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SIXTY-FIRST SESSION, 1923-'24



WITH ANNOUNCEMENTS FOR 1924-'25

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CALENDAR

1924														1925													
JANUARY							JULY							JANUARY							JULY						
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JUNE							DECEMBER							JUNE							DECEMBER						
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The College Calendar

SUMMER SCHOOL, 1924

May 31, Saturday.—Registration of students for Summer School begins at 8 a. m.
June 2, Monday.—All classes meet according to schedule.
May 31 to August 1, Saturday to Friday.—Summer School in session, nine weeks.
Aug. 15, Friday.—Reports of all grades for Summer School due in registrar's office.

FIRST SEMESTER, 1924-'25

Sept. 5, Friday.—All members of the instructional force on duty.
Sept. 6, Saturday.—Meeting of assigners with committee on schedule at 2 p. m.
Sept. 6, Saturday.—Meeting of assigners with deans at 3 p. m.
Sept. 8, Monday.—Admission and registration of students begin at 8 a. m.
Sept. 9, Tuesday.—Housekeepers' Course begins; registration at 8 p. m.
Sept. 10, Wednesday.—Registration of students closes at 11 a. m.
Sept. 10, Wednesday.—Opening convocation, 11 a. m. to 12 m.
Sept. 10, Wednesday.—*All classes meet according to schedule, beginning at 1 p. m.
Sept. 29, Monday.—Special short courses for auto mechanics, tractor operators, machinists, blacksmiths, foundrymen, and carpenters begin.
Oct. 4, Saturday.—Examinations to remove conditions.
Oct. 11, Saturday.—Scholarship deficiency reports to students and deans are due.
Oct. 13 to 18, Monday to Saturday.—Annual Conference of Extension Workers.
Nov. 8, Saturday.—Midsemester scholarship deficiency reports to students and deans are due.
Nov. 26, Wednesday.—Thanksgiving vacation begins at 12 m.
Nov. 29, Saturday.—Thanksgiving vacation closes at 6 p. m.
Dec. 20, Saturday.—Housekeepers' Course closes at 12 m.
Dec. 20, Saturday.—Winter vacation begins at 6 p. m.
Jan. 3, 1925, Saturday.—Winter vacation closes at 6 p. m.
Jan. 5, Monday.—Special short courses for auto mechanics, electricians, tractor operators, machinists, blacksmiths, foundrymen, and carpenters begin.
Jan. 5, Monday.—Farmers' Short Course and Creamery Short Course begin.
Jan. 16 to 24, Friday to Saturday.—Examinations at close of semester.
Jan. 24, Saturday.—First semester closes at 11 a. m.
Jan. 26, Monday.—Semester deficiency reports to students and deans are due.

SECOND SEMESTER, 1924-'25

Jan. 26, Monday.—Meeting of assigners with committee on schedule at 2 p. m.
Jan. 27, Tuesday.—Admission and registration of students begin at 8 a. m.
Jan. 27, Tuesday.—Housekeepers' Course begins; registration at 8 a. m.
Jan. 29, Thursday.—*All classes meet according to schedule, beginning at 8 a. m.
Feb. 2 to 7, Monday to Saturday.—Farm and Home Week.
Feb. 7, Saturday.—Reports of all grades for first semester due in registrar's office.
Feb. 21, Saturday.—Examinations to remove conditions.
Feb. 28, Saturday.—Scholarship deficiency reports to students and deans are due.
Feb. 28, Saturday.—Farmers' Short Course and Creamery Short Course close at 12 m.
Mar. 28, Saturday.—Midsemester scholarship deficiency reports to students and deans are due.
April 1, Wednesday.—Preliminary reports on masters' theses are due.
April 16, Thursday.—Announcement of elections of seniors to Phi Kappa Phi.
May 5, Tuesday.—Housekeepers' Course closes at 12 m.
May 13 to 20, Wednesday to Wednesday.—Examinations for seniors.
May 15, Friday.—Masters' theses and abstracts of theses are due.
May 20 to 27, Wednesday to Wednesday.—Examinations at close of semester.
May 22, Friday.—Commencement Exercises, The Vocational School.
May 28, Thursday.—Commencement Day.
May 29, Friday.—Semester deficiency reports to students and deans are due.
June 11, Thursday.—Reports of all grades for second semester due in registrar's office.

SUMMER SCHOOL, 1925

June 1, Monday.—Registration of students for Summer School begins at 8 a. m.
June 1 to Aug. 1, Monday to Saturday.—Summer School in session, nine weeks.
Aug. 15, Saturday.—Reports of all grades for Summer School due in registrar's office.

FIRST SEMESTER, 1925-'26

Sept. 14, Monday.—Admission and registration of students begin at 8 a. m.
Sept. 16, Wednesday.—Registration of students closes at 11 a. m.

* Students must be present at the first meeting of each class or render a reasonable excuse. Failure to take out an assignment is not accepted as an excuse for absence from classes. A fee of five dollars is charged those who are assigned after the time set for close of registration unless an acceptable excuse is offered.

The State Board of Administration

GOVERNOR JONATHAN M. DAVIS, *ex officio Chairman*
A. B. CARNEY ROGER WILLIAMS W. P. LAMBERTSON
D. O. MCCRAY, *Secretary*

T. J. O'NEIL, *Business Manager*
J. W. HOWE, *Assistant Business Manager*
ROBERT GOOD, *Assistant Business Manager*

Administrative Officers

President of the College..... WILLIAM M. JARDINE
Vice President, and Dean of the Division of General
Science J. T. WILLARD
Dean of the Division of Agriculture and Director of
the Agricultural Experiment Station..... F. D. FARRELL
Dean of the Division of Veterinary Medicine..... R. R. DYKSTRA
Dean of the Division of Engineering and Director of
the Engineering Experiment Station..... R. A. SEATON
Dean of the Division of Home Economics..... MARGARET M. JUSTIN
Dean of the Division of College Extension..... H. J. UMBERGER
Dean of the Summer School..... E. L. HOLTON
Dean of Women MARY P. VAN ZILE
Principal of the Vocational School..... A. P. DAVIDSON
Registrar JESSIE MCD. MACHIE
Librarian ARTHUR B. SMITH
Custodian of Buildings and Grounds..... G. R. PAULING

Aims and Purposes of the College

The Kansas State Agricultural College has three chief aims: to give to the young men and women of Kansas a high standard of collegiate training in agriculture, engineering, home economics, general science, and veterinary medicine; to investigate, through its experiment stations, the agricultural and industrial problems of Kansas; and, by means of its extension division, to carry the full benefits of the College to the remotest parts of the state.

In all the collegiate curricula particular pains are taken that each student, in connection with the scientific and technical instruction necessary to his vocation, be given through training in fundamental, cultural subjects which promote sound thinking and good citizenship. The College aims to turn back to the state the type of citizen who is straight-thinking in all lines and a particularly valuable leader in some definite field of human activity. Its chief aim is the development of intelligent, effective leadership.

Besides the full collegiate course the College offers short courses in many fields of agricultural and industrial activity. These courses do not lead to degrees. Their aim is to give in the shortest possible time the gist of the practical training needed by the efficient artisan.

The second important aim of the Kansas State Agricultural College is, to serve the state by investigating in a scientific manner the state's problems in agriculture and the industries. This work is accomplished through the various agricultural and engineering experiment stations. All investigational work is directly connected with the educational work of the College, so that the students are given the widest opportunity for appreciating the true value of scientific investigation. Many opportunities in the United States Department of Agriculture and in the various experiment stations of the country are thus opened to such students as show interest and skill in investigational work.

In addition to the regular instructional work conducted on the campus, the College realizes its third important aim through the Division of College Extension. This is a highly organized system of agricultural education and service carried directly to the homes of the farmers. The work has been so highly developed within the last few years that the College has come to look upon the whole state as its campus. In addition to the regular staff of the Division of College Extension, many members of the College board of instruction and the staff of the experiment stations give several weeks of each year to this public work among the people of the state.

Grounds, Buildings and Equipment

The College campus occupies a commanding and attractive site upon an elevation adjoining the western limits of the city of Manhattan, with motor-car service into town and to the railway stations. The grounds are tastefully laid out according to the designs of a landscape architect, and are extensively planted with a great variety of beautiful and interesting trees, arranged in picturesque groups, masses, and border plantings, varied by banks of shrubbery and interspersed with extensive lawns, gardens, and experimental fields. Broad, well-shaped macadamized avenues lead to all parts of the grounds. Cement walks connect the buildings with one another and with the entrances. Including the campus of 160 acres, the College owns 1,398 acres of land at Manhattan, valued at \$340,600. Outside the campus proper, all of the land is devoted to educational and experimental work in agriculture. Within the College grounds, most of the space not occupied by buildings and needed for drives and ornamental plantings is devoted to orchards, forest and fruit nurseries, vineyards, and gardens. A number of fields in the northern and western portions of the campus are used for general experimental work by various departments.

The College buildings, twenty-three in number, are harmoniously grouped, and are uniformly constructed of limestone obtained from the College quarries. These buildings are listed below.

ANDERSON HALL. Erected, 1879; cost, \$79,000; dimensions, 152 x 250 feet; two stories and basement. Contains the offices of administration of the College, a social center hall, the College post office, offices of the Division of College Extension and of the Department of Student Health, and offices and classrooms of the Departments of Applied Art, Economics, Education, English, Mathematics, and Modern Languages. Value of equipment, \$55,223.*

AUDITORIUM. Erected, 1904; cost, \$40,000; dimensions, 113 x 125 feet. Has a large staff with drop curtain and scenery. Seating capacity, 2,300. Contains also the offices and music rooms of the Department of Music. Value of equipment, \$10,300.

CAFETERIA. Erected, 1921; cost, \$125,000; two stories and basement. Basement occupied by receiving and storage rooms for the cafeteria, dishwashing room, refrigeration machinery room, pipe room, locker rooms, and bakery. The first floor is devoted to the cafeteria, including kitchen, dining room, two offices, and lobbies. On the second floor are a tea room, with a main dining room, kitchen, three alcoves, receiving room, serving room, lobby and coat room, office, two classrooms, and the household-management laboratory. Value of equipment, \$16,409.

CHEMISTRY ANNEX No. 1. Erected, 1876; cost, \$8,000; dimensions, 35 x 110 and 46 x 175 feet, in the form of a cross. Originally erected as a chemical laboratory. Reconstructed at a cost of \$5,000 after fire in 1900, the building was used from 1902 to 1911 as a women's gymnasium; since 1911, used by the Department of Chemistry. Value of equipment, \$5,000.

CHEMISTRY ANNEX No. 2. Erected, 1904; cost, \$15,000; dimensions, 72 x 103 feet; one story and basement. Occupied by the Department of Dairy Husbandry from the time of its erection till the fall of 1923, since which time it has been used by the Department of Chemistry. Value of equipment, \$5,000.

DAIRY COMMISSION HALL. Erected, 1888; cost, \$5,000; dimensions, 30 x 30 feet; one story and basement. Used for many years by the Department of Horticulture and Entomology, then for horticultural work when that was

* The figures for equipment are based on the reports of June 30, 1923.

made a separate department. Contains offices used by the state dairy commissioner. Value of equipment, \$1,951.

DENISON HALL. Erected, 1902; cost, \$70,000; dimensions, 96 x 166 feet; two stories and basement. Occupied throughout by the laboratories, classrooms and offices of the Departments of Chemistry and Physics. Value of equipment: Chemistry, \$55,886; physics, \$21,468.

ENGINEERING HALL. Erected: East wing, 1909; main portion, 1920. Cost, \$270,000. Dimensions: Main portion, 60 x 236; east wing, 113 x 200 feet. Three stories in height, but much of the east wing built on the gallery plan rather than by complete floor separation into different stories. This building contains the general offices and library of the Division of Engineering, and the offices, drafting rooms and laboratories of the Departments of Agricultural Engineering, Applied Mechanics, Architecture, Civil Engineering, Machine Design, Mathematics, and Mechanical Engineering. The engines, turbines, generators and boilers that furnish heat, light and power for the College are also installed in this building. Value of equipment, \$248,772.

ENGINEERING SHOPS. These consist of several connected structures, erected at different times. The original building, now used as the woodworking shop, was erected in 1875; a series of additions having later been successively made, the present group is the result. Cost of the group, \$35,000. A portion of the building is two stories high. On the upper floor, which has a floor area of 9,260 square feet, are the classrooms, drafting rooms, pattern storage room and offices of the Departments of Machine Design and Shop Practice. The woodworking shop (35 x 219 feet) is equipped with bench tools and woodworking machinery. Adjoining is the machine shop, amply equipped with modern machine tools. The blacksmith shop (50 x 100 feet) contains 48 forges of modern type, connected with power blast and down-draft exhaust. The iron foundry (27 x 100 feet) and brass foundry (24 x 34 feet) are well supplied with the necessary equipment. The wash and locker room contains 250 steel lockers. A general supply room (22 x 24 feet) is conveniently located for storing small supplies. One room is fitted up as model farm shop and is used in the training of teachers for rural communities in accordance with the Smith-Hughes requirements. Value of equipment, \$51,910.

FAIRCHILD HALL. Erected, 1894; enlarged, 1903; cost, \$77,750; dimensions, 100 x 140 feet; two stories, basement, and attic. On the first floor are the College Library and reading rooms, a newspaper reading room, offices of the Librarian and his assistants, and the general museum. On the second floor are the offices, classrooms and laboratories of the Departments of Zoölogy, Entomology, and History and Civics. The museums of natural history are placed here also. The basement is occupied largely by recitation rooms and offices of the Department of History and Civics. Value of equipment: Library, \$258,769; other departments, \$20,055.

FARM BARN. Erected, 1913; cost, \$25,000; dimensions, 80 x 160 feet; two stories and basement. Consists of three sections, arranged like the letter H, and a glazed tile silo of 200 tons capacity. The west wing contains nine box stalls and twenty-six single stalls, equipped with sanitary feed mangers and racks, and is designed especially for the housing of horses. The east wing contains twelve box stalls and thirty single stalls for the breeding cattle and the show herd. The central section has an office, feed rooms, a washing floor, and a basement containing the engine room. The loft, to which a driveway leads, has storage space for ten carloads of grain and 100 tons of hay and straw and contains the grinding apparatus. This barn is used by the Department of Animal Husbandry. Value of equipment, \$1,300.

FARM MACHINERY HALL. Erected, 1873; cost, \$11,250; dimensions, 46 x 95 feet; two stories. This was the first building erected on the present campus. It was originally designed as a College barn, and first used for that purpose. It has been used as a general College building, and successively by the De-

partment of Botany and the Department of Veterinary Medicine. The first floor, a large hall, was used for many years as an armory by the Department of Military Science. The entire building is now used by the Department of Agricultural Engineering and contains modern types of farm machinery. Value of equipment, \$2,800.

HOME ECONOMICS HALL. Erected, 1908; cost, \$70,000; dimensions, 92 x 175 feet; two stories and basement. The first floor and basement are occupied by the laboratories, classrooms, and offices of the Departments of Food Economics and Nutrition, and Household Economics; the second floor is occupied by the laboratories, classrooms, and offices of the Department of Clothing and Textiles. Value of equipment, \$33,063.

HORTICULTURAL BARN. Erected, 1917; cost, \$1,500; dimensions, 38 x 55 feet. Two stories, first story stone, second story frame. This building is located one mile west of the College campus.

HORTICULTURAL HALL. Erected, 1907; cost, \$50,000; dimensions, 72 x 116 feet; two stories and basement. This building is used by the Departments of Botany and Plant Pathology, and Horticulture. Its classrooms, laboratories, museums, and equipment are modern and ample. Value of equipment, \$36,762.

ILLUSTRATIONS HALL. Erected, 1876; cost, \$4,000; dimensions, 32 x 80 feet; one story and basement. At an early period used as a horticultural hall; later the headquarters for general College repairs; since the summer of 1919 used by the Department of Illustrations. Contains also the alumni office and the stadium office. Value of equipment, \$3,778.

INFIRMARY. Erected, previous to 1884; rebuilt, 1919; dimensions, 34 x 34 feet; two stories. Originally a farm house, later used as dwelling by the professor of agriculture and more recently by the custodian. Contains separate wards for men and women, five rooms in each ward. Value of equipment, \$1,330.

KEDZIE HALL. Erected, 1897; cost, \$16,000; dimensions, 70 x 84 feet; two stories and basement. Used from its erection till 1908 by the Departments of Domestic Science and Domestic Art. Basement occupied by the printing plant; first floor taken up by the Department of Industrial Journalism and Printing; second floor divided into general classrooms and offices used by the Department of English. Value of equipment: English, \$1,200; Industrial Journalism and Printing, \$18,849.

NICHOLS GYMNASIUM. Erected, 1911; cost, \$122,000; dimensions, 102 x 221 feet; three stories and basement. The building consists of a main section and two wings. The main section (85 x 141 feet), consisting of two stories and a basement, is used as a men's gymnasium and armory, and contains a running track, sixteen laps to the mile. The east half of the basement of the main section contains a swimming pool, baths, rest room, etc., for women; the west half contains a swimming pool and baths for men. The east wing (40 x 102 feet) contains the women's gymnasium, classrooms and offices of the Department of Military Training, and several literary society halls. The west wing (40 x 102 feet) contains the offices of the director of athletics and physical education, a large locker room for men, and several literary society halls. This building is constructed on the old armory-castle type and is modern in every respect. Value of equipment, \$14,634.

VETERINARY HALL. Erected, 1908; cost, \$70,000; dimensions, 133 x 155 feet; two stories and basement. Occupied by the laboratories, demonstration and dissecting rooms, classrooms, and offices of the Departments of Anatomy and Physiology, Bacteriology, Pathology, and Vaccine Laboratories, and by the offices of the dean of the Division of Veterinary Medicine. Value of equipment, \$40,916.

VETERINARY HOSPITAL. Erected, 1923. Contract price, \$118,000. The building is of stone and of fireproof construction throughout, with general dimen-

sions of 145 x 146 feet. It consists of a central portion and two wings, and is two stories and an attic in height, with a basement under one of the wings. The building is used exclusively for the teaching of the practical phases of veterinary medicine and surgery. It is equipped for housing sick animals of all species, such as horses, cattle, sheep, swine, poultry, dogs, and cats. Its equipment includes an hydraulic elevator, large and small animal operating tables, cattle and horse stocks, dog kennels, operating rooms, laboratories for the diagnosis of animal diseases, etc. In addition, there are well-equipped rooms for senior students in veterinary medicine, together with a reception room for visitors, and offices for members of the veterinary clinical teaching staff.

VOCATIONAL SCHOOL HALL. Erected, 1900; cost, \$25,000; dimensions, 90 x 95 feet; two stories and basement. Occupies original site of the president's house, destroyed by lightning in 1896. Contains classrooms and office of the Vocational School and of the Departments of English and Public Speaking and offices of the veteran's bureau and of the custodian. Value of equipment, \$5,523.

WATERS HALL. East wing erected, 1912; west wing erected, 1923; cost of portions now completed, \$500,000; cost of building when developed and completed as planned, \$1,000,000. Each of the wings now completed is 80 feet wide and 169 feet long and four stories high. An 80 x 50 foot one-story annex on the east wing serves as a meats laboratory, and a similar annex on the west wing serves as a creamery. A stock-judging pavilion (45 x 100 feet) is located between the two wings and is divided into two large stock-judging rooms, each having a seating capacity of 475. The two wings and the stock-judging pavilion are used by the Departments of Agricultural Economics, Agronomy, Animal Husbandry, and Dairy Husbandry, and the general offices of the Agricultural Experiment Station and of the Division of Agriculture. The equipment includes an electrically operated flour mill capable of manufacturing 75 barrels of flour a day, a modern creamery, a well-equipped meats laboratory, and modern laboratories for instructional and investigative work in seed testing, market milk, soils, field crops, farm organization, grain grading, etc. Value of equipment, \$69,855.

In addition to the substantial stone buildings mentioned above, the College has a number of other buildings, among them the following:

AUTO MECHANICS LABORATORIES. Erected, 1918; dimensions, 42 x 176 feet; two stories. Built for the S. A. T. C. as mess hall (barracks No. 5). The upper floor contains a large lecture hall which is used as an assembly room for the Division of Engineering. The main portion of the building is occupied by the repair and ignition sections of the auto mechanics laboratories.

EXPERIMENT STATION BUILDING. Erected, 1918; dimensions, 40 x 176 feet; two stories. Built as barracks No. 4 for the S. A. T. C., now used by the Agricultural Experiment Station.

GENERAL-PURPOSE BUILDING. Erected, 1918; dimensions, 40 x 80 feet; two stories. Built as barracks No. 6 for the S. A. T. C. This building is used by the Department of Electrical Engineering and as a hospital for patients with contagious diseases.

GREENHOUSE. Erected, 1909; cost, \$7,000; dimensions, 114 x 150 feet. Contains six sections used by the various departments as follows: Horticulture, three; Botany, one; Agronomy, one; Entomology and Zoölogy, one. Value of equipment, \$5,547.

PLANT MUSEUM. Erected, 1907; cost, \$2,500; dimensions, 20 x 100 feet. Used by the Department of Horticulture. Contains a large number of rare growing plants, including many subtropical species. Value of equipment, \$440.

REPAIR SHOP. Erected, 1918; dimensions, 40 x 176 feet; one story. Built as barracks No. 1 for the S. A. T. C. Occupied by the Department of Building and Repair. Value of equipment, \$1,200.

SERUM BARN. Erected, 1914; cost, \$3,000; dimensions, 92 x 96 feet; contains 30 pens, each 8 x 12 feet, and two feed rooms of the same dimensions. This is a frame and cement building situated three-quarters of a mile north of the College campus.

SERUM PLANT. Erected, 1914; cost, \$7,000; constructed of brick; dimensions, 20 x 60 feet; two stories. Value of equipment, \$7,214.

TRACTION ENGINE LABORATORIES. Erected, 1918; cost, \$20,000; two buildings, each 40 x 176 feet. These are two frame buildings on concrete foundations, built originally as barracks Nos. 2 and 3 for the S. A. T. C. Value of equipment, \$2,417.

POWER AND WATER SYSTEMS. The College maintains and operates its own modern heat, light, power, water and sewer systems. A central boiler plant of 2,900 horsepower furnishes steam for both the heating system and the power plant. The central power plant contains steam engines and turbines, totaling 700 horsepower, connected to electric generators which furnish power and light for the entire campus. A complete system of underground tunnels connects the various buildings, and through these are carried the steam mains and electric cables which distribute steam and electrical energy to the different parts of the campus.

The waterworks pump house contains electric motor-driven pumps of an aggregate capacity of 600 gallons per minute. Cast-iron water mains distribute this over the campus, and a steel tank of 110,000 gallons capacity supported on a steel tower provides a reserve supply.

In addition to the totals for equipment listed above, there are other items which might be mentioned, *e.g.*, live stock valued at \$61,973. Miscellaneous equipment to the value of \$57,000 is located on the agronomy farm, in the hog barns, animal-husbandry barn, nutrition barns, sheep barn, slaughter house, botany field house, traction shed, dairy and calf barns, machine shed, horse barn, apiary building, pumping plants, the Ellen Richards Lodge (rented quarters), the Music Annex (rented quarters), at the poultry farm, the old serum plant, and in the zoölogy animal house.

The College Library

The general College Library consists of all books belonging to the College, including the library of the Agricultural Experiment Station, which is incorporated with it. On January 1, 1924, the Library contained 76,700 bound volumes, besides much unbound material. It receives currently about four hundred serial publications. As a depository the Library receives the documents and other publications of the United States government. The books are classified according to the Dewey system and are indexed in a dictionary card catalogue.

All students, as well as all officers of administration and instruction, have the privilege of direct access to the book stacks. The Library is primarily for free reference use, but the privilege of drawing books is accorded to all those connected with the College as registered students or as members of the Faculty. Books not specially reserved may be drawn for home use for two weeks. All books are subject to recall at any time.

General reference books, books reserved for classes, general periodicals, and certain other groups of books are to be consulted only in the reading rooms. They may not be loaned from the Library except when the reading rooms are closed. They must then be returned to the Library by the time it next reopens. Any violation of the regulations of the Library subjects the offender to a fine, or to a withdrawal of library privileges, or to both, according to the gravity of the offense. More serious offenses, such as mutilation or theft of books or periodicals, are considered just causes for suspension or expulsion of the offender, who is also required to make good the loss incurred.

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 the important daily and weekly Kansas newspapers. These rooms are freely open to the student and to the public for purposes of reading and study.

DIVISIONAL LIBRARIES. Divisional and departmental collections are deposited in certain College buildings apart from the main Library. These collections are for the special convenience of the instructors and students of the departments concerned. They are under the direction of the librarian and are accessible to all students at regular hours.

Student Health Service

The Department of Student Health was established in order to maintain good health among the students of the College. One doctor gives his entire time and three doctors devote part time to this service. The services of the College physicians are free, but the student may employ, at his own expense, any physician he may desire. Four nurses are employed on full time and the matron of the hospital also devotes all her time to student health needs.

The offices of the department are in Anderson Hall and are open to students each school day from 7:45 a. m. to 5 p. m. It is expected that students who have need of medical services and are able to walk will go to the office, unless there is a possibility that they have a contagious disease. Those who are unable to do so, or who have reason to believe that they have some contagion, should go to the hospital at once.

The College hospital is ready to receive students any hour of the day or night. Free hospital service is given for three days in each case of acute sickness except smallpox. After that period a charge of one dollar a day is made. Smallpox cases are not handled at the hospital except in cases where the disease has been contracted after proper vaccination against it. Patients are admitted to the hospital only on recommendation of the head of the College medical corps. Hospital service does not include major surgical cases, such as appendicitis, hernia, etc. If such a case develops while the student is in the hospital, he will be transferred, at his own expense, to a hospital of his choice. Treatment of chronic cases by the College physicians cannot be guaranteed. However, when practicable, treatment of such cases may be undertaken on the same basis as acute cases. Fractures and dislocations of a serious nature are not treated, but minor cases may be treated at the option of the head physician. Students with fractures are admitted to the hospital.

Standard hospital nursing service is furnished free, but the student may employ, at his own expense, a private nurse at any time he desires to do so. A private nurse must obey the same rules that the College nurses are expected to follow. No ambulance service is maintained by the College, as in practically all cases of beginning sickness patients are able to ride to the hospital in an ordinary conveyance.

In order to help control contagious diseases, a student absent from classes must, before he returns to his classes, secure from the College physician, a return card showing him to be free from all such diseases.

Students have the privilege of consulting any of the College physicians at any time on any question of personal hygiene of whatsoever nature.

The student health service is maintained by the sick-benefit fee fund. For data concerning this fee see the section on expenses, under General Information.

Requirements for Admission

The entrance requirements to the College are made broad and flexible, only fundamental subjects being definitely required. These requirements are made upon the supposition that high schools are local institutions in which the courses should be adapted to the needs of the individual localities, and that College entrance requirements should be such as to take the output of the high schools, rather than to determine the nature of the work offered in them.

Any person who has completed a four-year course of study in any high school or academy accredited by the State Board of Education will be admitted to the freshman class.

In order to carry the several curricula successfully the following subjects must have been completed:

Curriculum in Agriculture.....	English, three units; physics, one unit; algebra, one unit; geometry, one unit.
Curriculum in Veterinary Medicine.....	Same as for Curriculum in Agriculture.
Curriculum in Animal Husbandry and Veterinary Medicine	Same as for Curriculum in Agriculture.
Curriculum in Home Economics.....	Same as for Curriculum in Agriculture.
Curriculum in Home Economics and Nursing..	Same as for Curriculum in Agriculture.
Curriculum in Industrial Journalism.....	Same as for Curriculum in Agriculture.
Curricula in Music.....	Same as for Curriculum in Agriculture.
Curriculum in General Science.....	English, three units; physics, one unit; algebra, one and one-half units; geometry, one unit.
Curriculum in Industrial Chemistry.....	Same as for Curriculum in General Science.
Curriculum in Rural Commerce.....	Same as for Curriculum in General Science; and bookkeeping.
Curricula in Engineering.....	English, three units; physics, one unit; algebra, one and one-half units; geometry, one and one-half units.
Curriculum in Architecture.....	Same as for Curricula in Engineering.

These curricula were formulated on the assumption that the high-school subjects named will be offered for admission. Those graduates of accredited high schools who in accordance with a state law are admitted as freshmen without all of the high-school subjects that are prerequisite to carrying the curricula chosen will be assigned to the necessary subjects and allowed College credit toward graduation in them, as follows: Elementary Physics, four semester hours; Algebra III, two semester hours; Solid Geometry, two semester hours.

Persons who are not graduates of accredited high schools or academies will be admitted to the freshman class if they have completed fifteen acceptable units of high-school work, including the fixed requirements. (A unit is defined to be the work in an accredited high school or academy in five recitation periods a week for one school year.) One who offers fourteen such units will be admitted as a freshman, but will be conditioned in one unit. Such deficiency (whether fixed or optional requirement) must be made up the first year that the student is in attendance. If the optional requirement is not made up within that time College credits are taken in its place.

Subjects acceptable for entrance, arranged in eight groups, together with the number of units that may be offered, are shown as follows:

GROUP I—ENGLISH.....	Three or four units.
GROUP II.....	Latin, one, two, three, or four units.
FOREIGN	Greek, one, two, three, or four units.
LANGUAGES.	German, one, two, three, or four units.
	French, one, two, three, or four units.
	Spanish, one, two, three, or four units.
GROUP III.....	Elementary algebra, one or one and one-half units.
MATHEMATICS.	Plane geometry, one unit.
	Solid geometry, one-half unit.
	Plane trigonometry, one-half unit.
	Advanced algebra, one-half unit.

GROUP IV	Physical geography, one-half or one unit.
NATURAL	*Physics, one unit.
SCIENCES.	*Chemistry, one unit.
	*Botany, one-half or one unit.
	*Zoölogy, one-half or one unit.
	*Physiology, one-half or one unit.
	*General biology, one-half or one unit.
	*General science, one-half or one unit.
GROUP V.....	Greek and Roman history, one unit.
HISTORY AND	Medieval and modern history, one unit.
SOCIAL SCIENCES.	English history, one unit.
	American History, one unit.
	Economics, one-half or one unit.
	Sociology, one-half unit.
	Civics, one-half or one unit.
GROUP VI.....	Psychology, one-half unit.
NORMAL TRAINING	Methods and management, one-half unit.
SUBJECTS.	Higher arithmetic, one-half unit.
	Reviews
	Grammar, geography, and reading, 12 weeks
	each, or
	Two of these, eighteen weeks each } one unit.
	*Music, one unit.
GROUP VII.....	*Agriculture, one-half, one, two, three, or four units.
INDUSTRIAL	*Drawing, one-half or one unit.
SUBJECTS.	*Woodwork, one-half, one, or two units.
	*Forging, one-half or one unit.
	*Printing, one-half, one, or two units.
	*Domestic science, one-half, one, or two units.
	*Domestic art, one-half, one, or two units.
GROUP VIII.....	Commercial law, one-half unit.
COMMERCIAL	Commercial geography, one-half unit.
SUBJECTS.	Bookkeeping, one-half or one unit.
	*Stenography and typewriting, one-half or one unit each.

DEFICIENCIES

The courses in the Vocational School offered in connection with the College give every needed opportunity for students of the College to make up anything lacking in their preparation for entrance. All such entrance deficiencies must be made up before the beginning of the sophomore year. No student is considered a candidate for graduation in the spring who is deficient more than nine semester hours in addition to his regular assignment at the beginning of the first semester. No student who fails or is conditioned or found deficient in any subject, or whose grade in more than one subject falls below G in any semester, is allowed to carry extra work during the succeeding semester.

ADVANCED CREDIT

At the discretion of the president, students who present certificates showing credits for college work done in other acceptable institutions are allowed hour-for-hour credit on courses in this College, in so far as they may be directly applied, or can be accepted as substitutions or electives. Candidates must present to the Committee on Advanced Standing their high-school and college credits certified to by the proper authorities. It is requested, also, that a *college catalogue covering the period of attendance be furnished with college credentials*. In cases in which it is impossible for one to furnish an acceptable certificate concerning work upon which advanced credit is asked, examinations are given, if the subject has been studied under competent instruction.

Advanced credit in certain subjects of freshman rank may be secured by examination on account of surplus high-school units over and above the fifteen acceptable units required for admission. The registrar, on request, will furnish a statement of such surplus units to the Committee on Advanced Credit and that committee will conduct the examination within the first thirty days of

* In courses consisting of laboratory work wholly or in part, two periods of laboratory work are to be considered the equivalent of one recitation period.

the semester. Examinations, however, which affect the assignment of the first semester will be given the first Saturday of the first semester.

If the work of the student shows that advanced credits have been wrongly allowed such credits will be revoked.

ADMISSION

ADMISSION BY EXAMINATION. Examinations for admission will be held at the College on Monday, September 8, 1924; Monday, January 26, 1925; and Monday, June 1, 1925. These examinations are given for the benefit of those students who need some additional high-school credits to qualify them for entrance to the freshman class. Applications for these examinations should be made in advance to the registrar.

ADMISSION BY CERTIFICATE. The applicant is required to submit to the Committee on Admission a certificate of the high-school or academy credit properly certified to by the authorities of the institution in which the work was done. Blanks will be furnished by the College for this purpose.

It is greatly to the advantage of the prospective student to see to it that this blank, properly filled out and *indicating the curriculum he wishes to take here*, be sent to the College as soon as possible after graduation. A permit to register will then be sent him by the registrar before the first of September. This permit *cannot be sent* unless the prospective student sees that the information as to curriculum is sent to the registrar. This will greatly facilitate the work of entrance. The student will present this permit at the registration room in Nichols Gymnasium, and will not be compelled to wait for his turn to meet the Committee on Admission.

LATE ASSIGNMENT

A considerable amount of extra work and a great deal of confusion is caused by the neglect of students to enroll at the time set for that purpose, and a fee of \$5 will be charged those who are assigned after the time fixed for the close of registration unless they present to the president acceptable excuses for their delay.

SPECIAL STUDENTS

In recognition of the fact that experience and maturity tend to compensate, in a measure at least, for lack of scholastic attainment, the College admits as special students those who are twenty-one years of age or older, without requiring them to pass the regular examinations, provided (1) they show good reason for not taking a regular course; (2) they be assigned only to such work as they are qualified to carry successfully; (3) they do superior work in the subjects assigned. The age limit is not applied to special students of music.

A special student is assigned by the dean of the division in which occur the major subjects to be pursued.

Special students are subject to all of the general regulations and requirements of regular students, such as assignment to physical education and military training.

KANSAS HIGH SCHOOLS AND ACADEMIES IN ACCREDITED RELATIONS WITH THE COLLEGE

(Graduates admitted without examination.)

Abbyville.	Allen.	Andover.
Abilene.	Alma.	Anthony.
Ada.	Almena.	(Anthony High School.)
Adams.	Altamont.	(Spring Township H. S.)
Admire.	(Labette County.)	Antrim.
Agenda.	Alta Vista.	(St. John P. O.)
Agra.	Alton.	Appanoose.
Alden.	Altoona.	(Pomona P. O.)
Alexander.	Americus.	Arcadia.

Argonia.	Cawker City.	Elgin.
Arnold.	Cedar.	Elkhart.
Arkansas City.	Cedar Vale.	Ellinwood.
Arlington.	Centralia.	Ellis.
Arma.	Chanute.	Ellsworth.
Asherville.	Chapman.	Elmdale.
Ashland.	(Dickinson County.)	Elsmore.
Assaria.	Chase.	Elwood.
Atchison.	Chautauqua.	Emporia.
(Atchison High School.)	Cheney.	(Emporia High School.)
(Mount Saint Scholastica	Cherokee.	(Roosevelt High School.)
Academy.)	(Crawford County.)	Englewood.
(St. Benedict's High School.)	Cherryvale.	Ensign.
Athens.	Chetopa.	Enterprise.
Athol.	Cimarron.	Erie.
Attica.	Circleville.	Esbon.
Atwood.	Clafin.	Eskridge.
(Rawlins County.)	Clay Center.	Eudora.
Auburn.	(Clay County.)	Eureka.
Augusta.	Clayton.	Everest.
Aurora.	Clearwater.	Fairview.
Axtell.	Cleburne.	Fall River.
(Axtell High School.)	Clifton.	Falun.
(St. Michael's High School.)	Climax.	Fellsburg.
Baldwin.	Clyde.	Florence.
Bancroft.	Coats.	Ford.
Barclay.	Codell.	Formoso.
Barnard.	Coffeyville.	Fort Scott.
Barnes.	Colby.	Fowler.
Basehor.	(Thomas County.)	Frankfort.
Bavaria.	Coldwater.	Frontenac.
Baxter Springs.	Colyer.	Fredonia.
Bazine.	Colony.	Fulton.
Beattie.	Columbus.	Galena.
Beeler.	(Cherokee County.)	Galesburg.
Belle Plaine.	Concordia.	Galva.
Belleville.	Conway Springs.	Garden City.
Belmont.	Coolridge.	Garden Plains.
Beloit.	Copeland.	Gardner.
Belpre.	Corning.	Garfield.
Bendena.	Cottonwood Falls.	Garnett.
Benedict.	(Chase County.)	Garrison.
Bennington.	Council Grove.	Gaylord.
Bentley.	Courtland.	Gem.
Benton.	Covert.	Geneseo.
Bern.	Cuba.	Girard.
Berryton.	Cullison.	Glaseo.
Beverly.	Culver.	Glendale.
Bird City.	Cunningham.	Glendale (Rural).
Bison.	Deerfield.	(Pratt P. O.)
Blaine.	Delavan.	Glen Elder.
Bloom.	Delia.	Goddard.
Blue Mound.	Delphos.	Goff.
Blue Rapids.	Denison.	Goodland.
Bogue.	Denton.	(Sherman County.)
Bonner Springs.	Derby.	Gove.
Brewster.	De Soto.	Grainfield.
Bronson.	Dexter.	Great Bend.
Brookville.	Diamond Valley.	Greeley.
Brownell.	(Burdick P. O.)	Greenleaf.
Bucklin.	Dighton.	Greensburg.
Bucyrus.	(Lane County.)	(Kiowa County.)
Buffalo.	Dodge City.	Gridley.
Buhler.	(Dodge City High School.)	Grinnell.
Bunkerhill.	(Saint Mary of the Plains	Gypsum.
Burden.	Academy.)	Haddam.
Furlingame.	Dorrance.	Halstead.
Burlington.	Douglass.	Hamilton.
Burns.	Dover.	Hamlin.
Burr Oak.	Downs.	Hanover.
Burrtton.	Dunlap.	Hardtner.
Bushong.	Durham.	Harlan.
Bushton.	Dwight.	Harper.
Byers.	Easton.	(Harper High School.)
Caldwell.	Edgerton.	(Harper Academy.)
Cambridge.	Edna.	Hartford.
Caney.	Edwardsville.	Harveyville.
Canton.	Effingham.	Haven.
Carbondale.	(Atchison County.)	Havensville.
Carneiro.	El Dorado.	Haviland.
Cassoday.	Elk City.	(Haviland High School.)
Castleton.	Elk Falls.	(Friends Academy.)

- Hays.
 (Hays High School.)
 (Boys' Catholic College
 Academy.)
 (Girls' Catholic High
 School.)
 Hazelton.
 Healy.
 Herington.
 Herndon.
 Hesston.
 (Hesston Academy.)
 Hiawatha.
 Highland.
 Hill City.
 Hillsboro.
 (Hillsboro High School.)
 (Tabor College Academy.)
 Hoisington.
 Holcomb.
 Hollenberg.
 Holton.
 Holyrood.
 Hope.
 Horton.
 Howard.
 Hoxie.
 Hoyt.
 Hugoton.
 (Stevens County.)
 Humboldt.
 Hunter.
 Hutchinson.
 (Hutchinson High School.)
 (St. Teresa High School.)
 Independence.
 (Montgomery County.)
 Ingalls.
 Inman.
 Iola.
 Ionia.
 Irving.
 Isabel.
 Jamestown.
 Jarbalo.
 Jetmore.
 (Hodgeman County.)
 Jewel City.
 Johnson.
 (Stanton County.)
 Junction City.
 (Junction City H. S.)
 (Saint Xavier's H. S.)
 Kackley.
 Kanopolis.
 Kanorado.
 Kansas City.
 (Argentine High School.)
 (Catholic High School.)
 (Central High School.)
 (State School for Blind.)
 (Sunner High School.)
 (Western University
 Academy.)
 Keats.
 Kensington.
 Kincaid.
 Kingman.
 Kinsley.
 Kiowa.
 Kipp.
 Kirwin.
 Kismet.
 La Crosse.
 La Cygne.
 La Harpe.
 Lake City.
 Lakin.
 Lane.
 Langdon.
 Lansing.
 Larned.
 Latham.
 Lawrence.
 (Lawrence High School.)
 (Oread High School.)
 Leavenworth.
 (Catholic High School.)
 (Leavenworth High
 School.)
 (St. Mary's Academy.)
 Lebanon.
 Lebo.
 Lecompton.
 Lehigh.
 Lenora.
 Leon.
 Leona.
 Leonardville.
 Leoti.
 (Wichita County.)
 Le Roy.
 Lewis.
 Liberal.
 Lincoln.
 Lincolnville.
 Lindsborg.
 (Lindsborg High School.)
 (Bethany College
 Academy.)
 Linn.
 Linwood.
 Little River.
 Logan.
 Lone Elm.
 Longford.
 Long Island.
 Longton.
 Lorraine.
 Lost Springs.
 Louisville.
 Louisville.
 Lovewell.
 Lucas.
 Luray.
 Lyndon.
 Lyons.
 McCracken.
 McCune.
 McDonald.
 McLouth.
 McPherson.
 (McPherson High School.)
 (Central College Academy.)
 (McPherson College
 Academy.)
 Macksville.
 Madison.
 Mahaska.
 Maize.
 Manhattan.
 (Manhattan High School.)
 (Sacred Heart Academy.)
 Mankato.
 Maplehill.
 Marion.
 Marquette.
 Marysville.
 Mayetta.
 Meade.
 Medicine Lodge.
 Melvern.
 Menlo.
 Meriden.
 Merriam.
 Michigan Valley.
 Milan.
 Mildred.
 Miller.
 Milton.
 Miltonvale.
 (Miltonvale High School.)
 (Wesleyan Academy.)
 Minneapolis.
 Minneola.
 Moline.
 Montezuma.
 Montrose.
 Monument.
 Moran.
 Morehead.
 Morganville.
 Morland.
 Morrill.
 Moscow.
 Mound City.
 Mound Ridge.
 Mound Valley.
 Mount Hope.
 Mullinville.
 Mulvane.
 Munden.
 Muscotah.
 Narka.
 Nashville.
 Natoma.
 Neal.
 Neodesha.
 Neosho Falls.
 Neosho Rapids.
 Ness City.
 Netawaka.
 Newton.
 (Newton High School.)
 (Bethel College Academy.)
 Nickerson.
 (Reno County.)
 Norcat.
 Northbranch.
 (Northbranch Academy.)
 Norton.
 (Norton County.)
 Nortonville.
 Norway.
 Norwich.
 Oakland.
 Oakley.
 Oberlin.
 (Decatur County.)
 Offerle.
 Oketo.
 Olathe.
 Olsburg.
 Onaga.
 Oneida.
 Osage City.
 Osawatomie.
 Osborne.
 Oskaloosa.
 Oswego.
 Ottawa.
 (Ottawa High School.)
 (Ottawa University
 Academy.)
 Overbrook.
 Overland Park.
 Oxford.
 Ozawkie.
 Padonia.
 Palco.
 Palmer.
 Paola.
 (Paola High School.)
 (Ursuline Academy.)
 Paradise.
 Parker.
 Parkerville.
 Parsons.
 Partridge.
 Pawnee Rock.
 Paxico.
 Peabody.
 Perry.
 Peru.
 Piedmont.
 Pierceville.

Phillipsburg.
 Piper.
 Pittsburg.
 (Pittsburg High School.)
 (Normal High School.)
 Plainville.
 Plains.
 Pleasanton.
 Plevna.
 Pomona.
 Portis.
 Potter.
 Potwin.
 Powhattan.
 Pratt.
 Preston.
 Pretty Prairie.
 Princeton.
 Protection.
 Quenemo.
 Quincy.
 Quinter.
 Ramona.
 Randall.
 Randolph.
 Ransom.
 Rantoul.
 Raymond.
 Reading.
 Reece.
 Republic City.
 Reserve.
 Riley.
 Robinson.
 Rock Creek.
 Rolla.
 Rosalia.
 Rosedale.
 Rose Hill.
 Rossville.
 Roxbury.
 Rozel.
 Russell.
 Russell Springs.
 Sabetha.
 Saffordville.
 Saint Francis.
 (Cheyenne County.)
 Saint Francis, Dist. No. 93.
 (St. Paul P. O.)
 Saint George.
 Saint John.
 Saint Marys.
 (Saint Mary's High School.)
 (Immaculate Conception
 High School.)
 (Saint Mary's College
 Academy.)
 Salina.
 (Salina High School.)
 (Sacred Heart Academy.)
 Satanta.
 Savonburg.
 Sawyer.
 Scandia.
 Scott City.
 (Scott County.)
 Scottville.
 Scranton.
 Seaman.
 (North Topeka P. O.)
 Sedan.
 Sedgwick.
 Selden.
 Seneca.
 (Seneca High School.)
 (Saint Peter and Saint
 Paul's High School.)
 Severance.
 Sharon.
 Sharon Springs.
 Shallow Water.
 Shawnee Mission.
 Silver Lake.
 Simpson.
 Smith Center.
 Smolan.
 Soldier.
 Solomon.
 South Haven.
 South Hutchinson.
 (Hutchinson P. O.)
 Sparks.
 Spearville.
 Spivey.
 Spring Hill.
 Stafford.
 Stanley.
 Stark.
 Sterling.
 Stilwell.
 Stockdale.
 Stockton.
 Strawn.
 Sublette.
 Summerfield.
 Sylvan Grove.
 Sylvania.
 Syracuse.
 Tampa.
 Tescott.
 Thayer.
 Tonganoxie.
 Tonovay.
 (Utopia P. O.)
 Topeka.
 (Topeka High School.)
 (Catholic High School.)
 (College of Sisters of
 Bethany.)
 (Highland Park High
 School.)
 (Kansas Industrial and
 Educational Institute.)
 (Washburn Rural High
 School.)
 Toronto.
 Towanda.
 Tribune.
 (Greeley County.)
 Trousdale.
 Troy.
 Turner.
 Turon.
 Tyro.
 Udall.
 Ulysses.
 Uniontown.
 Utica.
 Valley Center.
 Valley Falls.
 Vermillion.
 Vernon.
 Victoria.
 (Saint Fidelis Academy.)
 Vinland.
 Viola.
 Virgil.
 Wakeeney.
 (Trego County.)
 Wakefield.
 Waldo.
 Walnut.
 Walton.
 Warnego.
 Washington.
 Waterville.
 Wathena.
 Waverly.
 Wea.
 (Bucyrus P. O.)
 Webster.
 Weir City.
 Welda.
 Wellington.
 (Sumner County.)
 Wellsville.
 Westmoreland.
 Westphalia.
 Wetmore.
 Wheaton.
 White City.
 White Cloud.
 White Water.
 Whiting.
 Wichita.
 (Wichita High School.)
 (Cathedral High School.)
 (Mount Carmel Academy.)
 Williamsburg.
 Willis.
 Wilmore.
 Wilsey.
 Wilson.
 Winchester.
 Windom.
 Winfield.
 (Winfield High School.)
 (Saint Johns College
 Academy.)
 Winona.
 Woodbine.
 Woodston.
 Yates Center.
 Zenda.

Undergraduate Degrees and Certificates

For graduation, one must complete one of the four-year curricula as shown elsewhere. These are believed to provide for the necessities of most students who seek an institution of this kind, and departures from the specified work are not encouraged. Under special conditions, however, such College substitutions are allowed as the interests of the student demand. The total requirement, including military science or physical training, is about 134 hours, or semester credits, a semester credit being one hour of recitation or lecture work, or three hours of laboratory work a week, for one semester of eighteen weeks. A student, to be considered as a candidate for graduation, must have done his last year's work in residence. In special cases, candidates would be considered who have done three full years of work here and have done their last in an institution approved by the Faculty.

Candidates for graduation or for advanced degrees are requested to be present in person, unless arrangements have been made in advance for the conferring of the degree in absentia. Application for this privilege should be made to the student's dean.

DEGREES

The degree of Bachelor of Science (B.S.) is conferred upon those who have completed the four-year curriculum in agriculture, agricultural engineering, chemical engineering, mechanical engineering, electrical engineering, civil engineering, flour-mill engineering, architecture, landscape architecture, home economics, industrial journalism, industrial chemistry, rural commerce or general science.

The degree of Bachelor of Music (B.M.) is conferred upon those who have completed one of the four-year curricula in music.

The degree of Doctor of Veterinary Medicine (D. V. M.) is conferred upon those who have completed the four-year curriculum in veterinary medicine.

CERTIFICATES

An appropriate certificate is granted upon completion of any one of the following:

1. The three-year curriculum in music.
2. The two-year curriculum in public-school music.
3. The house-keepers' course, lasting about fifteen weeks.
4. The short course in agriculture.
5. The eight-week creamery short course.
6. Any one of the special courses related to engineering.

Graduate Study

THE ADMINISTRATION OF GRADUATE COURSES

The administration of the graduate courses is vested in the Graduate Council. This body consists of seven members, selected from the different divisions of the College as follows: Agriculture, two; Engineering, one; General Science, two; Home Economics, one; and Veterinary Medicine, one. The members of the Graduate Council are appointed and its chairman designated by the president.

Graduate courses may be offered by members of the graduate faculty only. The graduate faculty consists of all those recommended by the department heads and approved by the Graduate Council as qualified to give graduate instruction. Its chairman is the chairman of the Graduate Council.

The Graduate Council determines, subject to the authority of the president and the Board of Administration, and in accordance with any general regulations adopted by the graduate faculty, matters of curriculum, admission to graduate study and to candidacy to advanced degree, and other matters which relate to the proper administration and development of graduate work in the College.

ADMISSION

Admission to graduate courses is granted to graduates of institutions whose requirements for the bachelor's degree are substantially equivalent to those of the Kansas State Agricultural College. Admission to the graduate courses, however, may not be construed to imply admission to candidacy for an advanced degree. Such candidacy is determined by the Graduate Council upon the recommendation of the major instructor after the student has demonstrated by his work for a period of two months or longer that he has the ability to do major work of graduate grade. A mere accumulation of grades will not lead to a degree.

Three classes of applicants are recognized: (1) those who have received a bachelor's degree and wish to broaden their education without reference to an advanced degree; (2) those who wish to become candidates for advanced degrees, but are deficient in undergraduate preparation; and (3) those who wish to become candidates for an advanced degree and whose preparation is adequate.

Applicants of class 1 are admitted at once, on evidence of graduation, to approved graduate courses. Those of class 2 are admitted to graduate standing, but must at once make up their deficiencies by taking the necessary work in the undergraduate courses or by arrangement with the head of the department involved. Upon making up all deficiencies, class 2 applicants are recognized as of class 3. The latter are admitted to candidacy as previously provided.

Application blanks for admission to graduate courses may be secured from the registrar. Every applicant for admission must submit with his application an official transcript of his college record.

Students applying for graduate work should present themselves to the chairman of the Graduate Council, after registering at Nichols Gymnasium, for instructions concerning assignment to classes. On regular registration days (see College calendar), the chairman will be found at Nichols Gymnasium, on other days in room 38, Waters Hall.

REGISTRATION

Students who have been admitted to the graduate courses are required to register with the College registrar and with the chairman of the Graduate Council, at the beginning of each semester, unless special permission for later

registration has been granted by the chairman of the Graduate Council. Credit toward the fulfillment of the residence requirements dates from the time of registration and not from the beginning of the semester when the student enters.

CANDIDACY FOR MASTER'S DEGREE

Candidates for the degree of Master of Science (M. S.) are required to spend at least one collegiate year in residence, except under the special conditions noted below. The equivalent of thirty-two semester credits including a thesis must be satisfactorily completed. Not more than sixteen credits, including thesis, may be secured in a single semester. Students holding half-time graduate assistantships may not obtain more than eight credits, including thesis, in one semester.

GRADES. Graduate student's work is graded in five classes: E, G, M, P, and F. The last indicates a failure. P indicates unsatisfactory though passable work. The degree will not be conferred on any student who does not receive a grade of G or higher in three-fourths of the courses taken, including thesis. A failure or absence from examination in any course may prevent the conferring of the degree, and failure in any course in the major field precludes conferring the degree in the same year.

LANGUAGE REQUIREMENTS. A reading knowledge of a modern language in the field of the major subject is highly desirable. At the discretion of the department in which the major work is done, this may be required for the degree. This requirement must be met before the beginning of the last semester preceding the conferring of the degree by the student's presenting himself to the head of the Department of Modern Languages for examination. An earlier meeting of this requirement is highly desirable.

MASTER'S THESIS. Each candidate for a master's degree is required to present a thesis on some subject approved by the Graduate Council upon the recommendation of the instructor in charge of his major work.

The thesis ordinarily demands one-fourth of the student's time and may not exceed one-third of it. The thesis must be typewritten according to the specifications to be obtained from the office of the chairman of the Graduate Council.

Under proper conditions, a student of unusual attainment may be allowed to complete *in absentia* the last fourth of his work if this is devoted to his thesis. To secure this privilege, the student must have spent the equivalent of one semester and a half in residence and have creditably passed not less than twenty-four credits of graduate work; must petition for the privilege; must submit to the chairman of the Graduate Council an outline of his proposed investigation, approved by the head of his major department; and must submit satisfactory evidence that adequate facilities are available to him at the place where he proposes to do the work.

A preliminary report on the progress of all theses must be made by the major instructors to the chairman of the Graduate Council before April 1 of the year when the degree is conferred. Three complete copies of the theses as approved must be furnished not later than May 15 to the chairman of the Graduate Council. One of these copies will be deposited in the College Library, one with the dean of the division involved, and the other placed on file in the department in which the major subject is taken.

Six copies of a short but comprehensive abstract of each thesis giving a summary of the principal data and the conclusions, must be sent to the chairman of the Graduate Council before May 15 of the year the degree is conferred. These abstracts will be sent to the members of the candidate's examining committee.

A candidate for the master's degree is subject to a rigid oral examination covering his major and minor subjects and thesis by a committee consisting

of the dean of the division in which his major subject was taken, the member of the Graduate Council from that division, and the instructors with whom he has taken major and minor work.

PROGRAM OF STUDY

In carrying graduate work, the student is expected to assume the initiative and the responsibility. It is important to recognize in the beginning that graduate work does not consist in the fulfillment of routine requirements alone. The various courses as well as the assistance and advice of the instructors are to be regarded simply as aids in acquiring the methods, discipline, and spirit of independent research.

Each candidate for a degree is expected to have a wide knowledge of his subject and of related lines of work. This is usually obtained only by a wide range of private reading and study outside the immediate field covered by the formal courses to which he may be assigned.

The branch of knowledge to which the student expects to devote the larger part of his time is termed his major subject. The other fields of study selected, which will necessarily be more restricted in scope, are termed minor subjects. The latter should be chosen with reference to their direct bearing on the major subject.

Approximately two-thirds of the student's 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. The nature and distribution of the majors and minors are approved by the Graduate Council, upon the recommendation of the instructor with whom the major is taken.

The program of study suggested by the major instructor and approved by the Graduate Council is made the basis of the formal assignment to courses at the beginning of each semester and of the summer session.

It will be noted that in the announcement of the various departments of the College that certain courses are open to both graduate and undergraduate students. No credit earned during the undergraduate course may be counted for graduate credit, unless registered, at the time taken, with the chairman of the Graduate Council as credits in excess of those required for the bachelor's degree.

VACATION CREDIT

Upon the recommendation of his major instructor a student may accumulate a limited number of graduate credits in problem or research courses during the period between the close of Summer School and the beginning of the next succeeding semester under the following provisions: (1) The approval of the Graduate Council must be secured in advance. (2) The work must be carried on under the immediate supervision of a graduate instructor.

The credits so earned will be included on the student's next regular assignment marked "Vacation credit" and will be in addition to the regularly allowed number of credits assigned. Such credits will be forwarded to the registrar by the instructor as soon as he receives the class cards after the beginning of the next semester.

GRADUATE ASSISTANTSHIPS

In order to encourage graduates of this and similar institutions to continue their studies and to pursue advanced work leading to a master's degree, the College has established graduate assistantships in several departments. Those assistantships demand half the time of the student for laboratory or research assistance along the line of his major work during the regular collegiate year. The remainder of his time is given to graduate work. No half-time graduate assistant may receive more than eight graduate credits per semester nor satisfy the residence requirement in less than four semesters.

Half-time graduate assistantships, paying a salary fixed each year by the Board of Administration, have been established as follows:

<i>Subject</i>	<i>Number</i>	<i>Date vacant</i>
Agricultural Economics	1	September, 1924
Agronomy	1	September, 1924
Agronomy	1	September, 1925
Animal Husbandry	1	September, 1924
Animal Husbandry	1	September, 1925
Dairy Husbandry	1	September, 1925
Horticulture	1	September, 1925
Poultry	1	September, 1924
Bacteriology	1	September, 1925
Botany and Plant Pathology.....	1	September, 1925
Education	1	September, 1924
Public Speaking	1	September, 1925
Zoology	1	September, 1924
Zoology	2	September, 1925
Food Economics and Nutrition.....	1	September, 1924
Household Economics	1	September, 1924

Any department having a half-time graduate assistantship vacant may appoint two quarter-time assistants whenever the plan seems feasible. A quarter-time assistantship pays half the salary of a half-time assistantship. A student holding a quarter-time assistantship may carry not more than twelve credit hours each semester. By satisfactorily completing eight credits of graduate work in the summer session, such a student may meet the requirements for a master's degree within one calendar year.

Appointments for all assistantships are made annually in March, or soon thereafter, for the following year. Students desiring such appointments may obtain application blanks from the chairman of the Graduate Council.

GRADUATE WORK IN THE SUMMER SESSION

Graduate students desiring to do a part or all of the work for the master's degree in the summer may complete the residence requirements, in certain lines only, by pursuing graduate work for four summer sessions. Persons interested should correspond with the chairman of the Graduate Council in advance. In special cases it may be possible to complete the residence requirements for the master's degree as indicated above under "Candidacy for Master's Degree."

A detailed statement concerning the graduate work in the Summer School may be had on application to the dean of the Summer School, Kansas State Agricultural College, Manhattan, Kan.

Professional Degrees

ENGINEERING AND ARCHITECTURE

Graduates in engineering or in architecture from this College previous to 1917 who have been engaged in engineering or architectural practice for a period of five years or more, and graduates in 1917 or later who have been engaged in engineering or architectural practice for a period of three years or more, will be granted the professional degrees of M. E., C. E., Ch. E., E. E., Agr. E., F. M. E., Architect, or Landscape Architect, under the following conditions:

The graduate to be eligible to a degree must submit a statement of his experience and a thesis covering some phase of his practice. This thesis and experience must be approved by the head of the department in which the degree is requested, by the dean of the Division of Engineering, and by the Graduate Council, before the granting of such a degree will be recommended to the College Faculty and to the Board of Administration.

A candidate must declare his candidacy and file with the Dean of the Division of Engineering a detailed statement of his professional study and experience, and an outline of his proposed thesis, not later than the November 15 next preceding the June commencement at which the degree is to be conferred.

A preliminary copy of the completed thesis must be submitted for criticism not later than April 1, and the final copy in duplicate must be submitted not later than May 15.

Candidates for professional degrees shall present themselves at the commencement exercises in order that the degrees may be conferred.

A diploma fee of \$10 shall be paid by each candidate to the registrar not later than May 15.

General Information

DUTIES AND PRIVILEGES

Good conduct in general, such as becomes men and women everywhere, is expected of all students. Every possible aid and stimulus toward the development of good character is given by the various Christian organizations of the College and the town and by the College itself. Every student is expected to render a good account of himself in the College community life. For those who are high-minded and reasonable, no other requirements need be expected. College discipline is confined chiefly to sending away those whose conduct, after fair trial, makes their further attendance at the College unprofitable or inadvisable.

In order that a fine type of democratic sociability may be fostered among students and Faculty, a large community recreation and rest center has been recently established (1920) in Anderson Hall, the administrative building. This center, one of the largest rooms on the campus, is furnished with divans, arm chairs, and writing tables in wicker and is neatly and beautifully decorated. During vacant hours and between classes, students and Faculty gather here for rest and conversation. The room is also available for student and Faculty receptions and parties during the late afternoon and the evening hours.

Absences from class or laboratory periods must be accounted for to the instructor concerned. Permission for absence from College for one or more days must be secured in advance from the dean of the division in which the student is registered. Students cannot honorably leave the College before the close of a semester except by previous arrangement with the deans concerned.

Opportunities for general scientific, literary and forensic training are afforded, in addition to the College courses, by various literary and scientific societies and clubs. The Science Club, meeting monthly, admits to membership all instructors and students interested in science. Papers given at the meetings of the Science Club represent original work in science done at the institution. The program is further characterized by free discussion of the papers presented and by general scientific notes and news contributed by the members. The numerous literary and professional societies, which are described elsewhere in the catalogue under the title "Student Organizations," also afford excellent training in their diverse lines.

At various times during the year the College halls are opened for social, literary, musical, and dramatic entertainments furnished by lecture courses, by the literary societies, by the Department of Music, by the Dramatic Club, by the Oratorical Association, and by other organizations of students and instructors. Addresses by prominent speakers, men of affairs, and persons prominent in scientific, educational, and social work are of frequent occurrence.

EXPENSES

TUITION. There is no charge for tuition. Class instruction in music is free, but fees are charged for individual instruction. (See Department of Music for statement of fees for music.)

MATRICULATION FEE. A matriculation or entrance fee of \$10 for residents of Kansas, or \$15 for nonresidents, is charged all students in College curricula and in the Vocational School. This fee is not charged Summer School students or short course students, but is payable by special students in the College or the Vocational School.

INCIDENTAL FEE. An incidental fee of \$20 a year or \$10 a summer term is charged residents of Kansas; nonresidents pay \$30 a year or \$15 a summer term. Students in short courses of more than eight weeks duration pay an incidental fee of \$10. Eight-week short-course students pay an incidental fee of \$5.

SICK-BENEFIT FEE. Each student in the College or Vocational School pays a sick-benefit fee of \$3 a semester or \$1.50 for a summer term. Students in short courses of more than eight weeks duration pay a sick-benefit fee of \$3. For students in the short courses, lasting eight weeks only, this fee is \$1.50.

The sick-benefit fee entitles the student to receive the service of the College physician for any illness contracted while in College. It also includes the cost of medicine, and free hospital service up to three days. The fee does not include the cost of surgical operations, reduction of fractures, or the treatment of chronic conditions.

As in the case of all other fees, the College reserves the right to change this fee or to modify the benefits given for it, without previous notice.

The College maintains on the campus a contagion hospital having separate wards for men and women. This hospital is in charge of a matron who resides continuously in the building and cares for the patients under the direction of the College physician. Students, when suffering from or suspected of having any contagious disease, except smallpox, are admitted to the hospital on the recommendation of the College physician. The student's only expense for hospital service is a fixed charge of \$1 a day, after three days of free service. The aim of the College in providing this hospital is to prevent contagious diseases among the students and, in case the student should contract such a disease, to make it unnecessary to quarantine a rooming house where there are many students.

LATE ASSIGNMENT FEE. For unexcused late assignment the student is charged \$5.

LABORATORY EXPENSE. In all laboratories students are required to pay for supplies used and for apparatus broken or lost. The cost in the several subjects ranges from 50 cents to \$10 a semester. In the special courses related to engineering, the laboratory charges are fixed at from \$18 to \$36 for the entire course.

COMMENCEMENT FEE. On graduation students pay a commencement fee of \$10 to cover the cost of the diploma and other commencement expenses.

WHEN FEES ARE PAYABLE. The matriculation fee, the incidental fee, and the sick-benefit fee for the full year are payable at the beginning of the year. Laboratory fees and the student activity fee are payable at the beginning of each semester.

A senior expecting to complete his course at the end of the first semester, by presentation of a statement to that effect signed by his dean, will be required to pay for the first semester only.

FEE RECEIPTS ARE TO BE SAVED. Receipts for fees paid must be shown to the assigner at the beginning of each semester before a student is permitted to take out his assignment. Fall semester fee receipts admit the student for second-semester assignment.

REFUND OF FEES. *No refund is made on the matriculation fee.* Certain refunds are made on other fees, as shown below.

A student who does not return for second semester work may receive a refund of his second semester fees.

A student permitted to withdraw on or before the end of the first one-fourth of a semester may receive a refund of one-half of the fees paid for that semester.

A student permitted to withdraw after remaining one-fourth and less than one-half semester may receive a refund of one-fourth the fees paid for that semester.

Refund is made on the unused portion of laboratory fees.

Refunds are given *only* on the presentation of the fee receipt for various fees paid. Refunds are authorized at the office of the registrar. *Fee receipts must be preserved by the student.*

STUDENT-ACTIVITY FEE. Each student pays a student-activity fee of \$5 a semester. This fee is imposed by vote of the students themselves, and at their request is collected by the College at the beginning of each semester along with the fees levied by the state. Payment of this fee admits the student to all athletic events, to all intercollegiate debates and oratorical contests, and to band concerts, and gives membership in the Students' Self-governing Association. Exemption from payment of this fee is allowed by the president of the College in special cases where in his judgment the student would find the payment of the fee a hardship. The members of the Faculty and the employees of the College are allowed the privilege of participation in the activity-fee plan.

TEXTBOOKS. The average cost of textbooks is about \$8 a semester in most of the curricula. For the first semester the cost is about \$12. There is considerable variation from term to term and in the different curricula.

GYMNASIUM SUITS. Each young woman taking physical training must have an approved gymnasium suit costing about \$4.50. Complete gymnasium suits for young men cost about \$5.

MILITARY UNIFORM. Each student required to take military training pays a fee of 25 cents a semester for use of his uniform, which is furnished by the government.

ROOMS. Rooms are not furnished by the College. They are readily obtainable in the city at a cost of from \$10 to \$15 a month for a room suitable for two occupants. Less desirable quarters and less desirable locations may be obtained at a lower rate. There are great differences in the accommodations offered. Those for which the higher prices are charged are modern in all respects, and light, heat, and bath are included in the cost stated.

BOARD. The cost of board depends largely upon individual requirements. In clubs and private boarding houses the cost is usually from \$5 to \$7 a week. Students may board themselves at a smaller money outlay. The College operates a first-class cafeteria, where all meals may be obtained, except on Sundays, at moderate prices. Food is furnished at cost and the expense to the student depends upon the care and judgment which he employs.

LAUNDRY. The expense for laundry may be estimated at 40 cents to 70 cents a week, depending upon individual requirements.

BOARDING AND ROOMING HOUSES

The Christian Associations of the Agricultural College keep on file the official list of boarding and rooming houses. All correspondence relative to boarding accommodations, in advance of the student's arrival in Manhattan, may be addressed to the secretary of the Young Men's Christian Association, to the secretary of the Young Women's Christian Association, or to the registrar of the College. Upon arrival in Manhattan, young men should go directly to the Y. M. C. A. building, corner of Eleventh and Fremont streets, or to the office of the Y. M. C. A. secretary, in Anderson Hall on the College campus. Young women upon arrival should go directly to the Y. W. C. A. offices in Home Economics Hall on the campus. The cars from the Union Pacific station pass directly by the Y. M. C. A. building. Taxi service may be had from either station.

For three days before the opening of the fall semester and for the first three days after the opening day, committees from these associations meet trains and assist in directing new students, either to the association buildings or directly to proper boarding places. The associations make no charge for their services or for lists of all approved boarding places, and new students should depend absolutely upon the recommendations of the association committees.

SELF-SUPPORT

The courses of instruction are based upon the supposition that the student is here for study, and therefore a proper grasp of the subjects cannot be obtained by the average student unless the greater part of his time is given to College work. Students of limited means are encouraged and aided in every possible way, but unless exceptionally strong, both mentally and physically, such students are advised to take lighter work by extending their courses, in case they are obliged to give any considerable time to self-support. As a rule, a student should be prepared with means for at least a semester, as some time is required in which to make acquaintances and to learn where suitable work may be obtained.

There are various lines in which students may find employment. The College itself employs labor to the extent of about \$1,200 a month, at rates varying from 20 to 35 cents an hour, according to the nature of the employment and the experience of the employee. Most of this labor is upon the College farm, in the orchards and gardens, in the shops and the printing office, for the janitor, etc. Various departments utilize student help to a considerable extent during the vacations. Students demonstrating exceptional efficiency, ability, and trustworthiness obtain limited employment in special duties about the College. Many students secure employment in various lines in the town, and some opportunity exists for obtaining board in exchange for work, with families either in town or in the neighboring country.

Labor is universally respected in the College community, and the student who remains under the necessity of earning his way will find himself absolutely unhampered by discouraging social conditions. Indeed, over one-third of the students support themselves wholly, while a third support themselves in part. False standards regarding physical work do not exist, and are not tolerated by the board of instruction or by the student body as a whole. Absolutely democratic standards prevail at the College, and students are judged on the basis of their personal worth and efficiency alone.

Students are assisted to obtain employment by means of the employment bureaus maintained by the Young Men's Christian Association and by the Young Women's Christian Association of the College, with secretaries of which organizations correspondence is encouraged.

STUDENT LOAN FUNDS

THE ALUMNI LOAN FUND. The Alumni Association of the Kansas State Agricultural College has created a loan fund, chiefly by means of payments by which the alumnus is relieved from further regular dues in the association. Members are due to pay the association \$5 a year, and on payment of \$100 in one sum they are relieved from such dues. The fund so created, amounting now to about \$2,650, is lent to students at 5 per cent per annum. The fund is administered by a committee appointed by the directors of the Alumni Association. The committee announces no specific rules governing the granting of loans, but in general gives preference to smaller amounts on short time over larger amounts which cannot be paid for several years. Alumni are urged to add to the funds thus made available to worthy students. Students wishing loans from this fund may address Dean J. T. Willard, chairman of the Alumni Loan Fund Committee, Manhattan, Kan.

The following-named persons became life members of the Alumni Association on payment of \$20 each and thus contributed the greater part of the money in the alumni loan fund:

Harvey Adams, Elizabeth Agnew, Mary (Davis) Ahearn, Edith (Davis) Aicher, L. C. Aicher, Jessie (Reynolds) Andrews, H. W. Avery, R. J. Barnett, Clara Barnhisel, C. E. Bassler, J. W. Berry, R. R. Birch, Anna (Engel) Blackman, Claude M. Breese, Frances Brown, W. R. Browning, Esther Bruner, May (Harris) Burt, W. J. Burtis, Carl Butler, Clay E. Colburn, Mattie (Mails) Coons, Minnie Copeland, Victor Cory, N. A. Crawford (honorary), S. H.

Creager, Ruby (Buckman) Crister, Fannie (Waugh) Davis, K. C. Davis, Albert Deitz, Carrie (Painter) Des Marias, Albert Dickens, Harriet (Nichols) Donohoo, Ula M. Dow, Flora (Wiest) Doyle, Leila Dunton, Bert R. Elliott, Marshall Elsas, L. A. Fitz, Geo. W. Gasser, W. B. Gernert, G. O. Greene, Louise Greenman, Helen Halm, O. H. Halstead, Stella Harriss, Ina Holroyd, B. R. Hull, C. B. Ingman, Mildred Inskeep, Franc (Sweet) Johns, Daisy (Hoffman) Johntz, Nellie (Sawyer) (Kedzie) Jones, Ruth Kellogg, R. S. Kellogg, H. L. Kent, Amy Inez (Savage) Knaus, Karl Knaus, W. F. Lawry, Mary (Nixon) Linn, James W. Linn, Alice Loomis, Gertrude McCheyne, Eva (Linn) McKinsty, P. E. McNall, Abby Marlatt, C. L. Marlatt, E. Estella Mather, B. E. Mickelson, F. B. Morland, Charlotte Morton, Ernest Fox Nichols, Gertrude Nicholson, Wilma Orem, Clara Pancake, E. M. Parrish, Maude K. Pyles, Fred E. Rader, Flora Rose, P. H. Ross, Grace W. Rudy, Murilla Rushmore (honorary), Lynne J. Sandborn, W. H. Sanders, Nicholas Schmitz, Charles A. Scott, Roy A. Seaton, Blanche (Vanderlip) Shelley, Vesta Smith, Wilhelmina Spohr, M. I. Stauffer, Clif Stratton, E. C. Thayer, Helen B. Thompson, Carrie (Harris) Totten, A. F. Turner, Mary (Pierce) Van Zile (honorary), Mary (Williams) Wells, G. C. Wheeler, M. F. Whittaker, George W. Wildin, C. J. Willard, J. T. Willard, E. D. Williams (honorary), R. E. Wiseman.

Miss Alice M. Melton, Miss Nellie Aberle and Mr. O. A. Stevens have paid \$100 each in purchase of life memberships on the new basis.

Rev. George H. Atkinson paid \$100 into the alumni loan fund as a memorial to his deceased wife, Edna Coith Atkinson, a member of the class of 1914.

Announcement will be made in the catalogue of contributions made in the future by others to this fund.

THE HENRY JACKSON WATERS LOAN FUND. The Henry Jackson Waters loan fund consists of the royalties received from the Kansas sales of Ex-President Waters' textbook, *The Essentials of Agriculture*, for the first five years. The royalties so far have amounted to approximately \$2,000, which sum has been augmented by gifts of \$100 each from Senator Capper and L. R. Eakin, of Manhattan, and by smaller amounts received from some others. The entire amount, now over \$3,000, is in constant use. The fund is administered by a committee appointed by the president of the College and approved by the Board of Administration. The rules for the loans are likewise approved by the Board. The rules allow emergency loans of \$50 to any student who has completed one semester of work in this College. Juniors may borrow \$100 and seniors may borrow \$150. Applications for loans should be made to Prof. Albert Dickens, chairman of the Waters Loan Fund Committee, Manhattan, Kan.

THE CHAMBER OF COMMERCE LOAN FUND. The members of the Chamber of Commerce of Manhattan have raised a fund which now amounts to \$3,000 and is being augmented constantly. This is loaned to deserving students at 5 per cent per annum. About ninety loans have been made. Applications for loans from this fund should be addressed to the secretary, Chamber of Commerce, Manhattan, Kan.

THE STATE FEDERATION OF WOMEN'S CLUBS LOAN FUND. Each year several of the young women students of the Kansas State Agricultural College are beneficiaries of the State Federation of Women's Clubs through the administration of its liberal young women's student loan fund. Information regarding this fund can be obtained by addressing Dean Mary P. Van Zile, Manhattan, Kan.

THE P. E. O. LOAN FUND. The P. E. O., a national organization of women, maintains an educational fund to be loaned to girls to help defray college expenses. Information regarding this fund may be obtained from Dean Mary P. Van Zile.

THE SOCIAL CLUB LOAN FUND. This is a fund loaned by the K. S. A. C. Social Club and is administered by the Waters Loan Fund Committee.

THE D. A. R. LOAN FUND. The D. A. R. loan fund is a fund available to both men and women students and is administered by the Waters Loan Fund Committee.

THE WOMEN'S PAN-HELLENIC LOAN FUND. The Alumnæ Pan-Hellenic Fund is loaned to women students. Applications should be made to the president, City Pan-Hellenic, through Dean Mary P. Van Zile.

PRIZES AND MEDALS

STOCK JUDGING. The Block and Bridle Club offers four medals, one gold, one silver, and two bronze, to students obtaining the highest four places in the club's stock-judging contest. The same organization offers prizes of books for stock judging. The faculty of the Department of Animal Husbandry offers prizes of books or papers on stock judging.

DAIRY JUDGING. The Student Dairy Association each year holds a dairy-judging contest, and offers a gold, a silver, and a bronze medal to students obtaining the highest three places.

GRAIN JUDGING. The Klod and Kernel Klub holds an annual grain-judging contest. Cash prizes, subscriptions to farm papers, and ribbons are given to the highest ranking students.

PLAY WRITING. The Purple Masque Dramatic Fraternity offers each year a prize of \$50 for the best original play written by a student of the Kansas State Agricultural College and suitable for presentation by the fraternity.

ORATORY. The literary societies, through the Oratorical Board, offer each year, in the Intersociety Oratorical Contest, the following prizes:

First prize, gold medal and \$25.

Second prize, silver medal and \$15.

Third prize, bronze medal and \$10.

The Oratorical Board also finances the sending of a representative from the College to the annual Peace Oratorical Contests, to the winners of which valuable prizes in money are awarded.

The Department of Public Speaking sends to the annual Missouri Valley Contest an orator as the representative of the College. In this contest valuable prizes in money and medals are awarded.

SHORT-STORY WRITING. The Quill Club offers annually a gold medal to the student of Kansas State Agricultural College writing the best short story in a contest held by this organization.

SOCIOLOGY. The Kappa Alpha chapter of the Chi Omega Sorority offers a prize of \$25 to the student who holds the highest grade in sociology at the end of the second semester each year, the standing of the student to be determined by the instructor.

SCHOLARSHIPS

The local branch of the American Association of University Women offer a scholarship, a gift, of \$150 annually. This is awarded the woman student who has the highest academic rank at the end of the first semester of her junior year.

MILLING INDUSTRY. The Kansas Flour Mills Company offers \$300 annually to advanced students specializing in milling industry. This sum has been divided into three scholarships which are open to students in the Divisions of Agriculture, General Science, and Engineering who are specializing in flour milling and other milling-industry work. They are awarded on or before June 1 of each year, and except in unusual cases are not awarded to students below junior standing. Other things being equal, preference is given to residents of the state of Kansas.

In awarding these scholarships, the following points regarding the student are considered: Course of study pursued, scholarship, character and personality, and financial condition. The stipend is divided into ten monthly payments, the first payment being made September 1 and the last, June 1.

DEBATE. In the Department of Public Speaking two scholarships of the value of \$100 each, one for men and one for women students, are offered annually for proficiency in intercollegiate debating.

GRADUATE ASSISTANTSHIPS

Graduate assistantships have been established for some years by action of the Board of Administration, and are available in several departments of the College. For full details see a previous paragraph in the section devoted to graduate study.

BUSINESS DIRECTIONS

General information concerning the College may be obtained from the president or the registrar. Financial matters are handled through the office of the business manager, State Board of Administration, Topeka, Kan.

Prospective students desiring information or catalogues should address the vice president's office.

Scientific and practical questions, and requests for special advice in subjects in which the College and the Experiment Stations are prepared to give information, should be addressed to the heads of the departments concerned with the work regarding which information is sought.

Applications for farmers' institutes should be made as early in the season as possible, to the Division of College Extension. Applications for the publications of the Agricultural Experiment Station should be addressed: Director of the Agricultural Experiment Station, Manhattan, Kan. Publications of the Engineering Experiment Station may be had by addressing: Director of the Engineering Experiment Station, Manhattan, Kan.

Donations to the Library should be addressed to the librarian, and donations to the Museum to the curator of the Museum.

STUDENT ASSEMBLY

The Student Assembly is held one hour each week. At this time the library, offices, classrooms, and laboratories are closed and the students gather in the College Auditorium. These assembly exercises consist of devotional services, music, and addresses. The devotional exercises are conducted by members of the Faculty, by resident ministers of the various denominations, or by prominent visitors. Excellent music is provided by the College Orchestra, by members of the Department of Music, and by available outside talent. In addition to the addresses delivered by the president and by members of the Faculty, many prominent leaders of state and national reputation are invited to address the assembly. Thus the Student Assembly has become a center of true culture and enlightenment. Although attendance is not compulsory, it is common to see nearly two thousand enthusiastic students present during these exercises.

COLLEGE PUBLICATIONS

The official organ of the College is *The Kansas Industrialist*, published and printed at the College weekly by the Department of Industrial Journalism and Printing. Its pages are filled with articles of interest, with special reference to agriculture and the industries. Particular attention is paid to information concerning the work of the College, to investigations of the Experiment Stations, and to local and alumni news. *The Kansas Industrialist* will be sent to any address for seventy-five cents a year. The alumni may have *The Kansas Industrialist* free upon application.

The Division of College Extension issues a monthly publication entitled *Agricultural Education*, of special interest to institute members.

The students of the College publish a semiweekly periodical, *The Kansas State Collegian*, in the interest of the students at large. A humorous magazine, *The Brown Bull*, is published by the students and appears about four times during the college year. *The Kansas State Engineer* is published by students in the Division of Engineering. Students in the Division of Agriculture issue *The Kansas Agricultural Student*. A College annual, *Royal Purple*, is published each year by the senior class.

ASSIGNMENTS

No student may be enrolled in classes before receiving an assignment, and no assignment is completed until after the incidental fee is paid.

Assignments at the dates shown in the College calendar are made in Nichols Gymnasium, where detailed directions are announced by placards. Later assignments are made by the student's assigner during regular office hours, but are subject to checking by the registrar in respect to availability of classes. Classes are closed when the limits as to numbers are reached. A student is not admitted later than ten days after the opening of the semester except by special permission of his dean. An extra fee of five dollars is charged for assignments secured after the regular dates for assignment of students at the opening of each semester as announced in the College calendar, unless an acceptable reason for the tardiness is given.

A student desiring to take work at any other than the regular time must obtain the written consent of his dean, the head of the department in which the work is to be done, and the dean of the division to which the department belongs.

Each student must take full work unless excused by his dean, and more than regular work is not allowed to any student except by permission of his dean, and under no circumstance to anyone who failed or was conditioned or deficient in any subject the preceding semester, or whose average grade was below G.

A student is not allowed to carry work by correspondence while in College except by permission of his dean.

A student who, at the end of the semester, receives grades below passing in fifty per cent or more of the work to which he is assigned is required to leave College for at least one semester unless there are sufficiently extenuating circumstances, in which case his dean may suspend the rule and allow an assignment to twelve semester hours of work. Every student must carry the maximum load of which he is capable.

Any student who, at the end of the term, receives grades below passing in twenty-five per cent of his assigned work is allowed not more than seventy-five per cent of the regular work next semester.

Special requests concerning assignments, and permission to make up deficiencies by outside study under an approved tutor, are acted upon by the student's dean in conference with the heads of the departments involved.

CHANGES IN ASSIGNMENTS

Subjects are not dropped from assignments within two weeks of dates set for reports of low grades.

No student may drop a study or modify his assignment except by a reassignment, and any student desiring a change in his assignment must apply to his dean. Any change in a student's assignment is made in the office of his dean. Teachers desiring that assignments be changed send requests to the proper deans. Notices of changes are furnished the registrar, the student and the student's assigner. Changes are effective at once, and the registrar, through the heads of departments, sends notices or enrollment cards to the teachers affected.

A student receiving a notice of reassignment must at once report to classes in accordance therewith. If not content with the revised assignment, he may confer with his dean concerning it. All absences caused by a student's dropping out of class without a proper reassignment are reported by the instructor as unexcused absences.

ABSENCE AND TARDINESS

Each student must appear at the first exercises of his classes after he is assigned. Students must be present the very first day of each semester or render a reasonable excuse. All absences are reported from the first day of the semester, even though the student enrolled late. Failure to take out an

assignment is not accepted as an excuse for absence from classes. A student is not admitted later than ten days after the opening of the semester except by special permission of his dean.

Each student is required to attend every exercise of a class to which he is assigned. All absences and all cases of tardiness must be promptly accounted for on the "absence blanks." Permission for necessary absences from College for a day or more must, in all cases, be previously obtained from the dean. Any student present at College and desiring to be excused for the day from certain classes must apply in advance to the teachers of those subjects.

The student's attendance record is considered by each instructor as an important factor in determining the grade given in a subject.

The class record of attendance is marked immediately after the beginning of the class period. For students who come in late the record of absence may be changed to that of tardiness, but the teacher is not obliged to make such change unless the student on the day of tardiness hands to him at the close of the hour, on the "absence blank," a statement that he was present. In such a case the record is changed to agree with the facts. When a student who has been absent from College because of sickness returns, he must present to each instructor a certificate of good health from the College physician before he is permitted to remain in any classroom. The aim is to prevent the spread of any contagious disease.

Any class is excused if for any reason the instructor fails to report at the end of ten minutes after the beginning of the recitation period, unless the instructor sends word that he will be there later.

Signed reports of absences for each day are sent to the deans by the teachers before five o'clock p.m. Excuses submitted by students are transmitted with a recommendation in respect to excusing the absence. Action concerning excuse for absence is taken by the student's dean. Excuse for an absence does not relieve the student from responsibility for lecture, recitation or laboratory work lost while absent.

Any student who is found to be persistently inattentive in his College work is at once temporarily suspended by his dean, and reported to the president for permanent suspension.

EXAMINATIONS

Examinations are held during the last eight days of the semester in accordance with a definite examination schedule which, as far as possible, gives the student not more than two examinations on any one day.

No regular examination may be given at a date in advance of that provided, except that, at the discretion of the head of the department, a student may be permitted to take his examination with another class in the same subject instead of in his own class, and that in cases of extreme importance the dean of the student may authorize an examination at an earlier date.

Any student who receives a grade of E for the semester, in any subject, and whose absences for all causes from the class in such subject do not exceed one-tenth of the number of times the class is scheduled to meet during the semester, may be excused from the final examination in that subject, at the discretion of the instructor; provided, however, that instructors are to announce such exemption lists in their respective subjects not earlier than the last session of the class preceding the final examination.

Examinations to remove conditions are held on the fourth Saturday of each semester. A student who has received the grade of C is entitled to take such special examination, provided the instructor or the department head be notified of the student's desire to take the examination not later than the Tuesday evening preceding the Saturday set for the examinations. If a subject in which a student is conditioned is not passed at the first opportunity, the grade is changed from C to F, except that in individual instances, where the reason is sufficient, the student's dean may authorize such examination at a date different than that provided by the rule.

Permission for examination in subjects not taken in class or to make up

failures by special examination must be obtained on recommendation of the professor in charge, from the dean of the division in which the student is assigned. Permission to take such examination is not granted unless the preparation for it is made under an approved tutor. All such examinations are under the immediate supervision of the professor in whose department the subject falls, except that in individual instances, where the reason is sufficient, the student's dean may authorize such examination at a date different from that provided by the rule.

Examinations in high-school subjects for admission to the College are held at the beginning of each semester and of the summer school. Students desiring such examinations should consult the registrar in advance.

GRADES

Student grades are designated by the letters E, G, M, P, C, F, and U, having the following significance and order of rank:

The grade E designates really distinguished achievement, and is the net resultant of exceptionally good mental ability in conjunction with serious application. It is expected that this grade will not include more than ten per cent of all grades given a class, and usually will include about five per cent.

The grade G represents superior achievement, better than that exhibited by the average student, but not distinguished. It is recognized as a mark of considerable honor and is the resultant of high ability and fair application, or of fair ability and serious application. The percentage of students assigned this grade will depend somewhat upon the number assigned grade E, but the sum of grades E and G should approximate twenty-five per cent of all grades assigned.

The grade M represents the standing of about half of all students in the College. It means achievement equal to that of the average of students, and includes about half of all student grades. It indicates neither superior nor inferior accomplishment.

The grade P, meaning passed, represents achievement of a grade below that of the average of students. It indicates a student's position as being in the upper part of the lower fourth of the class, and his work as being such as may be described as poor, or inferior. The number of grades P awarded, together with the grades C and F, should not, on the whole, exceed twenty-five per cent of all, and are expected to include about that proportion.

The grade C, meaning conditioned, is the symbol used to represent two types of inferior work: (a) that which is deficient in quality, and (b) that which is satisfactory as to quality but inadequate as to quantity. The results of examinations to remove conditions are reported simply as P (passed) or F (failed), and such examinations not taken are recorded as F.

The grade F, meaning failed, is used to indicate work that is so unsatisfactory as to require that the work be repeated in class or under an approved tutor.

The letter U, meaning unfinished, is reported when, in the judgment of the instructor, the student deserves further time to complete work which has been interfered with by illness or other excusable cause of absence or disability. This is only a temporary report and in no way prejudices the student's final grade in a course.

REPORTS OF GRADES

On the fifth Saturday and the ninth Saturday of each semester, and within two days after the close of each semester, reports of all grades below passing at those dates are sent to the students and the deans. The dates are shown in the College calendar, and these reports are an imperative duty of all teachers. The first two of these reports are made in percentages on a scale of seventy for passing. The reports at the end of the semester are on the letter system in use.

The instructor prepares for each student a semester grade based on the

examination and class work, and is required to report this to the registrar for record within two weeks after the close of the semester. If a student goes through the first half of the semester but not the second half, a half-semester grade is reported for record, and designated as such. If the student drops a subject before midsemester a grade of Wd, withdrawn, or F, failure, is reported. A subject dropped at any time on account of failure is given a semester grade of F.

In cases of absence from the final examination at the end of a semester, a semester grade is not reported until the reason for such absence has been learned; and if the absence is excused or excusable, a reasonable time, usually not over one month, is allowed within which the examination may be taken. In such cases, however, within two weeks after the end of the semester the teacher reports to the registrar a mark of U with a grade for the first half of the semester. If the student's absence is inexcusable a semester grade is reported on the basis of zero for the final examination.

Students in laboratory and industrial work must put in at least four-fifths of the required time in order to get a passing grade in the subject. Should the required time minimum not be reached a mark of U is reported if the quality of the work done is satisfactory and one of F if it is unsatisfactory.

Instructors are enjoined to leave all class books on file in the proper department or with the president of the College when severing their connection with the institution.

THE POINT SYSTEM

For each semester credit of work assigned, the student receives points, according to the grade attained, on the following scheme: Grade E, 3 points; G, 2 points; M, 1 point; and P (or lower), no points. For graduation the total requirement in points is the same as in credits. Furthermore, the total number of points made in the freshman and sophomore years must be at least equal to the credit hours, and the total number of points made in the junior and senior years must be not less than the number of credit hours. Above the freshman year classification is based on the same requirement in points as in credits.

Seniors meeting the graduation requirement in credits but failing to meet it in points are required to take further courses designated by the dean of the division in which their major work lies, until the requirement in points is met.

CREDITS FOR EXTRA WORK

Activities connected with the College, but not provided for by any of the curricula, either as required subjects or as electives, are designated as *extra subjects*.

Credit for extra work may be given when the student is regularly assigned to the work in accordance with the general rules governing assignments. A student may be assigned to extra work for credit upon the written recommendation of the instructor in charge of the work. This recommendation is filed in the office of the student's dean, and is effective until revoked.

Credits earned for extra work may be counted as part or all of the electives in any of the College curricula. In curricula that do not include electives, credits for extra work are available only as substitutions for required work, and must be approved in the regular way before becoming effective. A total of not more than eight semester credits may be allowed a student for extra work, and not more than two of these may be obtained in any one semester.

The number of semester credits that may be allowed for extra work is as follows:

<i>Subject</i>	<i>Per semester</i>	<i>Total</i>
Physical Training	1	4
Orchestra	1	4
Band	1	4
Choral Society	1	4
Debate	2	4
Oratorical Contest	2	4
<i>Kansas State Collegian</i> journalism	1	4

BIBLE STUDY

Bible study is an elective. Two semester credits are granted for each completed one-year course. Credit may be granted to any one student for not more than two courses. Teachers of classes are to be approved as tutors, and the supervision of the work is placed in the Department of Education. This department also conducts the examination for credit in Bible study.

COURSE NUMBERS

Each course offered bears a number indicating in a general way the standing of students for whom it is given. Courses for undergraduates bear numbers 101 to 199, courses for undergraduates and graduates bear numbers 201 to 299, and courses for graduates only bear numbers 301 to 399. The numbers 1 to 29 are applied to studies offered for short-course students, the numbers 31 to 49 are assigned to Summer School subjects not taught for entrance credit or for College credit, and subjects which give credit in the School of Agriculture are numbered 51 to 99.

In applying this system, the courses offered by any department are numbered independently of all other departments of the College.

CLASSES

The minimum numbers for which classes are organized are as follows:

The Vocational School	18
Freshman or sophomores	12
Juniors or seniors	7

This rule is varied only by special permission of the Board of Administration.

THE STUDENT'S SELF-GOVERNING ASSOCIATION

The Students' Self-governing Association was organized on broad lines in the spring of 1919, with the whole-hearted approval and sanction of the Faculty. The association was formed "for the purpose of placing the control and advancement of student interests and activities in the hands of the student body itself, with the firm belief that this arrangement will cause an increased self-control, resulting in higher ideals and better coöperation, and that officers of sufficient wisdom and maturity may be found so that appeal to College authorities shall be unnecessary."

The officers of the association are a president and a vice president, elected by the association as a whole, and a secretary and a treasurer, elected by the executive council of the association.

The supreme governing council of the student association is known as the executive council. This body consists of nineteen members, and its membership is made up as follows: The president and the vice president of the association; two members from each of the College classes; two from the Literary Society Council; one from the Women's Pan-Hellenic Council; one from the Men's Pan-Hellenic Council; one from the "K" fraternity; one from the Women's Athletic Association; one from the Y. W. C. A. cabinet; one from the Y. M. C. A. cabinet; and one from the Vocational School. Regular meetings of the council are held once a month.

There are standing committees on discipline, finance, social affairs, calendar, school spirit, and points, and other temporary or standing committees may be provided for from time to time as occasion demands. All chairmen of committees are appointed by the executive council. Each chairman submits a list of members desired for his committee, which appointments must be ratified by the executive committee before they become effective.

All regulations passed by the executive council, by committees, and by the entire association, are considered valid and binding upon all students in so far as said actions are not disapproved by the Faculty and the president of the College.

THE CHRISTIAN ASSOCIATIONS

The Young Men's Christian Association and the Young Women's Christian Association are organizations of the greatest worth and value in the College community, forming centers of moral culture and religious stimulus among the young men and women during their developmental period. As is well known, the Christian associations in Colleges stand for the best ideals among the students, and are always accorded the cordial support of the authorities. In addition to general moral and spiritual development, the College Christian associations are practical and efficient influence among the students in many directions.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION

The College Y. M. C. A. has always been a strong and influential body among the students. Its growth may be indicated by the fact that the organization was able in 1908 to erect a handsome building for its purposes at a cost of \$35,000, on the corner of Eleventh and Fremont streets, near the College grounds.

This building contains reading rooms, committee rooms, students' living rooms, gymnasium, etc. All young men are welcome to make use of the privileges of the building, whether members or not. No fixed fees for membership are charged, each member giving whatever he feels able to afford. One of the useful and practical features of the Y. M. C. A. is a student's employment bureau, which is maintained for the benefit of all students seeking employment. The regular religious meetings of the association occur on Thursday evenings from 7 to 7:45, while occasional Sunday afternoon meetings are also held. Special meetings and receptions, which serve to broaden the acquaintanceship of the students and promote good-fellowship, are arranged from time to time. Especial attention is given the new students on and after their arrival, and assistance is rendered in securing rooms and boarding places for them. The association maintains a regular secretary, with whom prospective students are cordially encouraged to correspond. Address General Secretary, Y. M. C. A., Kansas State Agricultural College, Manhattan, Kan.

THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION

Similar in aim and purpose to the organization of the young men is the Young Women's Christian Association. The Home Economics Hall is the headquarters of the association, to which all young women of the College are at all times cordially welcome. An office for the general secretary and rest rooms for the young women are maintained in this building during the College year.

An employment bureau for women students is maintained by the general secretary, without charge to its beneficiaries. Various committees are responsible for the lines of work of the association. At the opening of the College semesters the incoming trains are met by "Big Sisters," who assist new women students, the "Little Sisters," in securing suitable lodging and boarding places. If any prospective woman student will write to the general secretary of the association, her "Big Sister" will correspond with her during the summer vacation.

During the College year various social functions are given for the young women. The first of these is an informal reception to enable the College girls to become acquainted with one another. Once each year the two associations entertain jointly.

The religious life of the young women is fostered by the weekly vesper services held in Recreation Center. The different churches of the city extend a cordial welcome to the College women, and through the efforts of the association they are encouraged to active participation in the services of the church of their choice.

THE NEWMAN CLUB

The Newman Club, an organization of Catholic students, holds meetings devoted to religious study on alternate Sundays. This work is carried on under the local pastor. The College authorities recognize this Bible study by allowing a two-hour credit for it when duly certified. In further recognition of the club's efforts the College has placed a set of the Catholic Encyclopedia in the library, where there is also a comprehensive selection of Catholic books and pamphlets purchased by the club. In addition to the meetings devoted to religious study, social meetings are held.

The club is affiliated with the national organization of Newman clubs of the state universities and colleges. Its aim is to foster sound morality, to develop character, and to promote the knowledge and practice of their faith among Catholic students.

LITERARY AND SCIENTIFIC SOCIETIES

The literary societies of the College, eight in number, are wholly student organizations, holding weekly meetings in the College buildings. The Alpha Beta and Franklin literary societies are open to both sexes; the Ionian, Eudolphian and Browning societies admit only young women to membership; the Webster, Hamilton and Athenian societies admit young men only. Students are encouraged to join one of these organizations for the sake of practice in the use of language, training in debate, and general experience in conducting meetings and in dealing with their fellows. These societies jointly maintain a debating council, which coöperates with a Faculty committee in arranging for all intercollegiate and interstate debates participated in by representatives of the College. The oratorical board, similarly maintained by these societies, arranges for the intersociety oratorical contest.

The Lincoln Literary Society, composed of young men in the Vocational School, has the same general aims and purposes as those in the College.

AGRICULTURAL SOCIETIES

The Agricultural Association meets Monday evenings. All students interested in agriculture are eligible to membership. The object of the association is to promote the general interests of agriculture in the College and in the state.

The Agricultural Economics Club meets on the second and fourth Tuesdays of each month. Membership is open to undergraduate students majoring in agricultural economics, graduate students majoring or minoring in agricultural economics, and to members of the Faculty whose work is of an agricultural economic character. The object of the club is to promote interest in agricultural economic topics, to encourage sound economic thinking, and to further the acquaintanceship of Faculty and students. Outside speakers are frequently secured for special meetings which are open to the public.

The Block and Bridle Club meets on the first and third Mondays of each month. Membership is open to all animal husbandry students above the freshman year. The object of the club is to promote the interests of animal husbandry in the College and in the state. Live-stock problems of all kinds are taken up, and the members of the Faculty and outside speakers are secured for addresses on special topics.

The Dairy Club meets on the first and third Mondays of each month. Membership is open to anyone who is taking any four-year course in the Division of Agriculture and also to anyone actively engaged in dairy work at the College. The object of the organization is the furtherance of dairying in Kansas. Current topics and records of the dairy breeds are read and lectures on special subjects are given by Faculty and outside speakers.

The Horticultural Club meets the first and third Tuesdays of each month during the College year. Its object is to promote the horticultural interests of the state and to afford opportunity for students to improve their knowledge of

horticulture. Students of the College interested in horticulture and Faculty members are eligible for membership. Students present the majority of the programs.

The Klod and Kernel Klub meets on the second and fourth Tuesdays of each month. Membership is open to junior and senior agronomy students and members of the agronomy Faculty. The object of the society is to arouse more interest in agronomic work and to help students and Faculty members of the Department of Agronomy to become better acquainted. Faculty and outside speakers are secured for programs.

ENGINEERING SOCIETIES

The various technical societies of the Division of Engineering meet weekly in departmental seminars for lectures, presentation of papers, and discussion of notable articles appearing in the technical press or in the journals of the national societies. On special occasions all of the societies meet together as the Engineers' Association, for lectures by eminent practicing engineers.

The students in mechanical and electrical engineering are organized as student branches of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers, respectively.

The Kansas State Agricultural College Civil Engineering Society conducts the meetings of the civil-engineering students, the Architects' Club conducts the meetings of the students in architecture, and the student branch of the American Society of Agricultural Engineers has charge of the meetings of the students in agricultural engineering.

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

HONORS

In each of the divisions of the College "junior honors" are awarded at Commencement to not more than five per cent of the junior class having the highest standing up to the close of the junior year.

In a similar manner "senior honors" are awarded to not exceeding five per cent of the senior class having the highest standing up to the close of the senior year.

HONOR SOCIETIES

A chapter of Phi Kappa Phi, an honor scholarship society, membership in which is open to honor graduates of all departments of American universities and colleges, was installed at the Kansas State Agricultural College on November 15, 1915. The eligibility of undergraduates to membership is determined on the basis of their scholarship. The candidates are elected to membership at the October, April and June meetings of the chapter.

The honor society of agriculture, Gamma Sigma Delta, has as its object the encouragement of high standards of scholarship in all branches of agricultural science and education, and the encouragement of a high degree of excellence in the practice of agricultural pursuits. Seniors whose grades place them in the upper one-fourth of their class are eligible for membership. Election is in the hands of Faculty members of the local chapter.

Besides these, above mentioned, there are a number of honor fraternities, sororities and societies which are open to students in different divisions of the College or in different activities. These are treated below.

HONORARY AND PROFESSIONAL ORGANIZATIONS

The honorary and professional organizations of the College consist of fraternities, sororities, and societies. Membership in these organizations is based on scholarship and achievement. They seek to stimulate effort and to pro-

mote the interests of the various divisions or departments which they serve or represent. The list of organizations follows:

<i>Organization</i>	<i>Division or department</i>
Alpha Zeta	Agriculture.
Farm House Fraternity	Agriculture.
Forum	Debating.
"K" Fraternity	Athletics.
McDowell Club	Music.
Omicron Nu	Home Economics.
Phi Alpha Mu	Women's Science.
Phi Kappa Delta	Education.
Phi Mu Alpha	Music.
Pi Kappa Delta	Debating.
Purple Masque	Dramatics.
Quill Club	College Writers.
Scabbard and Blade	Military.
Sigma Delta Chi	Industrial Journalism.
Sigma Tau	Engineering.
Theta Sigma Phi	Industrial Journalism.
Zeta Kappa Psi	Debating.

In addition to these student organizations there are chapters of Phi Kappa Phi and Gamma Sigma Delta. In both these societies election is based on scholarship and is in the hands of Faculty members. (See "Honor Societies," above.)

THE COLLEGE BAND

The College Band is a military organization, composed of cadets assigned to this duty for the College year in lieu of drill and technical military instruction. The Band is limited in its membership, and attendance of the members upon its exercises is obligatory. It has proved an effective aid to the cadet corps, stimulating a love for martial music, and affording an attractive feature of the various public ceremonial occasions at the College.

THE COLLEGE ORCHESTRA

The Orchestra is a student organization connected with the Department of Music, membership in which is voluntary. Its daily training under competent leadership results in the acquisition of a considerable repertoire of musical compositions of the best quality. Those connected with the Orchestra obtain in this way familiarity with the works of many of the great composers, and among the students at large the Orchestra is an efficient aid in cultivating a taste for and appreciation of good music.

ATHLETIC ORGANIZATIONS

By means of the gymnasium the College is prepared to give complete physical as well as mental training. This building, which is equipped with all the usual accessories, assists in developing and maintaining physical tone and health in the student body. In addition to the gymnasium classes, and physical training in the military corps of cadets, all young men are encouraged to develop their physical skill by playing on practice teams in various athletic lines. In the fall football teams are organized; in the fall and winter, basketball; while in the spring baseball, tennis, and track athletics prevail. Every possible encouragement is given all students desirous of participating in these games to enter the practice teams and receive the necessary instruction. The most proficient of these have opportunity to enter the first teams and participate in intercollegiate contests. The College authorities encourage all reasonable and sane athletic development, as a means for the training of physical qualities desirable in men everywhere. Professionalizing tendencies are strictly repressed, and the athletic rules adopted by the Faculty prevent, by proper regulation, all participation in intercollegiate games on the part of students deficient in their studies.

The women students have equal opportunity with young men for general physical training. In the gymnasium, under a physical director, they receive training suitable for their needs. Basketball and tennis teams are organized among the young women.

The Division of Agriculture

FRANCIS DAVID FARRELL, *Dean*

The teaching of rational, practical agriculture is fundamental to development in a state whose principal industries are agricultural. Kansas prospers in direct proportion to the productivity of her soil and to the effectiveness with which it is utilized. Effective utilization of the agricultural resources of the state depends upon the success with which the agricultural industries of the state are developed. In order to succeed in farming it is necessary to know something of the soil, the conservation of its fertility and moisture, and its proper cultivation; the kinds of plants to grow and how to improve them; the selection, breeding, and feeding of live stock; the maintenance of orchards, gardens, and attractive surroundings; farm buildings, and the equipment of the farm and the farm home with modern conveniences; the best methods of marketing the products of the farm; and in addition to all this, how to make the farm home the center of influence for good citizenship in the agricultural community.

A man may learn many of these things through practical experience, and thus become successful in modern farming. But practical experience alone is slow and expensive. The Agricultural College furnishes a means of acquiring systematic training in agriculture which fits young men adequately for the farm for a moderate expenditure of time and money.

In addition to training men for service as farmers, the College prepares students for various other activities which must be carried on if the agriculture of the state and nation is to be developed properly. These activities include scientific investigation of agricultural problems in state and national institutions, agricultural extension work, teaching of agriculture, service in the industries directly involving agriculture, and a variety of other lines of public and private service of an agricultural nature. The demand for well-trained, reliable men in all these lines is always extensive. The primary aim of the College in training men in agriculture is to fit them for service in which they will develop into agricultural leaders, either as farmers or in some other capacity, and as such, contribute to the upbuilding of rural institutions and the improvement of American country life.

EQUIPMENT

The facilities for such training at this College are of a high order. The College owns 1,402 acres of land, which is used for investigation, instruction, and demonstration in the various courses in agriculture and allied branches. The campus, which comprises 160 acres, is one of the best examples of ornamental tree planting and forestry in the state. Students working daily amid such surroundings can scarcely fail to gain an appreciation or love for the beautiful. A tract of 320 acres is devoted to the work in agronomy; for horticulture and forestry work, 80 acres are used; for dairy work, about 160 acres; and for animal husbandry, about 550 acres. The herds and flocks contain high-class representatives of the important breeds of dairy and beef cattle, hogs, horses, and sheep. With this class of stock available for the work in judging, the student is supplied with types of the best breeds, and becomes familiar with these types by actual handling of the stock.

CURRICULA IN AGRICULTURE

The various needs of the student of agriculture are met by the following curricula:

A four-year curriculum in agriculture.

A six-year curriculum in animal husbandry and veterinary medicine.
 Various special courses. (The work of these courses is discussed in another section of the catalogue.)

DEGREES

The four-year curriculum in agriculture leads to the degree of Bachelor of Science (in agriculture).

The six-year curriculum in animal husbandry and veterinary medicine, the last two years of which are given in the Division of Veterinary Medicine, leads to the degree of Bachelor of Science at the end of four years, and to the degree of Doctor of Veterinary Medicine at the end of two more years.

THE CURRICULUM IN AGRICULTURE

The four-year curriculum in agriculture is designed to meet the needs primarily of the students who expect to return to the farm. However, the student who completes the curriculum will have had sufficient training to enable him to enter some one of the many lines of agricultural industry as a specialist. The demand for men thus trained is constantly increasing, and such positions offer attractive opportunities for men who by nature and training are adapted to the work. The United States Department of Agriculture, the state colleges and departments of agriculture, high schools, private institutions of secondary and college rank, and a great variety of commercial interests, are constantly demanding men trained in agriculture.

The young man who expects to make farming his life work can start with no better asset than the thorough training in practical and scientific agriculture afforded by the four-year curriculum. The American farmer needs more of the skill that comes through the training of the hand, in order that he may better do the work of farming; but infinitely more, he needs the training of the mind in the fundamental truths that underlie every operation in farming, in order that he may use the skill of the craftsman with reason and judgment. One may learn to plow a field with the greatest skill; the work may be a model of its kind. If, however, it is plowed with utter disregard of the moisture conditions which prevail the result may be a failure. To understand the conditions which should determine when and how to plow is the work of the trained mind; the other is the work of the trained hand. The farmer and the teacher of agriculture must possess both kinds of training, and the curriculum has been organized with this fact in view, and has been so arranged that *the student begins his practical training in agriculture on the first day he enters College.*

ANALYSIS OF THE CURRICULUM IN AGRICULTURE¹

One hundred thirty-one semester credits in addition to military science are required for graduates, as follows:

	<i>Semester credits</i>
Prescribed agriculture	43
Electives in agriculture, required with their prerequisites.....	21
Required in agriculture	64
Prescribed in nonagriculture	44
Electives in nonagriculture, required	6
Electives that may be nonagricultural	17
Total allowed in nonagriculture	67
Required in military science	6
Total semester credits for graduation	137

As shown in the above general outline and in the tabulated curriculum given hereafter, the candidate for graduation must have completed one hundred thirty-seven College semester credits. The twelve major electives required must be taken from some one of the departments of the Division of Agriculture. During the second semester of the sophomore year each student is

1. Strictly speaking, this curriculum applies to the class of 1926 and succeeding classes. The requirements for the class of 1925, however, vary from the curriculum herein presented by such minor details that it is considered unnecessary to enumerate them in this catalogue.

required to file in the dean's office a formal statement of his selection of a department in which he will major. All electives must be approved by both the head of the department in which the student majors and the dean of the Division of Agriculture. The nine minor electives must support the major work. They may be taken from more than one department, and may even be selected from departments in other divisions of the College, but they must directly strengthen the student's preparation in agriculture. At the discretion of the student, with the approval of the dean of the Division of Agriculture and the head of the department in which the student is majoring, twenty-three semester hours of electives may be nonagricultural.

Any candidate for a degree in agriculture must have had at least six months' farm experience approved by the dean of the Division of Agriculture. A formal statement giving information regarding this experience must be filed in the dean's office during the last semester of the senior year.

The student who completes the freshman and sophomore years will have had, in addition to the basic work in chemistry, zoölogy, geology, botany, and English, fundamental studies in soils, farm crops, live stock, dairying, poultry husbandry, horticulture and agricultural economics. These two years give the student a general knowledge of the whole range of agriculture, more than one-third of his time being devoted to strictly agricultural courses.

During the junior and senior years the student continues his studies of fundamental science and learns to apply science to agriculture. He is led step by step to understand the scientific relations of every farming operation. There is so much agriculture to be taught that it becomes necessary for the student to determine which of the general lines he should emphasize most. This is made possible by numerous electives in soils, crops, agricultural economics, animal husbandry, dairy husbandry, horticulture, milling, and poultry husbandry.

STATE TEACHERS' CERTIFICATES

By the selection of proper electives in the Department of Education, the four-year curriculum in agriculture may not only lead to the degree of Bachelor of Science (in agriculture), but at the same time qualify the student for the three-year Kansas state teachers' certificate, renewable for life and valid in any high school or any other public school in the state. A student desiring to qualify for teaching should begin his professional preparation by electing Psychology, first semester, junior year. A total of eighteen semester credits in the Department of Education is required for this certificate. These must include the following courses: Psychology, Educational Administration, and Educational Sociology.

STATE CERTIFICATES FOR TEACHERS OF VOCATIONAL AGRICULTURE

The electives provided in this curriculum in agriculture may be so chosen as to prepare the student for the teaching of vocational agriculture in schools participating in the federal Smith-Hughes funds.

The following courses, or their equivalent, should be included in a student's preparation for the teaching of vocational agriculture:

	<i>Semester credits</i>
Professional work in education	18
Psychology D	3
Educational Administration B	3
Educational Sociology B	3
Special Methods of Teaching Agriculture	3
Supervised Observation and Teaching in Agriculture	3
Vocational Education	3
Gas Engines and Tractors	3
Farm Buildings	3
Farm Equipment	2
Farm Carpentry I	3
Farm Carpentry II	2
Farm Blacksmithing I	1
Farm Blacksmithing II	1
Farm Shop Methods	3
Total	36

In most cases as many as twenty-six credit hours of the work specifically listed above as required for the preparation of Smith-Hughes teachers may be included in the electives provided in the curriculum in agriculture. In such cases one summer school of extra work will qualify the graduate to secure the Smith-Hughes teacher's certificate. In the case of students majoring in any one of two or three of the live-stock departments it may be necessary to take two extra summer schools of work in order to qualify for the bachelor's degree and the Smith-Hughes teacher's certificate.

THE CURRICULUM IN ANIMAL HUSBANDRY AND VETERINARY MEDICINE

A combined curriculum in animal husbandry and veterinary medicine has been outlined so that students may receive the degree of Bachelor of Science in Agriculture at the end of four years, and the degree of Doctor of Veterinary Medicine at the end of two years more, thus securing both degrees in six years.

Curriculum in Agriculture

(FOR THE CLASS OF 1926 AND SUCCEEDING CLASSES¹)

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
College Rhetoric I Engl. 101 3(3-0)	College Rhetoric II Engl. 104 3(3-0)
Chemistry I Chem. 101 5(3-6)	Chemistry II Chem. 102 5(3-6)
General Botany I Bot. 101 3(1-4, 2)	General Botany II Bot. 105 3(1-4, 2)
Judging Market Live Stock An. Husb. 132 2(0-6)	General Geology Geol. 103 3(3-0)
Elements of Dairying Dairy Husb. 101 3(2-3)	Dairy Judging Dairy Husb. 104 1(0-3)
Library Methods Lib. Ec. 101 1(1-0)	Judging Breeding Live Stock An. Husb. 138 2(0-6)
Agricultural Lectures Gen. Agric. 101 R(1-0)	Agricultural Lectures Gen. Agric. 101 R(1-0)
Infantry I Mil. Tr. 101 1½(0-4)	Infantry II Mil. Tr. 102 1½(0-4)
Physical Education M-I Phys. Ed. 103 R(0-2)	Physical Education M-II Phys. Ed. 104 R(0-2)

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER ¹
Organic Chemistry (Agr.) Chem. 120 3(2-3)	Elements of Horticulture Hort. 108 4(3-3)
Agricultural Economics Ag. Ec. 101 3(3-0)	Principles of Feeding An. Husb. 152 3(3-0)
Anatomy and Physiology Anat. and Physiol. 131.... 3(2-3)or	General Zoology Zool. 105 5(3-6)
Plant Physiology I ² Bot. 208 3(3-0)	Farm Crops Agron. 109 5(3-6)
Soils Agron. 133 5(4-3)	
Farm Poultry Production Poult. Husb. 101 2(1-2, 1)	
Infantry III Mil. Tr. 103 1½(0-4)	Infantry IV Mil. Tr. 104 1½(0-4)
Physical Education M-III Phys. Ed. 105 R(0-2)	Physical Education M-IV Phys. Ed. 106 R(0-2)
Agricultural Seminar Gen. Agric. 103 R	Agricultural Seminar Gen. Agric. 103 R

1. The requirements for the class of 1925 vary from the curriculum herein presented by such minor details that it is considered unnecessary to enumerate them in this catalogue.
The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours of recitation each week; the second shows the number of hours to be spent in laboratory work each week; and the third, where there is one, indicates the number of hours of outside work in connection with the laboratory required each week.

JUNIOR

FIRST SEMESTER		SECOND SEMESTER	
Genetics		General Entomology	
An. Husb. 221	3(3-0)	Ent. 101	3(2-3)
Plant Pathology I		Farm Organization	
Bot. 205	3(1-4, 2)	Ag. Ec. 106	3(2-3)
Agricultural Microbiology		Agricultural Journalism	
Bact. 106	3(1-6)	Ind. Jour. 164	1(1-0)
Electives ³	7	Electives ³	9
Agricultural Seminar		Agricultural Seminar	
Gen. Agric. 103	R	Gen. Agric. 103	R

SENIOR

FIRST SEMESTER		SECOND SEMESTER		
Agricultural English		Agricultural Relationships		
Engl. 137	3(3-0)	Gen. Agric. 105	R(1-0)	
Electives ⁴	Major	6	Electives ⁴	
	Minor	4		Major
	General	3		Minor
Agricultural Seminar		Agricultural Seminar		
Gen. Agric. 103	R	Gen. Agric. 103	R	

Agricultural Electives for Students in the Curriculum in Agriculture

AGRICULTURAL ECONOMICS

FIRST SEMESTER	SECOND SEMESTER
Marketing of Farm Products 3(3-0)	Advanced Farm Organization 3(2-3)
Advanced Agricultural Economics 3(3-0)	Agricultural Industries 2(2-0)
Grain Marketing 3(3-0)	Agricultural Land Problems 3(3-0)
Transportation of Farm Products 3(3-0)	Conservation of Agricultural Resources 2(2-0)
Taxation and Land Ownership 3(3-0)	Agricultural Finance 2(2-0)
Farmer Movements 3(3-0)	History of Agricultural Economic Thought 3(3-0)

EACH SEMESTER

Farm Cost Accounting
3(2-3)

Farm Organization
3(2-3)

Agricultural Economics Seminar
1(1-0)

Research in Agricultural Economics
(1 to 5 semester credits, for graduates)

1. Sometime during the second semester of the sophomore year each student is required to file a written statement in the office of the dean of the Division of Agriculture, designating the department of the division in which he will major.

2. Students who do not expect to major in animal husbandry, dairy husbandry, or poultry husbandry may, with the approval of the head of the department in which they expect to major, take Plant Physiology I (Bot. 205) instead of Anatomy and Physiology.

3. Six semester credit hours of junior electives must be chosen from courses offered in education, economics, history, mathematics, or modern languages. Students preparing to teach should take not less than nine semester credit hours of junior electives in the Department of Education. Junior electives must be officially approved before assignment by both the head of the department in which the student majors and the dean of the Division of Agriculture.

4. All senior electives must be officially approved before assignment by both the head of the department in which the student majors and the dean of the Division of Agriculture.

AGRONOMY

FIRST SEMESTER	SECOND SEMESTER
Seed Identification and Weed Control 2(1-3)	Crop Improvement 3(2-3)
Advanced Forage Crops 2(1-3)	Crop Ecology 2(2-0)
Advanced Soil Fertility 3(2-3)	Special Crops 2(2-0)
Dry-land Farming 2(2-0)	Grain Grading and Judging 2(0-6)
Principles of Agronomic Experimentation 2(2-0)	Soil Survey 2(1-3)
Pasture Management 2(1-3)	Agronomy Seminar 1(1-0)
Plant Genetics 3(3-0)	
Advanced Grain Judging 2(0-6)	Soil and Crop Management 3(2-3)

EACH SEMESTER

Crops Research (for graduates)
Crop Problems
Soil Research (for graduates)
Soil Problems
Advanced Soils Laboratory
Pasture Management Research (for graduates)
(One or more semester credits each, according to work done)
Genetics Seminar
1(1-0)

ANIMAL HUSBANDRY

FIRST SEMESTER	SECOND SEMESTER
Advanced Stock Judging I 2(0-6)	Animal Breeding 3(3-0)
Form and Function in Live Stock 2(0-6)	Advanced Genetics 4(3-3)
Horse Production 3(2-3)	Advanced Meats (2 to 4 semester credits)
History of Breeds and Pedigrees 3(2-3)	Systems of Live-stock Production 3(3-0)
Sheep Production 3(2-3)	Advanced Stock Judging II 2(0-6)
Advanced Feeding 2(2-0)	Beef Cattle Production 3(2-3)
	Swine Production 3(2-3)
	Advanced Studies in Pedigrees 3(1-6)
	Animal Husbandry Seminar 1(1-0)
	The Wool Industry 3(2-3)
	Live-stock Marketing 2(2-0)
	Live-stock Production 3(3-0)
	Purebred Live-stock Production 2(2-0)

EACH SEMESTER

Meats
2(1-3)
Genetics Seminar
1(1-0)
Research in Genetics
(4 to 10 semester credits)
Research in Animal Husbandry
(6 to 16 semester credits)

DAIRY HUSBANDRY

FIRST SEMESTER	SECOND SEMESTER
Dairy Inspection I 2(1-3)	Milk Production 3(3-0)
Dairy Breeds and Pedigrees 2(1-3)	Cheese and Ice-cream Making 3(2-3)
Butter Making II 4(2-6)	Advanced Dairy Judging 1(0-3)
Butter Making I 3(2-3)	Dairy Herd Management 2(1-3)
	Dairy Seminar 1(1-0)
	Market Milk 2(1-3)
	Creamery Management 2(2-0)

EACH SEMESTER
 Dairy Production Problems
 Dairy Manufacturing Problems
 Dairy Research

(One or more semester credits each, according to work done)

HORTICULTURE

FIRST SEMESTER	SECOND SEMESTER
Systematic Pomology 4(2-6)	Small Fruits 2(2-0)
Farm Forestry 4(3-3)	Dendrology 3(1-6)
Practical Pomology 3(2-3)	Silviculture 3(2-3)
Spraying 2(1-3)	Market Gardening 3(2-3)
Subtropical Pomology 2(2-0)	Landscape Gardening I 2(1-3)
Advanced Pomology 3(2-3)	Home and School Gardening 3(2-3)
Horticulture Seminar 1(1-0)	Plant Materials in Landscape Gardening 3(2-3)
Greenhouse Construction and Management 3(3-0)	Landscape Gardening II 3(0-9)
History and Literature of Landscape Gardening 2(2-0)	Tree Surgery 2(1-3)
The Theory and Aesthetics of Landscape Gardening 3(2-3) (for graduates)	Landscape Gardening III 2(1-3) (for graduates)

EACH SEMESTER
 Civic Art
 3(3-0)
 Orchard Problems
 Market Gardening Problems
 Horticultural Research
 Forcing Flowers and Vegetables

(One or more semester credits each, according to work done)

Electives for Students Who Major in Horticulture and Who Wish Special Preparation in Landscape Gardening

FIRST SEMESTER	SECOND SEMESTER
Free-hand Drawing I 2(0-6)	Free-hand Drawing II 2(0-6)
Surveying I 2(0-6)	Surveying II 2(0-6)
Elements of Architecture I 3(0-9)	Elements of Architecture II 3(0-9)
History and Literature of Landscape Gardening 2(2-0)	Plane Trigonometry 3(3-0)
Greenhouse Construction and Management 3(3-0)	Plant Materials in Landscape Gardening 3(2-3)
Free-hand Drawing III 2(0-6)	Dendrology 3(1-6)
Farm Forestry 4(3-3)	Landscape Gardening II 3(0-9)
The Theory and Aesthetics of Landscape Gardening 3(3-3)	Free-hand Drawing IV 2(0-6)
Civic Art 3(3-0)	Business Organization 1(1-0)
History of Civilization and Art I 2(3-0)	Silviculture 3(2-3)
Horticultural Research 2(0-6)	Tree Surgery 2(1-3)
Commercial Law 1(1-0)	Landscape Gardening III 2(1-3)
Community Organization 3(3-0)	History of Civilization and Art II 2(3-0)
History of Architecture III 2(2-0)	Forcing Flowers and Vegetables 2(0-6)
Shades and Shadows 1(1-0)	Horticultural Research 2(0-6)
Perspective 1(0-3)	Descriptive Geometry 2(0-6)
	Free-hand Drawing VI 2(0-6)
Free-hand Drawing V 2(0-6)	History of Architecture II 2(2-0)
Spraying 2(1-3)	Ornithology 2(1-3)
French I 3(3-0)	French II 3(3-0)
Highway Engineering I 3(2-3)	Plant Ecology 2(2-0)
Practical Pomology 3(2-3)	Market Gardening 3(2-3)
	EACH SEMESTER
	Landscape Gardening I 2(1-3)

MILLING INDUSTRY

FIRST SEMESTER	SECOND SEMESTER
Wheat and Flour Testing 4(1-9)	Grain Products 2(2-0) Experimental Baking A 2(0-6)

EACH SEMESTER
Principles of Milling
1(0-3)
Milling Practice I
3(1-6)
Milling Practice II
2(0-6)

Advanced Wheat and Flour Testing
(Credit as arranged)

BOTH SEMESTERS AND SUMMER SCHOOL
Milling Industry Research
(Credit as arranged)

POULTRY HUSBANDRY

FIRST SEMESTER	SECOND SEMESTER
Practice in Poultry Feeding (1 semester credit) Poultry Judging 3(1-6) Market Poultry and Eggs 3(1-6)	Artificial Incubation and Brooding (2 to 4 semester credits) Poultry Breeding 2(0-6) Poultry Farm Organization 3(2-3) Poultry Bacteriology 3(1-6) Genetics of Dorsophila 2(1-3)

BOTH SEMESTERS AND SUMMER SCHOOL
Poultry Research
(2 or more semester credits, for graduates)
Poultry Problems
(2 or more semester credits)

Curriculum in Animal Husbandry and
Veterinary Medicine

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

Freshman year of the Curriculum in Agriculture

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
General Zoölogy Zoöl. 105 5(3-6)	Pathogenic Bacteriology I Bact. 111 4(2-6)
Anatomy I Anat. and Physiol. 102 4(2-6)	Anatomy II Anat. and Physiol. 107 ... 9(4-15)
Soils Agron. 133 5(4-3)	Farm Crops Agron. 109 5(3-6)
Organic Chemistry (Agr.) Chem. 120 3(2-3)	
Infantry III Mil. Tr. 103 1½(0-4)	Infantry IV Mil. Tr. 104 1½(0-4)
Physical Education M-III Phys. Ed. 105 R(0-2)	Physical Education M-IV Phys. Ed. 106 R(0-2)
Agricultural Seminar Gen. Agric. 103 R	Agricultural Seminar Gen. Agric. 108 R

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
Embryology Zoöl. 219 3(2-3)	Principles of Feeding An. Husb. 152..... 3(3-0)
Anatomy III Anat. and Physiol. 111.... 5(1-12)	Anatomy IV Anat. and Physiol. 116..... 3(1-6)
Histology I Path. 101 3(1-6)	Histology II Path. 106 3(1-6)
Genetics An. Husb. 221 3(3-0)	Agricultural Journalism Ind. Jour. 164 1(1-0)
Electives ² 3(-)	Elements of Horticulture Hort. 108 4(3-3)
Agricultural Seminar Gen. Agric. 103 R	Electives ² 2(-)
	Agricultural Seminar Gen. Agric. 103 R

SENIOR

FIRST SEMESTER	SECOND SEMESTER
General Entomology Ent. 101 3(2-3)	Agricultural Relationships Gen. Agric. 105 R(1-0)
Agricultural Economics Ag. Ec. 101 3(3-0)	Farm Organization Ag. Ec. 106 3(2-3)
Comparative Physiology I Anat. and Physiol. 121 5(4-8)	Comparative Physiology II Anat. and Physiol. 126..... 3(2-3)
Agricultural English Engl. 137 3(3-0)	Pathology I Path. 202 3(2-3)
Electives ² 2(-)	Electives ² 7(-)
Agricultural Seminar Gen. Agric. 103 R	Agricultural Seminar Gen. Agric. 103 R

FIFTH YEAR

Junior year of the Curriculum in Veterinary Medicine

SIXTH YEAR

Senior year of the Curriculum in Veterinary Medicine

Agricultural Economics

Professor GRIMES
Professor ENGLUND
Professor GREEN

Assistant Professor EVANS
Instructor HODGES

This department aims to give the student an understanding of facts and principles relating to the business side of farming and to agriculture as a fundamental part of the economic life of the people. The student is taught the principles of farm organization and management that are necessary to successful farming. He is also instructed in the factors and economic forces relating to marketing, credit, and other business relations among farmers as individuals and between farmers as a class and other classes in society. Instruction is not only given in present problems, but questions of the future are also considered, particularly through courses in land problems and conservation.

Principles taught in the classroom or elsewhere, and applied to practical problems, can be valuable only in so far as they are based on facts. For this reason the department conducts a number of investigations of various economic problems of agriculture. These studies provide facts for class work and other purposes and present opportunities for advanced students to engage in original research.

1. This curriculum is so arranged that students may receive the degree of Bachelor of Science (in agriculture) at the end of four years, and the degree of Doctor of Veterinary Medicine at the end of two more years.

2. All electives must be officially approved before assignment by both the head of the Department of Animal Husbandry and the dean of the Division of Agriculture.

The department is expanding its facilities to meet the growing demand for advanced study. Opportunities of careers for those who are well trained in this field are increasingly favorable, because of the growing importance of agricultural economics to the farmer and in our national life.

COURSES IN AGRICULTURAL ECONOMICS

FOR UNDERGRADUATES

101.* AGRICULTURAL ECONOMICS. Sophomore year, first semester. Class work, three hours. Three semester credits. Prerequisite: Sophomore standing. Professor Englund.

The course in agricultural economics undertakes to familiarize the student with the economic principles and forces that vitally concern every farmer. Texts: Taylor's *Agricultural Economics* and Ely and Wicker's *Elementary Principles of Economics*.

106. FARM ORGANIZATION. Junior year and elective, first and second semesters. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: Ag. Ec. 101, Agron. 133, and An. Husb. 152. Professor Grimes, Assistant Professor Evans, and Mr. Hodges.

The economic factors affecting the organization and operation of the farm business are studied with respect to their effect on the profits in farm enterprise. The course deals chiefly with the economic problems of the individual farmer on his farm. Results from actual farms are studied in the laboratory to give the student opportunity to observe the effect of the various economic factors in their influence on the farm business. Laboratory charge, \$1.

112. FARM COST ACCOUNTING. Elective, first and second semesters. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Ag. Ec. 101. Professor Grimes, Assistant Professor Evans, and Mr. Hodges.

Various systems of farm records and accounts are studied to acquaint the student with the more practical methods. The laboratory work affords opportunity to work out problems from actual farms in which these principles are involved. Particular attention is given to determining the cost of producing farm products and to the analysis and utilization of cost of production data. Laboratory charge, \$1.

FOR GRADUATES AND UNDERGRADUATES.

202. MARKETING OF FARM PRODUCTS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Ag. Ec. 101. Associate Professor Green.

This course deals with the economic principles and forces that are at the basis of modern marketing problems. Study is made of the necessary services of marketing and of the comparative efficiency of various marketing methods. The course also includes a study of price making, weaknesses of the present system of marketing, possibilities for improvement, and other marketing problems. Texts: Clark's *Principles of Marketing* and Hibbard's *Marketing Agricultural Products*.

203. GRAIN MARKETING. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Ag. Ec. 202. Professor Green.

This course deals with organized grain exchanges and their economic functions; fundamental factors of supply and demand affecting grain prices; influence of speculation on price; domestic and export trade in grain; and a study of competitive sources of grain supply.

204. TRANSPORTATION OF FARM PRODUCTS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Ag. Ec. 101. Professor Green.

* For an explanation of the system used in numbering courses, see the paragraph on "Course Numbers," given elsewhere in this catalogue.

This course makes a study of the shipping problems of the farm producer, with particular reference to grain and live stock. Attention is given to freight-rate structures and particular tariffs as they affect the marketing of farm products. Theory and practice in rate making; the effect on rates, of water competition, market competition, competing-line competition, and the development of motor-truck competition are covered with a view to giving the student a better understanding of how the farmer is concerned with transportation services and costs.

206A. ADVANCED FARM ORGANIZATION. Elective, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Ag. Ec. 106. Professor Grimes and Assistant Professor Evans.

The factors affecting the successful organization and operation of the farm business are studied by visiting farms in various parts of the state. The effects of external factors are also observed. A number of the better and more profitable farms in Kansas are visited during the course.

211. AGRICULTURAL INDUSTRIES. Elective, second semester. (Not offered in 1925-'26; alternates with Ag. Ec. 212.) Class work, two hours. Two semester credits. Prerequisite: Ag. Ec. 101. Dean Farrell.

This course deals with some of the more important phases of agriculture from the standpoint of their industrial requirements and relationships. Consideration is given to the principal geographic, economic, and social factors involved in the establishment and maintenance of the world's leading agricultural industries. The course is designed primarily to fit students to make an agricultural reconnaissance either in a settled or unsettled region, to determine what agricultural industries are suitable for a region; and to devise methods of establishing new agricultural industries or of improving industries already established. The course consists of lectures, reference work, assigned topics, and discussions.

212. CONSERVATION OF AGRICULTURAL RESOURCES. Elective, second semester. (Not offered in 1924-'25; alternates with Ag. Ec. 211.) Class work, two hours. Two semester credits. Prerequisite: Ag. Ec. 101. Open to juniors, seniors, and graduates only. Dean Farrell.

This course deals with several of the world's more important natural resources, as such, particularly those directly concerned with agriculture and the welfare of the agricultural community. Consideration is given to such matters as the size, location, and importance of these resources, their relationships to present and prospective conditions, their bearing in local, state, national, and international policies, and the place they should occupy in public opinion and citizenship. The course consists of lectures, reference work, assigned topics, and discussions.

218. AGRICULTURAL LAND PROBLEMS. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Ag. Ec. 101. Professor Englund.

This course includes a study of the ownership of land, the land policies of various important governments, state aid in land settlement, land taxation, and the Torren's system of registration in land transfer. It consists of lectures, assigned readings, topics for reports, and discussion. Text: Ely's *Outlines of Land Economics*.

219. TAXATION AND LAND OWNERSHIP. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Ag. Ec. 101, or consult instructor. Professor Englund.

This course consists of a study of some of the fundamental principles of taxation, particularly in their relation to land ownership. Special emphasis is placed on problems of taxation in Kansas. A historical and critical study is made of the general property tax, its advantages and inadequacies under modern economic conditions. This course also considers the possibilities of improving the fiscal system of Kansas and other states where similar economic conditions prevail. Instruction is given by lectures, assigned reading, reports and recitation.

221. AGRICULTURAL FINANCE. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Ag. Ec. 101. Professor Green.

Studies are made of the organization of agricultural land credit and short-time rural credit, the coöperative credit systems of Europe and other countries, the federal farm-loan act of the United States, coöperative insurance societies, and the problems of financing landowners, tenants, and farm laborers. Text: Wright's *Bank Credit and Agriculture* and Wright's *Farm Mortgage Financing*.

227. FARMER MOVEMENTS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Ag. Ec. 101. Professor Grimes.

Farmer movements include those efforts of farmers to improve their situation by organized action. The present and past activities and attainments of such organizations as the Grange, the Farmers' Union, the Farm Bureau, the Farmers' Alliance, and the American Society of Equity, are considered and discussed.

231. AGRICULTURAL ECONOMICS SEMINAR. Elective, both semesters. Class work, one hour. One semester credit. Prerequisite: Ag. Ec. 101. Professor Grimes, Professor Englund, and Professor Green.

Current questions in agricultural economics are reviewed and discussed and topics are prepared and presented by the students.

FOR GRADUATES

301. RESEARCH IN AGRICULTURAL ECONOMICS. Elective, both semesters and summer school. One to five semester credits. Prerequisites: Consult instructors. Professor Grimes, Professor Englund, Professor Green, and Dean Farrell.

This course involves individual research problems in the marketing of farm products, coöperation among farmers, farmer movements, land problems, tenancy, agricultural industries, agricultural finance, farm labor, farm power, farm organization, and the cost of producing farm products. Any of the subjects assigned may furnish data for a master's thesis.

305. ADVANCED AGRICULTURAL ECONOMICS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisites: Consult instructor. Professor Englund.

This course is a study of the basic principles of economics and is designed to meet the needs of advanced students by giving them a stronger foundation in fundamentals. The course consists of planned reading in the works of leading economists, and discussion of principles and their application to problems which specialists in agricultural economics must face.

310. HISTORY OF AGRICULTURAL ECONOMIC THOUGHT. Elective, second semester. Class work, three hours. Three semester credits. Prerequisites: Consult instructor. Professor Grimes.

The purpose of this course is to acquaint the student with the development of agricultural economics and the relation of agricultural economic doctrines to conditions existing when they were formulated. The work consists of assigned readings and discussions.

Agronomy

Professor CALL
 Professor SALMON
 Professor THROCKMORTON
 Professor PARKER
 Associate Professor SEWELL
 Associate Professor ZAHNLEY
 Associate Professor LAUDE

Assistant Professor DAVIS
 Assistant Professor LYONS
 Assistant Professor LONDON
 Assistant SILKETT
 Assistant HARLING
 Assistant PHINNEY

The College farm used by the Department of Agronomy comprises 320 acres of medium rolling upland soil, well suited to experimental and demonstration work. It is well equipped with all kinds of farm machinery necessary in crop production. 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 excellent opportunities for study and investigation.

Large and well-equipped 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. Ample greenhouse space is provided for problems and research work in crops and soils.

The Department of Agronomy offers courses in cereal and forage crop production and improvement, in pasture management, in soils, soil fertility, soil survey, and dry-land farming.

COURSES IN FARM CROPS

FOR UNDERGRADUATES

105. SEED IDENTIFICATION AND WEED CONTROL. Elective first semester and summer school. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Agron. 109. Associate Professor Zahnley and Mrs. Harling.

Methods of propagation, control, and eradication of weeds are discussed in lectures, the laboratory period is devoted to the identification of weed plants, and seeds; to germination and purity testing; and to field trips. Laboratory charge, \$2.50.

108. GRAIN GRADING AND JUDGING. Elective, second semester and summer school. Laboratory work, six hours. Two semester credits. Prerequisite: Agron. 109. Professor Salmon and Associate Professor Zahnley.

The principal feature of this course is practice work in grading and judging crops and crop products, including wheat, corn, oats, barley, rye, buckwheat, flax, rice, alfalfa, clover, soy beans, cowpeas, and various kinds of hay. Laboratory deposit, \$3.50.

109. FARM CROPS. Sophomore year, second semester. Class work, three hours; laboratory, six hours. Five semester credits. Prerequisite: Bot. 101. Associate Professor Zahnley and Assistant Professor Davis.

This course is a study of the distribution, relative importance, value, and production of the more important grain and forage crops. Laboratory deposit, \$5.

114. ADVANCED GRAIN JUDGING. Elective, first semester. Laboratory, six hours. Two semester credits. Prerequisite: Agron. 108. Professor Salmon and Associate Professor Zahnley.

This course is a continuation of Agron. 108. Identification, commercial grading, and judging and presenting the merits of samples of the various kinds of field crops orally and in writing are emphasized. Laboratory charge, \$3.

FOR GRADUATES AND UNDERGRADUATES.

202. CROP IMPROVEMENT. Elective, second semester. Class work, two hours; laboratory, three or six hours. Three or four semester credits. Prerequisites: Agron. 109 and An. Husb. 221. Professor Parker.

This course reviews the principles of plant breeding and applies them to the principal groups of field crops. Methods of selection, hybridization, and breeding for special qualities are discussed. Laboratory work is a study of heritable characters and of their behavior in several generations following the cross. Laboratory charge, \$2.

203. **ADVANCED FORAGE CROPS.** Elective, first semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Agron. 109. Associate Professor Zahnley.

Results of the most recent investigations carried on with forage crops in this and in other countries are studied, together with a more intensive study of the sorghums, alfalfa, sweet clover, soy beans, and other important or promising forage crops.

Laboratory.—The laboratory work is devoted to a study of the growth habits of the crops considered in the lecture, especially as they are related to the production and improvement of these crops. Storing, market grading, and marketing of hay are also considered. Laboratory deposit, \$2.

205A. **PRINCIPLES OF AGRONOMIC EXPERIMENTATION.** Elective, first semester. Class work, two hours. Two semester credits. Prerequisites: Agron. 109 and 133. Professor Salmon.

A discussion of the principles of experimentation in general is followed by their application to agronomic problems. Important contributions to agronomic science are studied from the historical viewpoint.

206. **AGRONOMY SEMINAR.** Elective, second semester. Class work, one hour. One semester credit. Prerequisites: Agron. 109 and 133. Professor Call.

In this course students are required to review before the class timely articles appearing in bulletins and current periodicals.

207. **PASTURE MANAGEMENT.** Elective, first semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisites: Bot. 102 and Agron. 109. Associate Professor ———.

This course will be taken up in two parts: First, native forage plants, their distribution, value, life history and habits, and their management. Second, management of pastures and ranges, including the determination of carrying capacity, character of stock best suited to a range or pasture and the proper methods of handling areas to maintain or increase the forage cover. Laboratory deposit, \$2.50.

208. **PLANT GENETICS.** Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: An. Husb. 221. Professor Parker.

This course is an advanced course in genetics and is offered to those students interested in plant breeding. Lectures and reference reading will deal with fundamental principles of breeding as they have been worked out in plants.

209. **GENETICS SEMINAR.** Elective, first and second semesters. One semester credit. Prerequisites, consult instructors. Professor Nabours, Professor Parker, Associate Professor Warren, and Assistant Professor Ibsen.

This course continues through the first and second semesters and includes the study and criticism of genetic experiments in plants and animals, the biological and mathematical methods employed, and the validity of conclusions drawn.

210. **CROP PROBLEMS.** Elective, both semesters and summer school. Laboratory, three to twelve hours. One to four semester credits. Prerequisite: Agron. 203. Professor Salmon and Professor Parker.

Students choose or are assigned special problems for study. The completion of the work with a written report entitles them to credit according to the amount and quality of the work done. Laboratory deposit, \$5.

211. **CROP ECOLOGY.** Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Agron. 109. Professor Salmon.

This course considers the distribution of farm crops with special reference to the climatic, edaphic, economic and social factors primarily responsible for the concentration of crop production in certain countries. The possibilities of further increase in crop-producing areas and the probable nature and direction of such increases are considered.

212. ORIGIN AND CLASSIFICATION OF CROP PLANTS. Elective, first semester. Class and laboratory work, six hours. Three semester credits. Prerequisite: Agron. 109. Professor Parker and Associate Professor Zahnley.

This course consists of lecture, reference and laboratory work on the geographical and botanical origin of crop plants. A careful study is made of the characters used in the identification of varieties of crop plants and related wild forms. Laboratory charge, \$2.

213. SPECIAL CROPS. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Agron. 109. Associate Professor Zahnley.

The distribution, climatic and soil requirements, relative importance and production of sugar beets, cotton, flax for fiber, hemp, tobacco and other minor crops are studied.

FOR GRADUATES

301. CROPS RESEARCH. Elective, both semesters and summer school. Laboratory, three to fifteen hours. One to five semester credits according to the work done. Prerequisite: Agron. 203. Professor Salmon and Professor Parker.

Students choose or are assigned special problems which may furnish data for a master's thesis. The completion of the work entitles them to credit according to the amount of work done.

302. PASTURE MANAGEMENT RESEARCH. Elective, both semesters and summer school. One to five semester credits, depending on the work done. Prerequisites: Agron. 207, Civ. Engr. 111, Bot. 225. Associate Professor ———.

Students choose or are assigned special problems for investigation. The investigations may furnish data for a master's thesis.

COURSES IN SOILS

FOR UNDERGRADUATES

133. SOILS. Sophomore year, first semester. Class work, four hours; laboratory, three hours. Five semester credits. Prerequisites: Chem. 102 or 108A and Geol. 103. Professor Throckmorton and Assistant Professor Lyons.

This course deals with the fundamental principles underlying the management of soils. Laboratory charge, \$3.50.

FOR GRADUATES AND UNDERGRADUATES

231. DRY-LAND FARMING. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: Agron. 133. Professor Throckmorton.

The principles underlying the cultivation methods and farming systems under light rainfall conditions are studied.

232A. ADVANCED SOIL FERTILITY. Elective, first semester. Class work, two hours, laboratory, three hours. Three semester credits. Prerequisite: Agron. 133. Professor Throckmorton.

This course deals with the use of commercial fertilizers and their effects upon plants and soil. Laboratory deposit, \$4.

233. SOIL SURVEY. Elective, second semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Agron. 133. Professor Throckmorton.

Types of soils of the United States and methods of mapping soil areas are studied in this course. Special attention is given to the study of Kansas soils in the field.

235. ADVANCED SOILS LABORATORY. Elective, first and second semester, or both. One to four semester credits, according to the amount of work done.

Prerequisite: Agron. 133. Professor Throckmorton and Assistant Professor Lyons.

This course deals with the more advanced problems of soil physics and fertility and includes the making of mechanical analyses, the determination of moisture equivalent, specific heat, and pot work with soils in the greenhouse. Laboratory deposit, \$3.50.

236. SOIL PROBLEMS. Elective, both semesters and summer school. Laboratory, three to twelve hours. One to four semester credits. Prerequisites depend on the problem given. Professor Call, Professor Throckmorton, and Associate Professor Sewell.

Students choose or are assigned special problems in soils. Laboratory deposit, \$5.

243. SOIL AND CROP MANAGEMENT. Elective, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: Agron. 109 and 133. Professor Call.

The practical management of soils and crops is covered by means of discussion and problems.

FOR GRADUATES

331. SOIL RESEARCH. Elective, both semesters and summer school. One to five semester credits, according to the work done. Prerequisites: Agron. 133 and Chem. 250. Professor Call, Professor Throckmorton, and Associate Professor Sewell.

Students are assigned special soil problems, which may extend throughout the year and furnish data for a master's thesis.

Animal Husbandry

Professor McCAMPBELL
Professor BELL
Associate Professor IBSEN
Associate Professor REED
Associate Professor ANDERSON

Assistant Professor AUBEL
Assistant Professor MACKINTOSH
Instructor MARSTON
Instructor WEBER
Fellow GREGORY

The courses of study in this department are arranged to give the student special instruction in the selection, breeding, feeding, marketing, and management of all classes of live stock.

The department devotes 550 acres of land to the maintenance of herds and flocks of pure-bred horses, cattle, sheep, and hogs. The College live stock has attained a national reputation among breeders and feeders on account of the many prize-winning animals produced.

The feed yards and barns are well arranged for experimental feeding and the maintenance of the herds. The laboratory of the animal husbandry student is the feed lot and the judging pavilion. He studies the animal from the standpoint of the breeder and of the feeder. He learns to combine the needs of each and to find these qualities in the animal best suited to meet these needs.

COURSES IN ANIMAL HUSBANDRY

FOR UNDERGRADUATES

132. JUDGING MARKET LIVE STOCK. Freshman year, first semester. Laboratory, six hours. Two semester credits. Associate Professor Reed, Associate Professor Anderson, Assistant Professor Aubel, Assistant Professor Mackintosh, and Mr. Weber.

This course consists of a study of conformation and quality in market live stock. Text: Vaughn's *Types and Market Classes of Live Stock*.

Laboratory.—Practice is given in scoring and comparing market animals.

133. JUDGING BREEDING LIVE STOCK. Freshman year, second semester and summer school, 1922. Laboratory, six hours. Two semester credits. Pre-

requisite: An. Husb. 132. Associate Professor Reed, Associate Professor Anderson, Assistant Professor Aubel, Assistant Professor Mackintosh, and Mr. Weber.

This course consists of a study of conformation, quality, and character in breeding animals and the breed characteristics of the various breeds of horses, cattle, sheep, and swine. Text: Plumb's *Types and Breeds of Farm Animals*, and Gay's *Principles and Practice of Judging Livestock*.

140. ADVANCED STOCK JUDGING I. Elective, first semester. Laboratory, six hours. Two semester credits. Prerequisite: An. Husb. 138. Professor Bell.

This course deals with the judging of market animals as well as with the different breeds of pure-bred stock. The stock is judged in groups of from four to six animals in the same manner as is customary at county or state fairs.

143. ADVANCED STOCK JUDGING II. Elective, second semester. Laboratory, six hours. Two semester credits. Prerequisite: An. Husb. 140. Professor Bell.

This is a continuation of An. Husb. 140. During the work of the semester occasional trips are made to the best live-stock farms of the state, where the students have an opportunity to judge and to observe the management of herds and flocks as handled by the most successful stockmen of the state.

146. FORM AND FUNCTION IN LIVE STOCK. Elective, first semester. Laboratory, six hours. Two semester credits. Prerequisite: An. Husb. 143. Professor Bell.

A detailed and specific study is made of animal form and type, and influence of type upon function; also of the relation of form, type and condition to growth and development. Comparative measurements are taken of growing and fattening animals, speed and draft horses, mutton and wool sheep, and lard and bacon types of hogs. Special training is given in presenting orally the relative merits of animals of all breeds.

149. HISTORY OF BREEDS AND PEDIGREES. Elective, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: An. Husb. 132. Assistant Professor Mackintosh.

A study is made of the early history and development of pure-bred domestic animals; also a sufficient study of herdbooks and pedigrees to acquaint students with the leading strains and families of the different breeds of horses, cattle, sheep, and swine. Text: Plumb's *Types and Breeds of Farm Animals*. Laboratory charge, \$2.

152. PRINCIPLES OF FEEDING. Sophomore and junior years, second semester and summer school. Class work, three hours. Three semester credits. Prerequisites: Anat. 132 and Chem. 120. Associate Professor Anderson.

This course involves a study of the digestive system and the processes of nutrition, the origin, chemical analysis, grades and feeding values of different feeds, and of the theory of practical economy of rations, both for the maintenance and for the fattening of all classes of farm animals. Text: Henry and Morrison's *Feeds and Feeding*, Parts I and II, supplemented by lectures.

155. BEEF-CATTLE PRODUCTION. Elective, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: An. Husb. 132, 138, and 152. Professor McCampbell and Associate Professor Anderson.

This course includes the study of economical methods of growing and fattening market cattle and up-to-date methods of breeding, developing, fitting, and marketing pure-bred beef cattle. The laboratory includes practice in feeding, management, and housing of cattle.

158. SWINE PRODUCTION. Elective, second semester. Class work, two hours; laboratory, three hours. Two semester credits. Prerequisites: An. Husb. 132, 138, and 152. Mr. Weber.

This course comprises a systematic study of economical methods of growing, fitting, and finishing swine, both for breeding purposes and for the market.

The laboratory work includes practice in feeding, management, and housing of swine. Text: Smith's *Pork Production*.

161. SHEEP PRODUCTION. Elective, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: An. Husb. 132, 138, and 152. Associate Professor Reed.

A systematic study is made of economic methods of growing, fitting, and finishing sheep, both for breeding purposes and for market. The laboratory work includes practice in feeding, management, and housing of sheep. Text: Coffey's *Productive Sheep Production*.

164. HORSE PRODUCTION. Elective, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: An. Husb. 132, 138, and 152. Assistant Professor Mackintosh.

This course includes a study of economic methods of growing, handling, and housing horses for breeding purposes, for work, and for the market. The laboratory work includes practice in feeding, handling, and housing horses. Text: Gay's *Productive Horse Husbandry*.

167. MEATS. Elective, both semesters and summer school. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisites: An. Husb. 138 and 152. Assistant Professor Mackintosh.

This is a course in killing, and in dressing, cutting, and curing meats. Laboratory charge, \$2.50. Text: Hesler's *Farm Meats*.

171. LIVE-STOCK PRODUCTION. Elective, second semester. Open only to juniors and seniors not majoring in animal husbandry. Class work, three hours. Three semester credits. Professor Bell.

The purpose of this course is to give students not majoring in animal husbandry a practical insight into the production of beef cattle, horses, swine, and sheep.

172. FEEDING LIVE STOCK. For Agricultural Engineers only. Junior year, second semester. Class work, three hours. Three semester credits. Associate Professor Anderson.

This course includes a study of the processes of digestion and assimilation, the food requirements of different animals, methods of calculating rations, and the relative feeding value of different feeds. Text: Henry and Morrison's *Feeds and Feeding*.

FOR GRADUATES AND UNDERGRADUATES

221. GENETICS. Junior year, first semester and summer school. Class work, three hours. Three semester credits. Prerequisites: Zoöl. 105, and Bot. 105. Associate Professor Ibsen.

This course embraces a general discussion of variation, Mendelian inheritance, and related subjects.

223. ANIMAL BREEDING. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: An. Husb. 221. Assistant Professor Aubel.

This course embraces a study of the physiology of reproduction; general principles of heredity; variation; systems of mating; influence of pedigrees and herdbook standard; and an analysis of the breeding practices of leading breeders.

225. ADVANCED GENETICS. Elective, second semester. Class work, three hours; laboratory, three hours. Four semester credits. Prerequisite: An. Husb. 221. Associate Professor Ibsen.

Particular attention is given to the relation of the chromosomes to heredity. The subject as a whole is studied in greater detail than in An. Husb. 221.

227. GENETICS SEMINAR. Elective, first and second semester. One semester credit. Prerequisites: Consult instructors. Professors Nabours, Ibsen, and Parker, and Associate Professor Warren.

This course continues through the first and second semesters and includes the study and criticism of genetic experiments in plants and animals, the

biological and mathematical methods employed, and validity of conclusions drawn.

229. RESEARCH IN GENETICS. Elective, first and second semesters. Four to ten semester credits. Prerequisite: An. Husb. 225. Associate Professor Ibsen.

This course continues through the year and offers opportunity for individual study of problems in which small mammals are used as the experimental animals.

231. ADVANCED STUDIES IN PEDIGREES. Elective, second semester. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: An. Husb. 149. Assistant Professor Mackintosh.

This course consists of a careful study of the pedigrees and the prepotency of individuals representing the more important strains and families of beef cattle, horses, sheep, and swine.

233. ADVANCED FEEDING. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: An. Husb. 152. Instructor Marston.

This course consists of a survey of the experimental feeding of horses, cattle, sheep, and hogs, together with a study of the fundamental and practical feeding problems of the various sections of the country. Emphasis is placed upon the results obtained in the experimental investigation of these problems.

244. ANIMAL HUSBANDRY SEMINAR. Elective, second semester. Open only to seniors and graduates majoring in animal husbandry. Class work, one hour. One semester credit. Prerequisite: An. Husb. 152. Professor McCampbell.

245. ANIMAL HUSBANDRY PROBLEMS. Elective, both semesters and summer school. Credit as arranged. Prerequisites: An. Husb. 140, 149, 152, and 223, and such other courses as may be necessary to a satisfactory study of any particular problem selected for study. Professor McCampbell.

250. PURE-BRED LIVE-STOCK PRODUCTION. Elective, second semester. Class work two hours. Two semester credits. Open only to seniors and graduates, with prerequisites as follows: An. Husb. 149 and 223. Associate Professor Reed.

This course gives the student an opportunity to study the real function of pure-bred live stock, the many factors upon which the successful production of pure-bred live stock depends, and the possibilities in pure-bred live-stock production.

FOR GRADUATES.

301. RESEARCH IN ANIMAL HUSBANDRY. Elective, first and second semesters. Prerequisites: An. Husb. 155, 158, 161, and 164. Six to sixteen semester credits. Professor McCampbell.

Students are assigned special problems for investigation in beef cattle production, swine production, sheep production, horse production, pure-bred live-stock production and genetics.

306. ADVANCED MEATS. Elective, second semester. Two to four semester credits. Prerequisite: An. Husb. 167. Assistant Professor Mackintosh.

This course includes grading of carcasses, studies in nutritive values of different grades of meats, factors influencing the quality of meats, factors influencing dressing percentage of meat animals, and the identification of meats from different animals.

311. THE WOOL INDUSTRY. Elective, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: An. Husb. 161. Associate Professor Reed.

This course includes a study of the supply of wool and the demand for it, and the method of producing, marketing, storing, grading, and manufacturing wool.

316. SYSTEMS OF LIVE-STOCK PRODUCTION. Elective, second semester. Class work, three hours. Three semester credits. Prerequisites: An. Husb. 155, 158, 161, and 164. Professor McCampbell.

This course includes a study of the relation of live-stock production to agriculture. It also includes a study of management, climate, soil, topography, location of markets, land, labor, capital, and managing ability as factors influencing the choice and adaptation of systems of production.

321. LIVE-STOCK MARKETING. Elective, second semester. Class work, two hours. Two semester credits. Prerequisites: An. Husb. 155, 158, 161, and 164. Professor McCampbell.

This course includes a study of the art of marketing live stock and live-stock products; freight and insurance rates in transit, liability of carrier and shipper, terminal charge, etc.; commissions for sale of storage; the relation of market prices of grain and hay to contemporary values of live-stock meat.

Dairy Husbandry

Professor FITCH
Associate Professor CAVE
Associate Professor OLSON
Instructor MCGILLIARD

Instructor LUSH
Assistant RENNER
Graduate Assistant WRIGHT

The activities of the Department of Dairy Husbandry may be divided into two groups: those that deal with the production of milk and those that deal with the marketing and manufacturing of the several dairy products. In order to get first-hand information a dairy herd is maintained and a creamery operated. The animals in the dairy herd are used by judging classes and in experiments in the feeding, care, and management of dairy animals. Up-to-date methods in creamery operation are exemplified in the creamery.

The dairy herd consists of excellent types of the four dairy breeds: Jersey, Guernsey, Ayrshire, and Holstein. These animals are pure bred, and a number have been entered in the advanced registry of their respective breeds. The excellence of the herd is shown by the yearly records of the cows that have been officially tested. The average for the Guernseys is 9,202 pounds of milk and 423 pounds of butter fat; for the Ayrshires, 12,895 pounds of milk and 474 pounds of butter fat; for the Holsteins, 14,411 pounds of milk and 488 pounds of butter fat; and for Jerseys, 8,408 pounds of milk and 439 pounds of butter fat.

The Department of Dairy Husbandry is provided with ample room in the west wing of Waters Hall. The creamery is located in a one-story annex on the north end of this wing. In this building the department has the most up-to-date equipment available for handling butter, cheese, milk and ice cream on a quantity basis, and is equipped far better than ever before to instruct students interested in the manufacturing side of dairying.

Students who have specialized in dairying are now among the leading dairy-cattle breeders of the state. Others who were interested in the manufacturing side of dairying are in responsible positions with creameries and milk companies or in business for themselves. The dairy industry is expanding in Kansas, and this is bringing a greater demand for men with experience and knowledge of dairying.

The instruction in the Department of Dairy Husbandry includes the study of the selection and breeding of dairy animals, the production of milk, its manufacture into butter, cheese, and other dairy products, and its sale on the market. The success of the instruction in judging dairy animals may be assumed from the fact that for the years 1919, 1920, and 1921 the dairy judging teams of this College have won first place in the students' national dairy judging contest at the National Dairy Show. In 1923 the Kansas team placed second.

COURSES IN DAIRY HUSBANDRY

FOR UNDERGRADUATES

101. ELEMENTS OF DAIRYING. Freshman year, both semesters and summer school. Class work, two hours; laboratory, three hours. Three semester credits. Associate Professors Cave and Olson, Mr. Renner, and Mr. Wright.

This is a general course in dairying, dealing with the secretion, composition and properties of milk, with the factors influencing the quantity and quality of milk, and with care of milk and cream on the farm. It includes a study of the different methods of creaming, the construction and operation of farm separators, the principles and application of the Babcock tests, the use of the lactometer, and butter making on the farm. Lectures supplemented by text, Stocking's *Manual of Milk Products*.

Laboratory.—Practice is given in operating the Babcock test and lactometer, separation of milk, and farm butter making. Laboratory deposit, \$2.

104. DAIRY JUDGING. Freshman year, both semesters and summer school. Laboratory, three hours. One semester credit. Associate Professor Cave, Mr. Lush, Mr. McGilliard, and Mr. Wright.

This course calls for the judging of dairy stock from the standpoint of economical production and breed type. Score cards are used for the purpose of training the student to become accurate, thorough and systematic in the selection of animals as representative of breeds or for breeding purposes. No textbook is required. *Types and Breeds of Farm Animals* by C. S. Plumb, and Breeder's Association literature are used as references.

106. DAIRY INSPECTION I. Elective, first semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisites: Bact. 106, and Dairy Husb. 101. Associate Professor Olson.

Advanced work is given in the testing of dairy products, including testing for adulterations. Practice is given in the use of score cards for inspecting and grading milk depots, dairy farms, and creameries. The course is designed to give training in the duties of a city, state, or government inspector or commissioner. State and city ordinances governing the handling and public sale of dairy products are outlined. Text: Farrington and Woll's *Testing Milk and Its Products*. Laboratory deposit, \$2.

108. MILK PRODUCTION. Elective, second semester. Class work, three hours. Three semester credits. Prerequisites: Dairy Husb. 101 and An. Husb. 152. Professor Fitch.

This course deals with the economical production of milk and with the most approved method of handling the dairy herd, also the construction of dairy barns and buildings, and other subjects which relate to the dairy farmer. Text: Eckles' *Dairy Cattle and Milk Production*.

109. BUTTER MAKING I. Elective, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: Dairy Husb. 101 and Bact. 211. Associate Professor Olson.

This course comprises a study of the principles of creamery butter making, the construction and care of creameries and their appliances, methods of sampling and grading cream, Pasteurization, starter making, cream ripening, and creamery accounting. Text: Hunzkier's *The Butter Industry*.

Laboratory.—Practice is given in the sampling and grading of milk and cream; in separating and ripening cream; in the preparation and use of the starter in Pasteurized and in raw cream; in churning; in working, washing, salting, and packing butter; and in keeping complete records of each operation. The work also includes the making of salt, fat, and moisture determinations of the finished product, and judging and scoring butter. Laboratory charge, \$2.

111. BUTTER MAKING II. Elective, first semester. Class work, two hours; laboratory, six hours. Four semester credits. Prerequisites: Dairy Husb. 101 and Bact. 211. Associate Professor Olson.

This course is for students specializing in dairy manufacturing, and differs from Butter Making I in having six hours laboratory instead of three. Laboratory charge, \$2.

114. CHEESE AND ICE-CREAM MAKING. Elective, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: Dairy Husb. 101 and Bact. 211. Associate Professor Olson and Mr. Renner.

The major portion of the work of this course consists of a study of the manufacture of ice cream and ices. The commercial manufacture of Cheddar cheese, soft cheese, and the most important foreign cheeses is given due consideration. Reference Text: Van Slyke and Publow's *The Science and Practice of Cheese Making*.

Laboratory.—The laboratory work in ice-cream making includes all phases in the manufacture of modern commercial ice cream from the raw material to the consumer. Practice is given also in the making of Cheddar cheese and soft cheeses. Laboratory charge, \$2.

116. MARKET MILK. Elective, second semester. Lecture, one hour; laboratory, three hours. Two semester credits. Prerequisites: Dairy Husb. 101 and Bact. 211. Associate Professor Olson.

This course includes a study of the classes of market milk (certified, inspected and Pasteurized, also other classifications), equipment and methods for clean milk production, and the relation of clean milk to producer, dealer, and consumer. Also systems of milk inspection, score cards, and milk and cream contests. Lectures are also given on milk plants, including their methods and equipment, such as receiving, storing, separating, removing sediment, pasteurization, bottling and capping, cleaning and sterilizing bottles and cans, the use of homogenizer and emulsifier and practical laboratory methods of examining milk. Text: Kelley and Clement's *Market Milk*.

Laboratory.—The work includes actual practice in all the steps in the production of market milk and cream in the College milk plant. Laboratory charge, \$2.

118. DAIRY INSPECTION II. (Vet.) Senior year, second semester. Laboratory, three hours. One semester credit. Mr. Renner.

This course comprises the testing of dairy products, the inspection and scoring of dairies and milk depots, and the testing for adulterants in dairy products. Text: Farrington and Woll's *Testing Milk and Its Products*. Laboratory deposit, \$2.

120. ADVANCED DAIRY JUDGING. Elective, second semester. Laboratory, three hours. One semester credit. Associate Professor Cave.

This course is a continuation of Dairy Husb. 104. Visits are made to the best farms in the state and students are given an opportunity to judge and to handle stock kept by the most successful breeders.

FOR GRADUATES AND UNDERGRADUATES

202. DAIRY SEMINAR. Elective, second semester. Class work, one hour. One semester credit. Prerequisites: Dairy Husb. 101, 106, and 108. Professor Fitch.

This course includes a study and review of dairy periodicals and experiment station bulletins, books and other dairy literature.

206. DAIRY HERD MANAGEMENT. Elective, second semester, senior year. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Dairy Husb. 108. Professor Fitch and Associate Professor Cave.

This is an advanced course in the feeding and management of the dairy herd. It takes up the study of feeding, the management of advanced registry cows, the fitting of animals for show and sale, and other subjects pertaining to the management of dairy herds.

Reference Texts: Larson and Putney's *Dairy Cattle Feeding and Management*, and Eckle's *Dairy Cattle and Milk Production*.

211. DAIRY BREEDS AND PEDIGREES. Elective, first semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Dairy Husb. 108. Associate Professor Cave.

This course is devoted to a study of the history and development of the different breeds of dairy cattle. In the laboratory a study is made of the herd books of the dairy breeds and a study of the pedigrees of some of the prominent animals of each breed.

216. DAIRY PRODUCTION PROBLEMS. Elective, both semesters. Credit as arranged. Prerequisites: Dairy Husb. 101, 104, and 108, and An. Husb. 152. Professor Fitch and Associate Professor Cave.

In this course the student is allowed to follow some investigation pertaining to dairy production problems. Plans for this investigation should be so formulated that the study could be continued for more than one semester if necessary.

221. DAIRY MANUFACTURING PROBLEMS. Elective, both semesters. Credit as arranged. Prerequisites: Dairy Husb. 101, 106, 108, 111, and 114. Associate Professor Olson.

In this course the student is allowed to follow some investigation pertaining to dairy manufacturing problems. Plans for this investigation should be so formulated that the study could be continued for more than one semester if necessary.

226. CREAMERY MANAGEMENT. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Dairy Husb. 111. Associate Professor Olson.

This is an advanced course in creamery management for students specializing in dairy manufacturing.

FOR GRADUATES.

301. DAIRY RESEARCH. Elective, both semesters. Credit as arranged. Prerequisites: Dairy Husb. 108, 109, 206, 211 or 108, 111, 116, and 226.

This course gives credit for special investigations in dairy husbandry or dairy manufactures which may form the basis of a thesis in partial fulfillment of the requirements for the degree of Master of Science.

General Agriculture

DEAN FARRELL

FOR UNDERGRADUATES

101. AGRICULTURAL LECTURES. Freshman year, first and second semesters. Lectures, one hour a week. Deans of the Division of Agriculture, Veterinary Medicine, Extension, and the Summer School, and heads of the departments of the Agricultural Experiment Station and of various other departments of the College.

These lectures have a twofold object: (1) To assist freshmen to develop ability to study efficiently, and (2) to inform freshmen regarding the prospective opportunities for those who prepare themselves for service in the various fields of work open to agricultural graduates, and the requirements for success in those fields; and regarding the relationships between agricultural subject matter and certain other kinds of subject matter in well-balanced agricultural training.

103. AGRICULTURAL SEMINAR. Required of all undergraduates in the Division of Agriculture. Four meetings each semester.

The agricultural seminar is maintained primarily to bring all the agricultural undergraduates together with reasonable frequency for the discussion of general agricultural questions and agricultural student affairs. The programs will be presented by students, members of the College faculty, and invited speakers from outside the College community.

105. AGRICULTURAL RELATIONSHIPS. Senior year, second semester. Class work, one hour. Required of all seniors in agriculture. Dean Farrell.

This course is designed for agricultural students who are about to enter upon their life work. It is given for the purpose of directing the attention of these students to their duties, responsibilities, and opportunities for service as citizens of the agricultural community and as specialists in various phases of agricultural activity. It consists of lectures and discussions relating to the broad, fundamental relationships of individual farmers and other agricultural people with each other, and of the agricultural community with other communities. The course places special emphasis in this connection on the responsibilities, obligations, and opportunities of agricultural graduates as American citizens.

Horticulture

Professor DICKENS
Professor BARNETT
Assistant Professor PICKETT

Assistant Professor WIEDORN
Instructor BALCH

A wealth of illustrative material for classes in all horticultural subjects is found in the large collection of species growing upon the College campus, in the orchard plantations, and in the greenhouses.

The horticultural grounds consist of eighty acres of land devoted exclusively to horticultural and forestry work in gardens, nurseries, orchards, and vineyards. A new small-fruit plantation is being developed, in which will be planted all standard kinds of small fruits. A full equipment of garden tools, spraying machinery and accessories, pruning tools, and special apparatus for floriculture is available at all times for the use of students. The College grounds furnish one of the finest and most complete laboratories in the state for the study of landscape gardening.

The instruction in the Department of Horticulture covers horticulture, pomology including fruit judging, vegetable gardening, small fruits, spraying, orcharding, greenhouse problems, forestry, and all phases of landscape gardening.

Instruction in landscape gardening is planned to meet the requirements of two classes of students: (1) Students who wish a better understanding of the principles underlying landscape gardening; (2) students who wish to specialize in landscape gardening. A complete course, with the coöperation of the Departments of Civil Engineering and Architecture, is offered the latter students.

COURSES IN HORTICULTURE

FOR UNDERGRADUATES

105. SYSTEMATIC POMOLOGY. Elective, first semester. Class work, two hours; laboratory, six hours. Four semester credits. Prerequisite: Hort. 108. Professor Barnett.

This course consists of a technical study of fruit varieties, including varietal relationships, and the principles underlying pomological nomenclature, variety description, and both artificial and natural systems of variety classifications. Texts: Waugh's *Systematic Pomology* and Beach's *Apples of New York*.

Laboratory.—In the laboratory actual fruits are studied. These are obtained from many parts of the United States and make possible valuable comparisons of varietal variations due to environment. Description, identification, judging, and the preparation of fruit displays are the principal laboratory topics. Laboratory charge, \$1.

108. ELEMENTS OF HORTICULTURE. Sophomore year, second semester and summer school. Class work, three hours; laboratory, three hours. Four semester credits. Prerequisite: Bot. 105. Professor Barnett and Assistant Professor Pickett.

The relation of the more important subdivisions of horticulture to general agriculture and to advanced courses in pomology and olericulture is presented in this course.

Both the practices necessary for success in orcharding and gardening and the principles on which these practices are based are brought out in some detail. This course is presented with two aims: First, to give the student who becomes a general farmer, a teacher of high-school agriculture, or a county agent the fundamentals of horticulture; second, to serve as a basic course for students planning to major in some branch of horticulture. Text: Sears' *Productive Orcharding*.

Laboratory.—The greater part of the laboratory work is done in the College orchards and gardens. Fruit-bearing habits, propagation, pruning, spraying, transplanting, cover crops, and fruit varieties are among the important topics studied. Laboratory charge, \$1.

110. SMALL FRUITS. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Bot. 105. Professor Barnett.

The small fruits of commercial importance are considered with reference to their requirements as to soil, fertilizers, cultivation, and protection. The management of small areas designed to furnish a supply of fruits for home use, and the handling of commercial plantations, are considered. Text: Sears' *Productive Small Fruit Culture*.

113. FARM FORESTRY. Elective, first semester. Class work, three hours; laboratory, three hours. Four semester credits. Professor Dickens.

This course consists of a study of the needs of Kansas farms for windbreaks and wood lots for post and fuel production; also a study of forest conservation and methods of handling timber. The growing of trees in locations better suited for timber than for other crops is considered; also the composition of windbreaks and their value as a protection to home orchards and fields.

Laboratory.—Laboratory work includes identification of species, methods of forming windbreaks, and nursery work in transplanting trees of various sizes and a determination of the rate of growth of trees under various conditions.

116. DENDROLOGY. Elective, second semester. Class work, one hour; laboratory, six hours. Three semester credits. Professor Dickens.

In this course a study is made of the classification and identification of forest trees, including a study of forest ecology and taxonomy; of the classification of commercial species; the relative importance of timber species; and the life history and requirements of trees.

Laboratory.—The laboratory work consists of studies in the College arboretum and excursions to near-by wood lots. The student is given an opportunity to become acquainted with trees that succeed well in this state.

119. SILVICULTURE. Elective, second semester. Class work, two hours; field work, three hours. Three semester credits. Prerequisite: Hort. 113 or 116. Professor Dickens.

The business of tree growing for timber and economic purposes is studied. Requirements of species, their range and requirements as to soils, climate and the various factors that determine their reproduction and rate of growth are discussed. Protection of forests from fire and insects and the application of various systems of silviculture are given consideration.

122. GARDENING. Sophomore year, second semester. Class work, three hours. Three semester credits. Professor Dickens and Assistant Professor Wiedorn.

It is the purpose of this course in gardening to give young women a working knowledge of and a close acquaintance with the garden as it concerns the home. The first part of the course is concerned with the principles of plant growth, the relation of soils to plants, and the methods necessary for successful work in kitchen gardening, flower beds, window gardening, the requirements of plants in regard to watering, temperatures, hotbeds and the first principles of floriculture.

In the latter part of the course the young women are introduced to the principles of landscape gardening, with particular reference to the problems of home plantings. In conjunction with the lectures, each member of the

class is required to prepare plans for town home, farm home and country place, and the classes are required to do group work that will give them an insight into the needs of school grounds. Playgrounds, public parks, and cemeteries are considered and are given a considerable amount of time.

Particular emphasis is placed upon acquaintance with materials that are used for garden purposes. The College campus, gardens, and greenhouses furnish a wealth of material that is adapted to garden problems and landscape composition.

126. LANDSCAPE GARDENING I. Elective, first and second semesters and summer school. Class work, two hours. Two semester credits. Assistant Professor Wiedorn.

This is a general course designed to give the student a broad knowledge of the planning of land areas for efficient use and beauty. A study is made of the various types of landscape and garden forms, of the elements which compose each, and the principles which underlie their artificial creation. A brief introduction to the plant materials for landscape gardening, including trees, shrubs, vines, and herbaceous flowers, which are hardy in Kansas, is given. The College campus affords an excellent laboratory for the study of landscape plant materials. A series of problems is given, advancing from the simple arrangement of home grounds to the layout of the country estate or park. This course is illustrated by the use of the stereopticon.

128. GREENHOUSE CONSTRUCTION AND MANAGEMENT. Elective, first semester. Class work, three hours. Three semester credits. Mr. Balch.

This course consists of work covering the more important points of greenhouse construction and the proper methods of conducting the greenhouse business. Not only is this subject treated from the commercial standpoint, but the management of private conservatories is also carefully studied.

131. HOME AND SCHOOL GARDENING. Elective, second semester and summer school. Class work, two hours; laboratory, three hours. Three semester credits. Mr. Balch.

The object of this course is to impart a knowledge of the principles which underlie success in gardening and the adaptation of small areas to the production of vegetables and flowers. The subjects of soil preparation, seed selection, fertilizers, hotbeds, plant manipulation, and the planning of the garden are given special consideration. Opportunity is given for teachers to become familiar with general garden methods and the use and manipulation of garden tools, including seeders, weeders, and wheel hoes. Allotments of ground areas required for different crops, the length of time required to mature various vegetable and flower crops, the adaptation of these to country and city schools, and suggestions for marketing, are among the subjects considered. Laboratory charge, \$2.50.

FOR GRADUATES AND UNDERGRADUATES

201. PRACTICAL POMOLOGY. Elective, first semester. Class work, two^o hours; laboratory, three hours. Three semester credits. Prerequisite: Hort. 105. Professor Barnett and Assistant Professor Pickett.

The class work in this course is given by means of lectures and library assignments. It treats of certain practical phases of orcharding which are not given due weight in even the most recent textbooks. These are: Fruit geography, harvesting, grading and packing, storage houses and their management, marketing, and the production of manufactured fruit products.

Laboratory.—The laboratory work consists of field work in the harvesting, grading, and packing of fruits. Several types of sizing machines are used for demonstrations. Intensive work is given in packing of the various kinds of fruits in boxes and barrels. A thorough study is made of storage practice. Laboratory charge, \$1.

202. SUBTROPICAL POMOLOGY. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: Hort. 105. Professor Barnett.

This course is designed to acquaint students of pomology with the geog-

raphy and methods of production of the principal subtropical fruits which are grown in the United States. The first half of the semester is devoted to the citrus group, and Coit's *Citrus Fruits* is used as a text. Other important fruits, as the fig, the olive, the date, the avocado, the loquat, etc., are studied by means of lectures and assigned readings during the second half of the semester.

205. ADVANCED POMOLOGY. Elective, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Hort. 105. Professor Barnett.

The class work in advanced pomology takes up each of the important deciduous tree fruits and considers those points in which its characteristics and production set it apart from the other species. Included are such studies as the taxonomy, morphology, history, statistics of production, climatic range and limits, varietal adaptations, quality and its determining factors, and irrigation of the kinds of fruits under consideration. Lectures and recent bulletins supply the material.

Laboratory.—Advanced apple judging, description and identification of the trees of named varieties, and preparation of production graphs studies are typical of the laboratory work in this course. Laboratory charge, \$1.

208. SPRAYING. Elective, first semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Chem. 102. Assistant Professor Pickett.

The class work consists of lectures on spraying machinery, accessories, and the principal materials used as insecticides and fungicides.

Laboratory.—The laboratory work offers practice in the preparation and testing of spray materials. Special study is given to the construction of the various types of spray machinery. Nozzles and spray guns are carefully tested. Laboratory charge, \$1.

209. ORCHARD PROBLEMS. Credit determined by instructor. Prerequisite: Hort. 105. Open to seniors and graduate students only. Professor Dickens.

An opportunity is given students in this course to do investigative work on problems relating to commercial orcharding. Orchard surveys, production costs, root-stock adaptations, pruning tests, and studies of fruits in common storage are specific examples. The course is elastic and may extend over the full year. Some extra expense incident to visiting other sections of the state or for the purchase of materials may be required of the student.

210. MARKET GARDENING. Elective, second semester. Class work, two hours laboratory, three hours. Three semester credits. Prerequisites: Agron. 133 and Hort. 131. Mr. Balch.

This course is made as practical as possible. In the classroom the lecture work is reinforced with problems concerning the business end of market gardening. The students are required to prepare seed orders and estimate the cost per acre of growing various garden crops. Particular stress is laid upon the harvesting, storing, and marketing of vegetables.

Laboratory.—The laboratory work is given in the College gardens. Each student is assigned a plot of ground to plant and care for during the semester. Careful records are kept of cultural operations and the yields. Disease and insect control are studied in a practical way. Laboratory charge, \$2.50.

218. MARKET GARDENING PROBLEMS. Credit determined by instructor. Prerequisite: Hort. 210. Mr. Balch.

This course includes a study of the important methods of production of standard vegetables of both garden and greenhouse. Special attention is given to the problems of marketing, including organization and formation of first-hand markets in cities by express and parcel-post shipments and the possibilities of improving storage and shipping facilities in order to prolong the period of salable condition.

221. FORCING FLOWERS AND VEGETABLES. Credit determined by instructor. Prerequisite: Hort. 128. Mr. Balch.

The propagation and cultural method, soil studies, ventilation, heating, watering, and the control of greenhouse pests are among the problems studied.

222. HISTORY AND LITERATURE OF LANDSCAPE GARDENING. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: Hort. 126. Assistant Professor Wiedorn.

This course consists of a study of the history and literature of landscape gardening with special reference to the early influences as they govern modern design.

223. CIVIC ART. Elective, first and second semesters. Class work, three hours. Three semester credits. Prerequisite: Hort. 222. Assistant Professor Wiedorn.

This is a general course. The subjects considered are city layout, civic centers, parks and park systems, playgrounds, streets and boulevards, city nuisances, civic improvement societies, etc. Some of the lectures are illustrated by slides and special emphasis is placed upon the problems of the smaller cities.

225. PLANT MATERIALS IN LANDSCAPE GARDENING. Elective, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Bot. 105. Assistant Professor Wiedorn.

A thorough study is made of the hardiness, form, color, habits, and adaptations of trees, both deciduous and evergreen, shrubs, hardy perennials, biennials, and annuals, with view to giving the student a working knowledge of the materials essential to formulate a working landscape plan. Laboratory charge, \$1.

233. TREE SURGERY. Elective, second semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Bot. 208. Assistant Professor Wiedorn.

This course consists of a study and practice of the most approved methods of caring for ornamental trees and the technical details of planting, pruning and spraying, bolting, chaining, and cavity work. Shade tree legislation and the duties of shade-tree commissions and tree wardens are discussed. Laboratory charge, \$1.

235. HORTICULTURE SEMINAR. Elective, first and second semesters. Class work, one hour. One semester credit. Prerequisites: Hort. 105 and 108. Professor Dickens and Professor Barnett.

The work in this course includes a study and critical discussion of recent horticultural publications and of experimental research projects now under study in this and other agricultural experiment stations.

238. LANDSCAPE GARDENING II. Elective, second semester. Laboratory, nine hours. Three semester credits. Prerequisite: Hort. 126. Assistant Professor Wiedorn.

A series of advanced problems, continuing course 125, from topographic surveys is offered by large areas, as parks, playgrounds, and country estates. Section profiles and perspectives will be made. Materials of construction will be discussed. Special emphasis is laid upon engineering work. Laboratory charge, \$1.

242. THE THEORY AND ÆSTHETICS OF LANDSCAPE GARDENING. Elective, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Hort. 222. Assistant Professor Wiedorn.

A careful study is made of the underlying principles of landscape art and design. This course is primarily intended for students who wish to specialize in landscape work, but will be of interest to all those who intend to teach. Laboratory charge, \$1.

245. LANDSCAPE GARDENING II (*or* PLANTING DESIGN). Elective, second semester and summer school. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisites: Hort: 225 and 238. Assistant Professor Wiedorn.

This course consists of a study of the hardiness, use, adaptation, arrangement, and æsthetic composition of trees, shrubs, vines, and flowers with refer-

ence to problems of landscape design; also the preparation of nursery lists and estimates of cost. Laboratory charge, \$1.

FOR GRADUATES

316. HORTICULTURAL RESEARCH. Elective, both semesters and summer school. Credit determined by the instructor. Prerequisites: Such courses as the problem undertaken may require. Professor Dickens, Professor Barnett, and Assistant Professor Wiedorn.

Graduate students who enroll in this course may select for original investigation any feasible problem which relates to their major line of graduate study. The field covered includes pomology, olericulture, forestry, and landscape gardening. Data collected in this course may form the basis for a master's thesis.

Milling Industry

Professor SWANSON
Associate Professor WORKING
Miller OAKES

The Department of Milling Industry was established primarily to undertake investigations in the handling, marketing and milling of wheat. Every student of agriculture should have some knowledge of this subject, and also of the handling of grain products other than those obtained from wheat. A full and complete knowledge of the needs of grain growing as an industry must necessarily include the utilization of grain in the manufacture of food, together with the natural by-products resulting therefrom.

The department has a well-equipped mill, consisting of six double-stand 7" x 14" rolls, with necessary cleaning machinery and dust collectors, sifters, and purifiers. The results secured here are comparable with those from a regular commercial mill. A baking laboratory equipped with proofing closet, dough mixer, and electric ovens is open for student use, as is also a laboratory for chemical tests on wheat, flour, and feed.

COURSES IN MILLING INDUSTRY

FOR UNDERGRADUATES

101. PRINCIPLES OF MILLING. Sophomore year and elective, both semesters. Laboratory, three hours. One semester credit. Miller Oakes.

This course includes a study of the theory and practice of milling with demonstrations on a small experimental mill. Laboratory charge, \$2.

103. GRAIN PRODUCTS. Junior year and elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Mil. Ind. 101 and Chem. 120. Professor Swanson.

A brief study of the methods of manufacturing food products from cereals, with the resulting by-products, and a comparison of composition and feeding value of these by-products are included in this course.

109. MILLING PRACTICE I. Junior year and elective, both semesters. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: Mill. Ind. 101. Miller Oakes.

This course consists of practice in the art of milling, with demonstrations on a model mill. Laboratory charge, \$2.

110. MILLING PRACTICE II. Senior year and elective, both semesters. Laboratory, six hours. Two semester credits. Prerequisite: Mil. Ind. 109. Miller Oakes.

This course is a continuation of Milling Practice I. Laboratory charge, \$2.

115. THESIS. Senior year, continuing through the year. First semester: laboratory, three hours; one semester credit. Second semester: laboratory,

six hours; two semester credits. Professor Swanson, Associate Professor Working and Mr. Oakes.

The flour mill and laboratories furnish an excellent opportunity for experimental work on problems connected with flour milling or the testing of wheat and flour. The subject for investigation should be selected in consultation with the head of the department at the beginning of the senior year.

FOR GRADUATES AND UNDERGRADUATES

203. WHEAT AND FLOUR TESTING. Senior year and elective, first semester. Class work, one hour; laboratory, nine hours. Four semester credits. Prerequisite: Mil. Ind. 103, Chem. 120 and 260. Professor Swanson and Associate Professor Working.

This course includes special quantitative tests applied to cereals and their by-products; methods of analysis and interpretation of results. Laboratory deposit, \$7.50.

204. EXPERIMENTAL BAKING A. Senior year and elective, second semester. Laboratory, six hours. Two semester credits. Prerequisite: Mill. Ind. 203. Associate Professor Working.

This course includes practice in baking tests; comparison of methods, formulas, and flour; and interpretation of results. Laboratory charge, \$4.

210. ADVANCED WHEAT AND FLOUR TESTING. First or second semester. One semester credit for each three hours laboratory work. Prerequisite: Mil. Ind. 203 and such other courses as are necessary for the work the student wishes to pursue. Professor Swanson and Associate Professor Working.

In this course the student has opportunity to study physico-chemical and other methods used in testing wheat and flour.

FOR GRADUATES

301. MILLING INDUSTRY RESEARCH. Elective, both semesters and summer school. Credit as arranged. Prerequisites: Mil. Ind. 203 and 204 and other courses as required by the problem selected. Professor Swanson and Associate Professor Working.

In this course a definite line of investigation is followed which may, if sufficient as to quality and quantity, be used as a basis for a thesis presented in partial fulfillment of the requirements for the degree of Master of Science.

Poultry Husbandry

Professor PAYNE
Associate Professor WARREN
Instructor STEUP

Graduate Assistant TAYLOR
Superintendent MUGGLESTONE

The poultry plant, occupying twelve acres and situated just north of the northeast corner of the College campus, is devoted to the breeding and rearing of the stock used for class and experimental work. It is equipped with various types of houses, runs, incubators and brooders, and with flocks of the leading breeds of fowls.

There is in the government and state experiment stations and in schools and colleges an increasing demand for men with experience and systematic training in handling poultry. There is likewise a growing demand for men to enter poultry-packing houses and for men capable of managing poultry-farming enterprises of considerable proportions.

COURSES IN POULTRY HUSBANDRY

FOR UNDERGRADUATES

101. FARM POULTRY PRODUCTION. Sophomore and junior years, both semesters and summer school. Class work, one hour; laboratory, three hours. Two semester credits. Professor Payne and Mr. Taylor.

This course takes up the problems of poultry management on the general farm. Laboratory charge, \$2.

104. PRACTICE IN POULTRY FEEDING. Elective, second semester. Three times a day, seven days a week, for a period of three weeks, at hours outside of the regular schedule. One semester credit. Prerequisite: Poult. Husb. 101. Mr. Taylor.

This course consists of the actual care of a flock of fowls by the student under the supervision of an instructor. Careful records are kept of the feeds consumed and the eggs produced, and a survey is made of the recent literature on poultry feeding.

110. JUDGING. Elective, first semester. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: Poult. Husb. 101. Professor Payne.

In this course a historical study is made of the various breeds commonly found on the Kansas farm. Particular attention is paid to tracing the evolution of the present types. The laboratory is given over largely to judging the different breeds and varieties, both by score card and by comparison.

112A. MARKET POULTRY AND EGGS. Elective, first semester. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: Poult. Husb. 101. Professor Payne and Mr. Taylor.

In this course the lectures cover the methods of handling market poultry, alive and dressed. For three hours of laboratory work, practice is given in candling and grading eggs, caponizing, killing, cooling, grading and packing poultry for market. The student will also crate-feed three lots of chickens for a period of two weeks. Text: Benjamin's *Marketing Poultry Products*.

113. ARTIFICIAL INCUBATION AND BROODING. Elective, second semester. Three times a day, seven days a week for a period of not less than eight weeks at hours outside the regular schedule. Two to four semester credits. Prerequisite: Poult. Husb. 101. Professor Payne and Mr. Taylor.

This course consists of a survey of the literature upon incubation and brooding, the care of an incubator by the student throughout the incubation period, bringing off the hatch, and caring for the chicks in a brooder for four weeks. Laboratory charge, \$2.

FOR GRADUATES AND UNDERGRADUATES

202. POULTRY BREEDING. Elective, second semester. Lectures, two hours. Two semester credits. Prerequisite: An. Husb. 221. Associate Professor Warren.

The experimental work on inheritance in poultry is reviewed by means of lectures and assigned readings.

POULTRY FARM ORGANIZATION. See Advanced Farm Organization (Ag. Ec. 206).

POULTRY BACTERIOLOGY. See Poultry Bacteriology (Bact. 216).

POULTRY ANATOMY. See Special Anatomy (Anat. 201).

206. POULTRY PROBLEMS. Elective, both semesters and summer school. Credit as arranged. Prerequisites: Poult. Husb. 101, 104, and such other courses as the problem undertaken may require. Professor Payne.

In this course the student pursues a definite investigation concerning some phase of poultry work. Arrangements must be made to continue this work through more than one semester when the problem attacked cannot be solved within the limits of a single semester.

208. GENETICS OF DROSOPHILA. Elective, second semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Genetics (An. Husb. 221.) Associate Professor Warren.

This course is designed primarily for graduate students who are doing major or minor work in genetics. Exceptional undergraduates may also be admitted.

Lectures and assigned readings review the literature upon the genetics of *Drosophila*.

Laboratory.—The laboratory work consists of breeding problems illustrating the more fundamental genetic phenomena observed in *Drosophila*. Lectures may be taken without the laboratory work.

210. GENETICS SEMINAR. Elective, first and second semesters. One semester credit. Prerequisites: Consult instructors. Professors Nabours, Ibsen, and Parker, and Associate Professor Warren.

This course continues through the first and second semesters and includes the study and criticism of genetic experiments in plants and animals, the biological and mathematical methods employed, and validity of conclusions drawn.

FOR GRADUATES

301. POULTRY RESEARCH. Elective, both semesters and summer school. Credit as arranged. Prerequisites: Poultr. Husb. 101, 104, and such other courses as the problem undertaken may require. Professor Payne and Associate Professor Warren.

In this course a definite line of investigation is followed which may form the basis of a thesis presented in partial fulfillment of the requirements for the degree of Master of Science.

Agriculture in the Summer School

Teachers in the high schools and grade schools of Kansas are beginning to appreciate the value of the work offered in the Summer School of the Kansas State Agricultural College. Besides first-class professional courses and other regular standard courses of college grade, courses in agriculture and agricultural engineering furnish unusual opportunities to teachers preparing for large usefulness in Kansas communities. Some of the agricultural courses that will interest teachers are: soils, farm crops, grain grading and judging, seed identification and weed control, genetics, judging market live stock, principles of feeding, elements of dairying, dairy judging, farm poultry production, elements of horticulture, home market gardening, and landscape gardening. Advanced courses in agriculture will be added to meet the demand, while the preparation of Smith-Hughes teachers and others for the proper teaching of farm shop work is amply provided for in the Departments of Agricultural Engineering and Shop Practice. Some of the fundamental courses offered in these departments are: farm buildings, gas engines and tractors, farm equipment, farm machinery, farm carpentry, farm blacksmithing, and farm shop methods.

Brief information regarding many of these courses in the Summer School may be found in the department descriptions in this catalogue.

Special Courses in Agriculture

The Farmers' Short Course, the Commercial Creamery Short Course, the Cream Station Operators' Short Course, the Short Course in Wheat and Flour Testing, the Short Course for Dairy Herdsmen, and the Beef Cattle Herdsman's Short Course are grouped with other special courses in another part of the catalogue, and are there described. They may be found by reference to the general index in the back of this book.

The Division of Veterinary Medicine

RALPH RALPH DYKSTRA, *Dean*

The College has one of the best-equipped schools of veterinary medicine in the West. It is rated in class "A" by the United States Department of Agriculture, which rating places it among the best in the United States and Canada. In addition to giving the student the best possible technical training in veterinary medicine, the course is designed to give the broad culture necessary for men who are to take their places in public affairs. Professional men, such as veterinarians, are placed in a more or less public relation to the communities they serve. They must have a broad groundwork in cultural and ethical training, which will win them the confidence and respect of their communities. Success is measured in something more than dollars and cents, and the man whose view of life is no broader than his profession adds but little to the world and its happiness. The training given by the College in veterinary science seeks to emphasize the value of the man as a man, as much as his value as a specialist.

The Division of Veterinary Medicine gives most of the technical work in the curriculum in veterinary medicine, a general description of which is given below. The division is housed in the Veterinary buildings which were erected at a cost of over \$175,000, and are thoroughly equipped throughout. Veterinary Hall contains modern classrooms, and its laboratories possess the necessary appliances for illustrating the several subjects required. The mode of instruction is more specifically detailed in succeeding sections.

The policy adhered to in the instruction in all the departments is that the science of veterinary medicine is the foundation, and the art merely supplementary. A thorough drill is given in the foundation studies, and later in the curriculum practical application of these is made in actual field work. This result is a thoroughly scientific veterinary education.

In the arrangement of the schedule of the veterinary curriculum it is implied that the courses should be followed in regular sequence, as each year's work depends upon the work done the previous year. Certain courses, however, may be selected as electives if a student has the necessary prerequisites. These courses are mentioned in the list of electives.

THE CURRICULUM IN VETERINARY MEDICINE

Veterinary medicine has made remarkable advances within recent years, and is taking its place alongside human medicine as a science. In truth, medical science and veterinary science are but specialized branches of the same science, and must be developed together. The modern veterinarian takes his place in the community as a professional man of education and culture. With the general improvement of the live stock on the farms, and with the advance of live stock in value, there is constant increase in the demand for skilled physicians to care for them.

The veterinarian while primarily trained to conserve the health of farm animals, has yet larger service to render in preventing disease common to both man and beast from being communicated from domestic animals to man. Moreover, he must see that the animals slaughtered for meat are healthy and that the products are handled under such conditions as to render them suitable for human food. The public is now demanding that milk and other food products be free from contamination and that they be incapable of transmitting dangerous diseases, like tuberculosis, typhoid fever, scarlet fever, and diphtheria. There is ample work for all of the thoroughly competent veterinarians that the colleges of the country will train.

The curriculum in veterinary medicine at the Agricultural 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. While the instruction in this curriculum is largely technical, enough subjects of a general character are included to give a sound education and a broad outlook. Better to fit the veterinarian to deal wisely with the live-stock problems which he has to meet, he is required to take the work in live-stock feeding, breeding and judging, and in milk inspection, zoölogy, and embryology, in addition to his purely professional work.

The diploma from this school is recognized by the United States Department of Agriculture, by the United States Civil Service Commission, by the American Veterinary Medical Association, and by the various examining boards of the several states and territories of America where it has been presented.

THE CURRICULUM IN ANIMAL HUSBANDRY AND VETERINARY MEDICINE

The combined curriculum in animal husbandry and veterinary medicine has been outlined so that students may receive the degree of Bachelor of Science at the end of four years, and the degree of Doctor of Veterinary Medicine at the end of two years more, thus securing both degrees in six years.

Curriculum in Veterinary Medicine

The Arabic numeral immediately following the name of a subject indicates the number of semester credits, while the numbers within the parentheses indicate the number of clock hours a week of recitation and of laboratory, respectively. One credit a semester is allowed for the courses in clinics.

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
Anatomy I		Anatomy II	
Anat. and Physiol. 102.....	4(2-6)	Anat. and Physiol. 107....	9(4-15)
Histology I		Histology II	
Path. 101	3(1-6)	Path. 106	3(1-6)
Chemistry V-I		Organic Chemistry (Vet.)	
Chem. 105	5(3-6)	Chem. 106	5(3-6)
Zoölogy and Embryology (Vet.)			
Zoöl. 109	5(3-6)		
Military Science (Vet.) I		Military Science (Vet.) II	
Mil. Tr. 121	1½(0-4)	Mil. Tr. 122	1½(0-4)
Physical Education M-I		Physical Education M-II	
Phys. Ed. 103	R(0-2)	Phys. Ed. 104	R(0-2)

SOPHOMORE

FIRST SEMESTER		SECOND SEMESTER	
Anatomy III		Anatomy IV	
Anat. and Physiol. 111....	5(1-12)	Anat. and Physiol. 116.....	3(1-6)
Comparative Physiology I		Comparative Physiology II	
Anat. and Physiol. 121.....	5(4-3)	Anat. and Physiol. 126	3(2-3)
Medical Botany		Pathogenic Bacteriology I	
Bot. 126	2(1-3)	Bact. 111	4(2-6)
College Rhetoric I		Pathology I	
Engl. 101	3(3-0)	Path. 202	3(2-3)
Judging Market Live Stock		Principles of Feeding	
An. Husb. 132	3(1-6)	An. Husb. 152	3(3-0)
		Genetics	
		An. Husb. 221	3(3-0)
Military Science (Vet.) III		Military Science (Vet.) IV	
Mil. Tr. 123	1½(0-4)	Mil. Tr. 124	1½(0-4)
Physical Education M-III		Physical Education M-IV	
Phys. Ed. 105	R(0-2)	Phys. Ed. 106	R(0-2)

JUNIOR

FIRST SEMESTER		SECOND SEMESTER	
Surgery I		Surgery II	
Surg. and Med. 101	3(3-0)	Surg. and Med. 106	3(3-0)
Diagnosis		Diseases of Large Animals I	
Surg. and Med. 170	2(2-0)	Surg. and Med. 174	4(4-0)
Farm Poultry Production		Horseshoeing	
Poult. Husb. 101	2(1-2, 1)	Surg. and Med. 126	1(1-0)
Materia Medica		Therapeutics	
Surg. and Med. 157	4(4-0)	Surg. and Med. 162	4(3-3)
Pharmacy		Pathology III	
Surg. and Med. 166	1(0-3)	Path. 212	5(4-3)
Pathology II		Clinics II	
Path. 207	3(2-3)	Surg. and Med. 140	1(0-9)
Pathogenic Bacteriology II			
Bact. 116	4(2-6)		
Clinics I			
Surg. and Med. 137	1(0-9)		

SENIOR

FIRST SEMESTER		SECOND SEMESTER	
Surgery III		Surgery IV	
Surg. and Med. 111	3(3-0)	Surg. and Med. 116	3(3-0)
Diseases of Large Animals II		Infectious Diseases of Large Animals	
Surg. and Med. 177	5(5-0)	Surg. and Med. 181	5(5-0)
Poultry Diseases		Diseases of Small Animals	
Bact. 217	2(2-0)	Surg. and Med. 186	2(2-0)
Pathology IV		Ophthalmology	
Path. 214	3(2-3)	Surg. and Med. 183	1(1-0)
Meat Inspection		Operative Surgery	
Path. 216	2(2-0)	Surg. and Med. 121	1(0-3)
Parasitology		Jurisprudence	
Zool. 208	3(2-3)	Anat. and Physiol. 161	1(1-0)
		Obstetrics	
		Surg. and Med. 131	3(3-0)
		Dairy Inspection II	
		Dairy Husb. 118	1(0-3)
Clinics III		Clinics IV	
Surg. and Med. 143	1(0-12)	Surg. and Med. 146	1(0-12)

ELECTIVES

FIRST SEMESTER		SECOND SEMESTER	
Applied Anatomy		Vaccine Manufacture II	
Anat. and Physiol. 206	1(0-3)	Path. 230	2(0-6)
Vaccine Manufacture I			
Path. 227	2(0-6)		

FIRST OR SECOND SEMESTER

Pathological Technic and Diagnosis I	
Path. 220	2(0-6)
Pathological Technic and Diagnosis II	
Path. 221	4(0-12)
Research in Pathology	
Path. 302	3 to 5(-)
Special Anatomy	
Anat. and Physiol. 201	4(1-9)
Problems in Physiology	
Anat. and Physiol. 215	3 to 5(-)

Curriculum in Animal Husbandry and Veterinary Medicine¹

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

Freshman year of the Curriculum in Agriculture

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
General Zoology	Pathogenic Bacteriology I
Zoöl. 105 5(3-6)	Bact. 111 4(2-6)
Anatomy I	Anatomy II
Anat. and Physiol. 102..... 4(2-6)	Anat. and Physiol. 107..... 9(4-15)
Soils	Farm Crops
Agron. 133 5(4-3)	Agron. 109 5(3-6)
Organic Chemistry (Agr.)	Infantry II
Chem. 120 3(2-3)	Mil. Tr. 104 1½(0-4)
Infantry I	Physical Education M-IV
Mil. Tr. 103 1½(0-4)	Phys. Ed. 106 R(0-2)
Physical Education M-III\	
Phys. Ed. 105 R(0-2)	

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
Embryology	Principles of Feeding
Zoöl. 219 3(2-3)	An. Husb. 152 3(3-0)
Anatomy III	Anatomy IV
Anat. and Physiol. 111.... 5(1-12)	Anat. and Physiol. 116 3(1-6)
Histology I	Histology II
Path. 101 3(1-6)	Path. 106 3(1-6)
Genetics	Agricultural Journalism
An. Husb. 221..... 3(3-0)	Ind. Jour. 164 1(1-0)
Electives ² 3	Elements of Horticulture
	Hort. 108 4(3-3)
	Electives ² 2

SENIOR

FIRST SEMESTER	SECOND SEMESTER
General Entomology	Agricultural Relationships ³
Ent. 101 3(2-3)	Gen. Agric. 201 1(1-0)
Agricultural Economics	Farm Organization
Ag. Ec. 101 3(3-0)	Ag. Ec. 106 3(2-3)
Comparative Physiology I	Comparative Physiology II
Anat. and Physiol. 121 5(4-3)	Anat. and Physiol. 126 3(2-3)
Agricultural English ³	Pathology I
Engl. 137 3(3-0)	Path. 202 3(2-3)
Electives ² 2	Electives ² 6

FIFTH YEAR

Junior year of the Curriculum in Veterinary Medicine

SIXTH YEAR

Senior year of the Curriculum in Veterinary Medicine

1. This curriculum is so arranged that students may receive the degree of Bachelor of Science (in agriculture) at the end of four years, and the degree of Doctor of Veterinary Medicine at the end of two more years.

2. All electives must be officially approved before assignment by both the head of the Department of Animal Husbandry and the dean of the Division of Agriculture.

3. The courses in Agricultural English and Agricultural Relationships are open to seniors only.

Anatomy and Physiology

Professor BURR
Associate Professor McLEOD

This branch of veterinary medicine extends over the freshman and sophomore years for veterinary students, and one semester is required in the curriculum in agriculture.

The classroom instruction consists of lectures, quizzes and recitations and special dissection of the part under discussion, also a study of dissected specimens, various models, and the Azoux model of the horse. Mounted skeletons and limbs, and loose bones are abundant in the museum. The horse is taken as a type and the other domestic animals are compared with the horse. As often as necessary parts of other animals are dissected to show the differences.

The subjects for dissection are preserved by the injection of a formalin solution followed by a starch solution colored red, which fills and hardens within the arteries. Each half of the subject is divided into three parts; namely, the head and neck, fore limb and thorax, hind limb and posterior half of body. The students work in pairs, each pair dissecting one part before passing on to another part. The work is so arranged that bones are first studied, then the muscles and joints. This is followed by the dissection of the circulatory and nervous systems. The viscera of certain regions are studied by the students at work on those respective parts, *i. e.*, the abdominal organs are studied by the students at work on the hind limb, etc.

The courses in anatomy require several lecture rooms, which contain models, skeletons, and bones of all kinds, and a thoroughly sanitary dissecting room equipped with all of the latest materials necessary to give a course in anatomy second to none on the continent.

The equipment for instruction in physiology is ample to give the student a thoroughly comprehensive course of laboratory study.

In addition to numerous atlases and charts furnished by the College, the student is required to have Sisson's *Veterinary Anatomy* as a textbook and Sisson's *Dissecting Guide* as a laboratory guide.

COURSES IN ANATOMY

FOR UNDERGRADUATES

102. ANATOMY I. Freshman year, first semester. Class work, two hours; laboratory, six hours. Four semester credits. Doctor McLeod.

This course consists of osteology, or the study of bones. The bones of the horse are studied in detail and a comparative study of the bones of other domestic animals and also of man, is made. Drawings of the bones are made by the student in order that he may obtain a better mental picture of their shape and characteristic parts. The bones of the head are studied separately and collectively. Careful attention is given to the location and extent of the sinuses of the head. Laboratory deposit, \$3.

107. ANATOMY II. Freshman year, second semester. Class work, four hours; laboratory, fifteen hours. Nine semester credits. Prerequisite: Anatomy I. Doctors Burt and McLeod.

This course consists of myology, arthrology and splanchnology, or a study of the muscles, joints and viscera. The student is required to make a careful dissection of the muscles of the body, learning their location and attachments, relations one to another as well as their relations to other important structures. After the muscles are dissected and learned the student dissects the ligaments of the joints. The student also studies the viscera of the respective part at the time of dissection of that part, *e. g.*, the student dissecting upon the fore limb and thorax will study the viscera of the thoracic cavity. Check cards and drawings indicating the different stages of dissection are kept, and the work checked at frequent intervals. Laboratory deposit, \$5.

111. ANATOMY III. Sophomore year, first semester. Class work, one hour; dissection, twelve hours. Five semester credits. Prerequisite: Anatomy II. Doctor Burt.

This course and Anatomy IV consist of the study of angiology and neurology and all parts not previously dissected. Having had osteology and myology, the student is now prepared to get an accurate mental picture of the distribution, location and relation of the blood vessels and nerves. As in Anatomy II, the subject is divided into three parts. During this semester two parts will be dissected, leaving one part for Anatomy IV. Drawings are required as in Anatomy II. Laboratory deposit, \$5.

116. ANATOMY IV. Sophomore year, second semester. Class work, one hour; dissecting, six hours. Three semester credits. Prerequisite: Anatomy III. Doctor Burt.

This course is a continuation of Anatomy III. The student will now complete the dissection of every part of the subject, including special parts, as the foot, brain, eye, etc. In addition to the completion of the dissection of the horse, a comparative study of the principal structural differences of the various domestic animals, not studied concurrently with the previous courses, will now be made. Laboratory deposit, \$5.

FOR GRADUATES AND UNDERGRADUATES

201. SPECIAL ANATOMY. Elective, first or second semester. Class work, one hour; dissection, nine hours. Four semester credits. Prerequisite: Any of the courses in Anatomy and Physiology: 102, 107, 111, 116, and 131, or their equivalent. Doctor Burt.

This course is adaptable to the requirements of the line of work in which the student is specializing. The work consists of the study of any part of the horse, as the digestive system, the genital system, etc., or may take up the study of similar parts of the ox, sheep, pig, etc. For any one so desiring, poultry anatomy may be chosen.

206. APPLIED ANATOMY. Elective, first semester. Laboratory, three hours. One semester credit. Prerequisite: Anatomy IV. Doctor Burt.

This course is a link that connects the other courses in anatomy with operative surgery. It consists of the dissection of certain areas embraced in performing the various surgical operations, and the study of all the structures in each area and their relation one to another as they would present themselves during an operation rather than the relation of any structure with the rest of the body.

COURSES IN PHYSIOLOGY

FOR UNDERGRADUATES

121. COMPARATIVE PHYSIOLOGY I. Sophomore year, first semester. Class work, four hours; laboratory, three hours. Five semester credits. Prerequisites: Anat. and Physiol. 102 and 107, and Chem. 106. Doctors Burt and McLeod.

This course treats of the physiology of domestic animals, beginning with the study of the blood, heart, blood vessels, and continuing with the ductless glands and internal secretions, respirations, digestion, and absorption. Text-book: *A Manual of Veterinary Physiology*, by Fred Smith.

Laboratory.—The laboratory work consists of a practical application of the knowledge derived in the classroom. The laboratory is equipped with all necessary material and apparatus, such as kymograph, manometers, tambours, inductoriums, signal magnets, and electric clocks, to make the work interesting and practical, as well as instructive. Many experiments are made by the students upon themselves as well as upon the domestic animals. Graphic records are made by the students of the blood pressure, rate and amplitude of the pulse, and respiration; also the changes produced by stimulating certain nerves, exercise, changes in position, the action of certain drugs, etc. The

time of coagulation of the blood of various species of animals and the conditions that influence the rapidity of coagulation are considered. The secretion of the various digestive juices, the conditions that will influence the rate of their secretion and their actions are studied in detail. Laboratory directions are furnished the student. References: *Practical Physiology*, Pembry; Halliburton's *Essentials of Chemical Physiology*; *Manual of Physiology*, Stewart; *Urine of the Horse and Man*, Fish; and other standard textbooks on physiology. Laboratory deposit, \$3.

126. COMPARATIVE PHYSIOLOGY II. Sophomore year, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: Anat. and Physiol. 107 and Chem. 106. Doctors Burt and McLeod.

The work of this semester is a continuation of Anat. 121, and treats of the urine and urinary system, nutrition, animal heat, muscular and nervous systems, locomotion, generation and development, growth and decay. Textbook: Smith's *Manual of Veterinary Physiology*.

Laboratory.—The work done exemplifies the lectures given in the classroom. Graphic records are made of the normal muscle contraction, the changes brought about by fatigue, tetanus, variations in temperature, application of drugs, etc. The conductivity of the nerves, nerve blocking, the effects of anæsthetics upon the conductivity of the nerves, reflexes, and other phenomena relating to the nervous system are studied. The composition of the normal urine and the tests applicable for the detection of abnormal constituents in pathologic urine are carefully considered. Directions and references are the same as in the laboratory course in Comparative Physiology I. Laboratory deposit, \$5.

FOR GRADUATES AND UNDERGRADUATES

215. PROBLEMS IN PHYSIOLOGY. Elective, both semesters. Three to five semester credits. Prerequisites: Anat. and Physiol. 121, 126, and 131, or their equivalent. Doctor Burt.

Individual investigational problems in the physiology of digestion, reproduction, endocrin glands, etc., are assigned.

COURSE IN ANATOMY AND PHYSIOLOGY

FOR UNDERGRADUATES

131. ANATOMY AND PHYSIOLOGY. Sophomore year, first semester. Lectures and recitations, two hours; laboratory, three hours. Three semester credits. Doctors Burt and McLeod.

This combined course is intended principally for students in agriculture, and treats chiefly of physiology of the domestic animals; however, sufficient anatomy is taught to enable the student to thoroughly comprehend the correlation between the two subjects, and the physiologic relations existing among the various organs of the body.

Special emphasis is placed on the physiology of digestion, absorption metabolism, and excretion, so that the student may have a good foundation to understand the principles of feeding, etc., but due consideration is paid to the functions of the circulatory, respiratory, and nervous systems, etc. Text: Smith's *Manual of Veterinary Physiology*. Laboratory deposit, \$1.

COURSE IN JURISPRUDENCE

FOR UNDERGRADUATES

161. JURISPRUDENCE. Senior year, second semester. Class work, one hour. One semester credit. Doctor Burt.

This course deals with the veterinarian's legal responsibilities, with national and state live-stock laws, quarantine regulations, etc. Text: Hemenway's *Veterinary Law*; also rules and regulations issued by state and federal authorities.

Pathology

Professor LIENHARDT
Associate Professor SCOTT

Assistant Professor KITSELMAN
Instructor SAWYER

The Department of Pathology presents courses in histology, pathology and meat inspection. The instruction is presented by lectures or recitations, laboratory periods, and demonstrations which are carried out by the use of the projectoscope, and by autopsies.

The laboratory is fully equipped and entirely up to date. The equipment consists of microtomes, paraffin ovens, microphotographic and projection apparatus, centrifuge, shaking machine, sterilizers, etc. Each student is furnished a drawer, microscope, prepared slides for study, and all other essentials needed for study in the laboratory courses.

The department is also in possession of quite a complete pathological museum, which contains specimens of organs and tissues that show lesions typical of the various infections, and some noninfectious diseases. These specimens are used in the study of pathology, and together with the specimens sent in from over the state and fresh material from the immediate vicinity they furnish ample material for the courses in pathology.

The department library contains text and reference books on pathology and allied subjects, also the current files of the important technical periodicals relating to pathology. These books are at the constant disposal of the student for reference.

The course in meat inspection together with the allied subjects required for a degree in veterinary medicine make the student eligible to take the civil-service examination for meat inspection. In this course visits are made to packing plants in Topeka and Kansas City.

COURSES IN HISTOLOGY

FOR UNDERGRADUATES

101. HISTOLOGY I. Freshman year, first semester. Class work, one hour; laboratory, six hours. Three semester credits. Doctors Lienhardt and Sawyer.

The first part of the semester is spent upon the care and manipulation of the microscope, in the use of which the student must become proficient. This is followed by a microscopical examination of cotton, woolen, silk and linen fibers, bubbles of air, and drops of oil, to enable the student to recognize these when they are accidentally mounted with tissue. The fundamental tissues are next studied: epithelial tissues with regard to form, structure, arrangement and location; connective tissues with regard to structure and location, including bone development and teeth and their development; muscular tissue, voluntary, involuntary, and cardiac; nerve tissue, the structures and forms of its cells, of medullated and nonmedullated nerve fibers; spinal cord; the blood vessels, heart, and lymphatic vessels. Blood corpuscles are studied with regard to size, shape, and structure, including each kind of white corpuscles. Also, the blood-forming organs, as bone-marrow, lymph glands, and spleen, are studied. The histology of the digestive tract is studied, including study of the mouth, the tongue, the taste buds, the parotid, the submaxillary and sublingual, the thyroid and thymus glands, and the oesophagus. In this semester the student studies and mounts sixty-five slides, some of which are teased, and many of which are sectioned in paraffin and celloidin. Textbook: *Histology*, by Stohr, or *Histology*, by Bailey. Laboratory deposit, \$3.

106. HISTOLOGY II. Freshman year, second semester. Class work, one hour; laboratory, six hours. Three semester credits. Doctors Lienhardt and Sawyer.

In this semester the student takes up the study of the stomachs of the dog, the horse, and the ox; the small intestines—duodenum, jejunum, and ileum; the large intestines—caecum, colon, rectum and anus; liver, the pancreas, the respiratory tract—nasal mucous membrane, larynx, trachea, bronchi and lungs; the urinary organs—kidney, ureter, bladder, urethra; the male and female

genital organs; the skin and its appendages; the suprarenal gland; the medulla; the cerebellum; the cerebrum; the eye; and the ear. During this semester the student stains, mounts, studies with microscope and makes drawings of the above-mentioned tissues. Some of the tissues studied are injected with gelatin mass to bring out the blood vessels. Textbook: *Histology*, by Stohr, or *Histology*, by Bailey. Laboratory deposit, \$3.

FOR GRADUATES AND UNDERGRADUATES

252. SPECIAL HISTOLOGY. Elective, second semester. Class work, one hour; laboratory, six hours. Three semester credits. Doctor Lienhardt.

This course is arranged to meet the requirements of those who are desirous of taking a histology course dealing with specific organs, as those concerned with digestion, respiration, etc. Tissues are fixed, dehydrated, imbedded, sectioned, stained, and mounted, and are studied after being properly prepared.

COURSES IN PATHOLOGY

FOR GRADUATES AND UNDERGRADUATES

202. PATHOLOGY I. Sophomore year, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: Path. 106 and Anat. and Physiol. 126. Doctors Lienhardt and Sawyer.

The course in general pathology extends over two semesters and treats of the history of pathology, predisposition, immunity, congenital and inherited disease, cause of disease, course and termination of disease. Text: *Comparative General Pathology*, by Kitt. Laboratory deposit, \$3.

207. PATHOLOGY II. Junior year, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: Path. 106 and 202, Anat. and Physiol. 126, and Bact. 111. Doctors Lienhardt and Sawyer.

This course is a continuation of Pathology 202 and treats of circulatory disturbances, cardiac difficulties, hyperæmia, hemorrhage, dropsy, cedema, thrombosis, embolism, and alteration of the blood; disturbances in metabolism, fever, necrosis, atrophy, cloudy swelling, fatty changes, inflammation, calcification and concrement formation; and processes of repair, tumors, and functional disturbances. Text: *Comparative General Pathology*, by Kitt. Laboratory deposit, \$3.

212. PATHOLOGY III. Junior year, second semester. Class work, four hours; laboratory, three hours. Five semester credits. Doctors Lienhardt and Sawyer.

This course is devoted to special pathology and pathological technic; collecting, fixing, hardening, embedding in celloidin and paraffin, sections of fresh, frozen, and embedded tissues; and a study of the method of preserving gross specimens. Considerable time is devoted to a consideration of stains and the method of staining. This work is followed by special pathology, which includes the macroscopic and microscopic examination of the following tissues in many of the pathological conditions to which they are subject: cardiac muscle, skeletal muscle, the liver, the kidney, the bladder, the pancreas, the lungs, the digestive tract, the serous membranes, the vascular system, the lymph nodes, the spleen, bone, skin, and genital organs. The students study and make drawings of the above-mentioned tissues. Textbooks: *Pathology*, by Delafield and Prudden; *Pathologische Anatomie*, by Kitt; and *Pathology*, vol. 11, by Adami and Nichols. Laboratory deposit, \$3.

214. PATHOLOGY IV. Senior year, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Doctors Lienhardt and Sawyer.

This course is devoted to the pathology of the infectious diseases and to laboratory diagnosis. Post-mortem examinations are made on all animals dying in the hospital, at the College barns and in the neighborhood. The students attend and take turns in holding the autopsy. Each student is expected to

keep a written record of the pathological changes, also of the microscopic findings. The above work is done under the direction of the pathologist in charge. Text: *Pathology of Infectious Diseases*, by Moore. Laboratory deposit, \$2.50.

216. MEAT INSPECTION. Senior year, first semester. Class work, two hours. Two semester credits. Doctor Kitselman.

The course in meat inspection is designed to prepare men for national, state, and local sanitary work, which is being more strongly urged and demanded every day. The kinds and classes of stock, the traffic and transportation of animals, their inspection before death, their slaughter, the normal conditions of healthy animals, the disease discernible at the time of slaughter, the disposition of the condemned from economic, hygienic and sanitary standpoints, and different preparations and methods of preservation, adulterations, sanitary laws and regulations, and other points bearing upon the question of healthful meat production, are considered. Visits are made to the local slaughtering establishments, and to the large packing plants in Topeka, Kansas City, or Wichita. Text: Edelman's *Meat Hygiene*, translated by Mohler and Eichorn.

220. PATHOLOGICAL TECHNIC AND DIAGNOSIS I. Elective, first and second semesters. Laboratory, six hours. Two semester credits. Prerequisite: Path. 212. Doctors Lienhardt and Sawyer.

This course consists of practice in post-mortem and laboratory diagnosis. The various methods of embedding and staining tissues are carried out upon the large collection of material which the laboratory contains, as well as the material which is constantly coming into the laboratory from various parts of the state. Laboratory deposit, \$3.

221. PATHOLOGICAL TECHNIC AND DIAGNOSIS II. Elective, first and second semesters. Laboratory, twelve hours. Four semester credits. Doctors Lienhardt and Sawyer.

This course is a continuation of Path. 220. Laboratory deposit, \$3.

227. VACCINE MANUFACTURE I. Elective, first semester. Laboratory, six hours. Two semester credits. Prerequisite: Bact. 116. Doctor Scott.

Vaccine Manufacture I comprises a study of the theory and practice of the manufacture of anti-hog-cholera serum and virus and the theory and practice of hog-cholera immunization. During this semester the student becomes familiar with and learns the principal use of all the apparatus pertinent to the manufacture of anti-hog-cholera serum and virus. Laboratory deposit, \$3.

230. VACCINE MANUFACTURE II. Elective, second semester. Laboratory, six hours. Two semester credits. Doctor Scott.

This course in vaccine manufacture is confined to the theory and practice of the manufacture of the various products which are used as immunologic agents in the control of blackleg, with special emphasis on the manufacture of filtrate and aggressin. This course also includes the application of tests for potency and sterility of the finished product and the isolation and identification of blackleg organisms from the suspected specimens. Laboratory deposit, \$3.

FOR GRADUATES

302. RESEARCH IN PATHOLOGY. Elective, both semesters. Three to five semester credits. Prerequisites: Path. 101, 106, 202, 207, 212, and 220, and Chem. 235, or their equivalent. Doctor Lienhardt.

This course includes individual research problems in pathology of the nervous system, eye and ear; also investigational work on disease caused by a filterable virus. The course is available as a master's thesis course. Laboratory deposit, \$3.

Surgery and Medicine

Professor DYKSTRA
Associate Professor SCOTT
Associate Professor McLEOD

Associate Professor FRICK
Instructor BULLARD

For instruction in surgery and clinics the equipment is excellent. The veterinary hospital, recently completed at a cost of more than \$100,000, is equipped with every modern appliance for surgical operations and diagnosis of animal diseases. The hospital has capacity for more than fifty horses or cattle, and in addition, it can accommodate fifty small animals, such as sheep, swine, cats, dogs, etc. In addition to the foregoing, members of the clinical staff, accompanied by students, make trips into the surrounding country to give veterinary attention to ailing patients. In this way the students come in contact every year with the diseases of animals and their treatment. The work is always under the guidance of proficient practitioners.

For the study of materia medica and pharmacy there are a general pharmacy laboratory containing all the drugs used in the practice of veterinary medicine and a practicing pharmacy where medicines are compounded for the everyday practice connected with the College.

COURSES IN SURGERY

FOR UNDERGRADUATES

101. SURGERY I. Junior year, first semester. Class work, three hours. Three semester credits. Doctor Dykstra.

This course includes methods of restraint; asepsis and antisepsis; anæsthesia, both local and general; inoculations, bandaging, massage, controlling hemorrhage; division of tissues and the uniting of wounds; injections of medicines into the subcutaneous tissues, blood streams, trachea, spinal canal. Animal dentistry is taken up very thoroughly, in so far as it constitutes an important part of the veterinarian's work. The students have free access to a large number of museum specimens of abnormal teeth. Also, many dental patients are presented at the College hospital for treatment.

106. SURGERY II. Junior year, second semester. Class work, three hours. Three semester credits. Doctor Dykstra.

This course considers in regular order the surgical diseases of the head, neck, thorax, abdomen, stomach and bowels, urinary organs, and organs of generation.

111. SURGERY III. Senior year, first semester. Class work, three hours. Three semester credits. Doctor Dykstra.

During this course particular attention is paid to causes, symptoms, and treatment of lameness. It considers in detail fractures and their reduction, diseases of joints, tendons and sheaths, muscles and fascia, and surgical diseases of the foot.

116. SURGERY IV. Senior year, second semester. Class work, three hours. Three semester credits. Doctor Dykstra.

Surgery as taught during this course includes special operations, such as neurectomies, autoplasties, desmotomies, actual cauterization, tenotomies, myotomies, enterotomy and enteroanastomosis, and surgery of the eye. Reference books: Dollar's *Regional Veterinary Surgery*; Merillat's *Veterinary Surgery*, Vols. I, II, and III; Williams' *Surgical Operations*; Fleming's *Operative Veterinary Surgery*, Parts I and II; White's *Restraint of Domestic Animals*.

121. OPERATIVE SURGERY. Senior year, second semester. Laboratory, three hours. One semester credit. Doctors Dykstra and Frick.

Old horses are purchased by the department, placed on the operating table, anæsthetized, and over one hundred operations are performed upon them. During this work the student is required to observe a careful technic, such as

antiseptics, and, in fact, performs the operation as thoroughly and completely as possible. It is a very practical course and fits the student for surgical work in actual practice. Laboratory charge, \$5.

126. HORSESHOEING. Junior year and elective, second semester. Class work, one hour. One semester credit. Doctor McLeod.

The course is taught by means of lectures, recitations and demonstrations, taking up the various divisions in the following order: normal conformation in both limb and foot, the anatomy of these parts, physiological movements and correct normal shoeing. This is followed by a study of the proper shoeing for the correction of wry limbs and feet; diseases of the feet, and the relation of horseshoeing thereto. The course ends with the study of the shoeing of mules and oxen. Throughout the entire course the purpose is to instill in the mind of the student normal shoeing, in order that he may be able to correct abnormalities in the foot and limb in so far as this can be accomplished by shoeing. Reference books: Lungwitz's *Textbook of Horseshoeing*; Dollar's *Handbook of Horseshoeing*.

COURSE IN OBSTETRICS

FOR UNDERGRADUATES

131. OBSTETRICS. Senior year and elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Anat. and Physiol. 116 and Zoöl. 109, or Anat. and Physiol. 131 and Zoöl. 219. Doctor McLeod.

This course discusses in detail the physiology of pregnancy, anatomy of the generative organs, care and hygiene of pregnant animals, sterility, diseases incidental to pregnancy, diseases of new-born animals, care of newborn animals, abnormal presentations during parturition, surgery of obstetrics, etc. This work is supplemented by demonstrations on an obstetrical phantom and fetus; in addition, the College farm and surrounding agricultural territory furnish an abundance of actual material. References: Williams' *Veterinary Obstetrics*, Williams' *Surgical and Obstetrical Operations*, De Bruin's *Bovine Obstetrics*, and Fleming's *Veterinary Obstetrics*.

COURSES IN CLINICS

FOR UNDERGRADUATES

137. CLINICS I. Junior year, first semester. Laboratory, nine hours. One semester credit. Doctors Dykstra, Frick, Scott, and Bullard.

A free clinic which affords an abundance of material is conducted. All species of domesticated animals are presented for treatment. These patients are assigned in regular order to the senior students for diagnosis and treatment; clinic sheets are provided, on which are recorded the history, symptoms, pulse, temperature, respiration, diagnosis, prognosis, treatment, and the unsoundness, defects or blemishes of the animal. The clinician in charge discusses all the abnormal conditions present in the patient, thus assisting the student to develop his powers of observation. The junior students assist the senior students and, in addition, are required to master, by practical experience, the restraint of animals, bandaging, etc. The compounding of prescriptions, the preparation of antiseptics and other medicinal agents, is taken in charge by the junior students. Key deposit, 50 cents.

140. CLINICS II. Junior year, second semester. Laboratory, nine hours. One semester credit. Doctors Dykstra, Frick, Scott, and Bullard.

This work is a continuation of Clinics I. Key deposit, 50 cents.

143. CLINICS III. Senior year, first semester. Laboratory, twelve hours. One semester credit. Doctors Dykstra, Frick, Scott, and Bullard.

Patients left at the hospital for treatment are assigned to seniors, who are required to administer all medicines, change dressings of surgical wounds, etc. All work is performed under the direct supervision of the clinician in charge. Numerous country calls are received by the Division of Veterinary Medicine.

These are taken care of by one of the clinicians, who is always accompanied by one or more senior students. This phase of the work is particularly valuable, as it gives the student practical experience under actual conditions. Key deposit, 50c.

146. CLINICS IV. Senior year, second semester. Laboratory, twelve hours. One semester credit. Doctors Dykstra, Frick, Scott, and Bullard. This work is a continuation of Clinics III. Key deposit, 50c.

COURSES IN MATERIA MEDICA

FOR UNDERGRADUATES

157. MATERIA MEDICA. Junior year, first semester. Class work, four hours. Four semester credits. Doctor Bullard.

This course includes definitions of terms, modes of action of drugs in general, their method and rapidity of absorption and elimination, physiological and chemical incompatibilities, etc. The drugs and medicinal agents are grouped according to their action. The lecturer discusses the origin, physical properties, active constituents, and official preparations of the medicinal agents.

162. THERAPEUTICS. Junior year, second semester. Class work, three hours; laboratory, three hours. Four semester credits. Prerequisite: Materia Medica. Doctor Bullard.

The student is thoroughly drilled in the physiological and therapeutic action of the various drugs both on the healthy and on the diseased animal. A course in toxicology is included in this work, and takes up the symptoms and the treatment of poisons frequently encountered in veterinary practice. The science of posology, or dosage, is considered of the utmost importance, and a liberal amount of time is devoted to it, the proper dose of the crude drug and its preparation for horses, cows, dogs, cats and swine being considered.

166. PHARMACY. Junior year, first semester. Class and laboratory work, three hours. One semester credit. Doctor Bullard.

In the lectures the meanings of the various pharmaceutical terms are discussed. Various systems of weights and measures, and the conversion of one system into another, are taught. Official preparation of each is studied in regular order. Particular stress is placed upon prescription writing, the student being taught to avoid incompatibilities, to give nouns the proper case ending, and to understand the meanings of certain Latin phrases. In the laboratory work the principles of filtration, percolation, hot-water and sand baths, etc., are taught. The student is required to prepare at least one of each of the following preparations: An infusion, a decoction, a tincture, a wine, a syrup, a fluid extract, a liniment, an emulsion, a liquor, an aqua, a spirit, an ointment, an electuary, and a cataplasm. In addition, a thorough course in the compounding of prescriptions is afforded at the clinic, where all medicines are prescribed and compounded by the students, under guidance of the instructor in charge. Reference works: *U. S. Pharmacopœia*; Maltbie's *Practical Pharmacy*; Remington's *Practice of Pharmacy*; Fish's *Exercises in Materia Medica and Pharmacy*. Laboratory deposit, \$3.

COURSES IN MEDICINE

FOR UNDERGRADUATES

170. DIAGNOSIS. Junior year, first semester. Class work, two hours. Two semester credits. Doctor Frick.

This is a course preparatory to the study of medicine proper. It takes up in detail the different diagnostic methods employed for the detection of diseases, including auscultation, percussion, palpation, and inspection, and also treats of the normal and abnormal abdominal and thoracic sounds, including diagnostic inoculations as an aid to the detection of disease.

174. DISEASES OF LARGE ANIMALS I. Junior year, second semester. Class work, four hours. Four semester credits. Doctor Frick.

The noninfectious diseases of the respiratory organs of the larger animals are studied in this course, taking up in regular order the nasal and accessory cavities, the larynx, bronchi, lungs, and pleura.

177. DISEASES OF LARGE ANIMALS II. Senior year, first semester. Class work, five hours. Five semester credits. Doctor Frick.

This course is devoted to the noninfectious diseases of the mouth, salivary glands, œsophagus, stomach and intestines, liver, pancreas and peritoneum of the larger animals. This is followed by diseases of the urinary organs, of the circulatory organs, diseases of metabolism, of the nervous system, of the organs of locomotion and of the skin.

181. INFECTIOUS DISEASES OF LARGE ANIMALS. Senior year, second semester. Class work, five hours. Five semester credits. Doctor Frick.

In contradistinction to the preceding courses in medicine, the distinctly infectious and contagious diseases of the larger domesticated animals are discussed. The following order is usually adopted: Acute general infectious diseases, acute exanthematous infectious disease, acute infectious diseases with localization in certain organs, infectious diseases with special involvement of the nervous system, chronic infectious diseases, infectious diseases produced by protozoa. In addition particular attention is given to the propagation and spread of infectious diseases, predisposing and exciting causes of diseases, general sanitation, etc.

183. OPHTHALMOLOGY. Senior year, second semester. Class work, one hour. One semester credit. Doctor Scott.

This course discusses the method of conducting examinations of the eye by means of the ophthalmoscope, illumination of the eye, and the use of drugs as an aid to this process; and acute and chronic diseases of the eye.

Reference books for the courses in medicine: Hutyra and Marek' *Pathology of the Diseases of Domestic Animals*, Vols. I and II; Friedberger and Frohner's *Veterinary Pathology*, Vols. I and II; Law's *Veterinary Medicine*, Vols. I, II, III, IV and V; Moussu and Dollar's *Diseases of Cattle*; Glass' *Diseases of the Dog*; Cadot's *Clinical Veterinary Medicine*.

186. DISEASES OF SMALL ANIMALS. Senior year, second semester. Class work, two hours. Two semester credits. Doctor Frick.

This course deals principally with the infectious and noninfectious canine and feline diseases. The various breeds of dogs and cats, the erection of kennels, the breeding and care of puppies, care and feeding of dogs in general, and the hygienic measures pertaining thereto are also discussed.

190. FARM ANIMALS IN HEALTH AND IN DISEASE. Elective, second semester and summer school. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Anat. and Physiol. 131. Doctor Bullard.

First-aid treatment of diseases of domestic animals is discussed in this course. Special emphasis is given to the cause and prevention of disease in farm animals. Domestic animals are studied in relation to their surroundings. Text: Craig's *Common Diseases of Farm Animals*.

The Division of Engineering

ROY ANDREW SEATON, *Dean*

The Division of Engineering offers curricula in agricultural engineering, architecture, chemical engineering, civil engineering, electrical engineering, flour-mill engineering, mechanical engineering and landscape architecture each leading to the degree of Bachelor of Science in the profession selected.

While the curricula, as scheduled, are believed to be sufficient to cover the needs of the average young man, it is possible to combine portions of the work of two or more of them in such a way that one may be prepared to take up a special line of work for which he desires to fit himself. For example, by substituting certain courses from the departments of chemistry and geology for some of those in the curriculum in mechanical engineering, a young man can fit himself for work in connection with the manufacture of cement. By combining some of the courses in civil and mechanical engineering and by taking additional work in chemistry and geology, a young man may fit himself for special work in connection with the development of the coal fields of the country. By combining courses in architecture and civil engineering, specialization in architectural engineering may be secured. In special cases permission will be granted to combine the work on the lines here indicated. With the permission of the dean of the division students desiring to do so may substitute work in the reserve officers training corps for certain subjects in any of the curricula of the division.

It is believed that the curricula as tabulated give the best preparation for students expecting to follow general work in the profession selected, and for those who are not certain what particular branch of the profession they will follow. The substitutions and combinations indicated, and others similar to them, will be permitted only when there is good evidence that the student desiring such work is practically certain to follow the branch selected.

In the case of any of these modifications, the degree granted will be that of the course in which the major portion of the work is taken. In no case will the substitution of an additional amount of technical work for any of the general cultural work in the course be allowed.

Besides the four-year professional curricula, the Division of Engineering offers:

A three-year curriculum in mechanic arts in the School of Agriculture, with trade practice electives in blacksmithing, carpentry, concrete construction, and stationary and traction engines, and

Short special courses for automobile mechanics, tractor operators, carpenters, machinists, blacksmiths, electricians, and foundry men.

These are all discussed elsewhere in this catalogue.

STATE TEACHER'S CERTIFICATE

By substituting nine credit hours of work in the Department of Education a four-year curriculum in engineering may lead not only to the degree of Bachelor of Science in engineering, but at the same time qualify the student for a three-year Kansas state teacher's certificate, renewable for three-year periods. By taking nine additional credit hours of work in the Department of Education, graduates in engineering are qualified for the three-year Kansas state teacher's certificate, renewable for life and valid in any high school or any other public school in the state. A student desiring to qualify for teaching should begin his professional preparation by electing psychology in his junior year.

CURRICULUM IN AGRICULTURAL ENGINEERING

The curriculum in agricultural engineering is designed to qualify men for engineering work in rural communities; for positions in the farm-machinery and farm-motor industry; for the management of farms where drainage, irrigation or power-farming methods are prevalent; and for the positions of advisors, consulting engineers or architects in connection with agricultural development.

The work of the first year is the same as in the other engineering curricula. During the last three years about one-third of the time is devoted to agricultural subjects, in order to familiarize the students with the modern methods of scientific agriculture and to enable them to apply engineering principles to agricultural problems. Considerable time is devoted to farm machinery, farm motors, rural architecture, highway engineering, irrigation, drainage, and concrete construction.

CURRICULUM IN ARCHITECTURE

The curriculum in architecture aims to provide the technical training which will give a broad and sound foundation for the needs of the practicing architect, as well as the essentials of a liberal education. Although closely associated with, and somewhat dependent upon, science and engineering, architecture is primarily a fine art; hence the training of the architect, while including the general fundamentals of engineering and science, must be based primarily upon a study and understanding of the basic architectural principles together with the canons of art and good taste. A major portion of the curriculum is therefore devoted to the study of architectural design, supplemented by those subjects preparatory or contributory to it.

Supporting this line of study the student is given a comprehensive view of the development of civilization together with a more detailed study of the history of architecture and of art. Throughout the course draughtsmanship as applied to architectural design and construction, as well as to free-hand drawing and sketching, is given constant attention. Courses dealing with the fundamental principles of building construction, sanitation, heating and lighting, together with a careful study of the properties and uses of building materials, are given simultaneously with the courses in design and drawing.

In addition to the above-outlined professional and technical studies, approximately one-quarter of the curriculum is devoted to more general studies designed to broaden the student's view and to give him the essentials of a liberal education. Thus it is the aim not only to provide a fundamental training upon which the student may base his professional development and advancement, but to afford a training which is in the broadest sense educational.

CURRICULUM IN LANDSCAPE ARCHITECTURE

The aim of the curriculum in landscape architecture is to give to the student such technical training as will equip him for successful practice as a landscape architect.

The work of the landscape architect embraces the design, construction, execution, planting, and maintenance of farmsteads, estates, and other home grounds. In his work he is also called upon to plan parks, playgrounds, real estate subdivisions, country clubs, and boulevards and street systems. City planning and the laying out of town sites is probably the most important work of the landscape architect.

The function of the landscape architect is the fitting of land for human use, convenience and enjoyment, whether it be in the city or in the country. The work requires a thorough knowledge of the fundamentals of architecture, engineering, and horticulture. Because landscape architecture is primarily a fine art, especial emphasis is given to the study of the fundamental principles of design. A major portion of the curriculum is therefore devoted to the study of architectural and landscape design. These courses are supplemented with courses in drafting, free-hand drawing, and sketching, so the student may

develop a facility for expressing his ideas on paper. Throughout the course the student is also given intensive training in the study of plant materials, forestry, and soil conditions.

In addition to professional courses of study, the curriculum provides general cultural courses. These courses are designed primarily to give the student the basic elements of a liberal education.

CURRICULUM IN CHEMICAL ENGINEERING

Though the progress of chemical science and of the chemical industries has been rapid in the last twenty-five years, their development really has only begun. One need but survey briefly the hosts of industries which are dependent upon chemistry for their improvement to realize what opportunities await the trained chemical engineer. Industries which have been more or less empirically developed include those concerned with the manufacture of paints and varnishes, soaps, glass, leather, rubber and ceramic materials. Industrial products which are the direct result of chemical research include dyes, synthetic essential oils, drugs, food products, and all electrochemical and electrothermal products, such as calcium carbide, carborundum, graphite, caustic soda, chlorine, chlorates, aluminum and other metals, and atmospheric nitrates. Still further improvements are possible in the present processes and a vast number of entirely new industries are waiting to be developed.

The training offered in the chemical engineering curriculum gives the student knowledge of the theoretical phases of chemistry and engineering which are fundamental to further development in many lines of industrial work. It is intended to fit him to enter the professional field of chemical engineering. In addition to sound training in chemical laws and processes, considerable work is given in the mathematical and physical sciences, drawing, economics, and engineering methods and operations.

CURRICULUM IN CIVIL ENGINEERING

The aim of the curriculum in civil engineering, as outlined in this catalogue, is to give the young men taking the work the best possible preparation for entering upon the active practice of the profession under present conditions. It will be noted that the first and second years are devoted largely to general cultural studies and the sciences, including mathematics. This follows the arrangement generally found in the engineering curricula of American colleges, and it finds its justification in the well-nigh universally accepted idea that any engineering education worthy of consideration must be grounded upon ample preliminary education in the allied sciences. An introduction to the technical work is given in these years through courses in drawing, shopwork, surveying, and the elementary phases of engineering.

The last two years are devoted largely to technical work. In recognition of the mechanical trend of the age, liberal provision is made for class and laboratory work in mechanical and electrical engineering. In view of the growing importance of municipal problems, such as paving, sewerage, and water-supply, the curriculum in civil engineering includes required courses in these subjects.

Advanced elective courses in railway, highway, and irrigation and drainage engineering are offered in the second semester of the senior year.

CURRICULUM IN ELECTRICAL ENGINEERING

The essential elements underlying a sound engineering training are based upon a thorough study of mathematics and the physical sciences. These studies, together with introductory courses in drawing, shopwork, surveying, and the elementary phases of engineering, occupy most of the time of the first two years.

Freshmen are given courses which involve the fundamental principles of electricity and magnetism and their application to electrical construction and machinery.

The professional work of this curriculum begins in the junior year and continues throughout the last two years. General cultural subjects are included in the work of each of the four years.

Emphasis is placed upon training to deal with forces and matter according to scientific principles, rather than upon the accumulation of facts. The department laboratories are well equipped with the various measuring instruments, standardizing apparatus, and different types of dynamo machinery. The different subjects are presented in the classroom, and the classroom work is supplemented by laboratory practice. The curriculum provides a liberal training in wood- and iron-working, mechanical drawing, and machine-shop practice.

The laboratory experiments selected for the students are designed to give a clear conception of the theoretical work of the classroom.

Students are given extensive practice in connecting up the different types of machines for testing purposes and for standard commercial work. This practice work and testing extends throughout the junior and senior years, and is intended to give the student familiarity with the underlying principles of the different machines, and a knowledge of the care necessary to operate them successfully. Opportunity is also given to undertake the investigation of commercial problems as they are sent to the College from the different central stations of the state.

CURRICULUM IN FLOUR-MILL ENGINEERING

The milling of wheat and other cereals is an important industry in this state. The curriculum in flour-mill engineering is designed to prepare men for the management of mills, for work in connection with the designing of milling plants, and for research work in the preparation and utilization of mill products.

The work of the freshman year is the same as in the other engineering courses. The sophomore year is similar to that of the mechanical engineering course, but includes additional chemistry and a beginning course in milling practice. In the junior and senior years, besides the courses dealing with the production, marketing, testing, and milling of grain products, a considerable amount of time is devoted to mechanics, chemistry, history, economics, business law and organization, steam and gas engineering, and flour-mill design.

CURRICULUM IN MECHANICAL ENGINEERING

The work in mechanical engineering prepares for the successful management and superintendence of factories and power plants; for the design of power machinery installations; for the design and construction of machine tools, steam and gas engines, compressors, hydraulic machinery, etc.; and for the design and erection of engineering buildings and factories, including the selection, purchasing, and location of the equipment.

The curriculum has been laid out with the aim of securing a judicious mixture of theory and practice, such as will not only give the student the technical skill required for engineering operations, but will also endow him with an understanding of the scientific and economic principles necessary for the solution of engineering and industrial problems.

Throughout the four years the theoretical studies in the classroom are supplemented by practical work in the laboratories in such a manner as very materially to strengthen both. In the testing laboratories the work does not end when the test is completed, but the entire problem must be written up in such a manner as would be approved in the best commercial testing laboratories. The laboratory work in the shops not only gives the student practice in performing the machinery and various mechanical operations, but includes a scientific study of the factors of production, so that the loss of material and expenditure of human effort will be a minimum.

Optional or elective courses are available in the senior year, second semester, and give the student an opportunity for instruction in the more specialized branches of mechanical engineering. These courses include: heating, ventilation, and refrigeration; factory design; aerodynamics, or aeronautical engineering, and automobile engineering.

Students pursuing a mechanical engineering curriculum are urged to spend at least two summers in some shop or commercial plant in order to broaden their training.

Curriculum in Agricultural Engineering

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FIRST SEMESTER		FRESHMAN	SECOND SEMESTER
Chemistry E-I		Chemistry E-II	
Chem. 107A	4(2-6)	Chem. 108A	4(2-6)
Plane Trigonometry		College Algebra	
Math. 101	3(3-0)	Math. 104	3(3-0)
College Rhetoric I		College Rhetoric II	
Engl. 101	3(3-0)	Engl. 104	3(3-0)
Engineering Drawing		Descriptive Geometry	
Mach. Design 101	2(0-6)	Mach. Design 106	2(0-6)
Judging Market Live Stock		Field Machinery	
An. Husb. 132	2(0-6)	Ag. Engr. 106, 107	2(1-3)
Extempore Speech I		Engineering Woodwork I	
Pub. Spk. 106	2(2-0)	Shop 101	1(0-3)
Artillery I		Forging I	
Mil. Tr. 113	1½(0-4)	Shop 150	1(0-3)
Engineering Lectures		Artillery II	
Gen. Engr. 101	R	Mil. Tr. 114	1½(0-4)
Physical Education M-I		Engineering Lectures	
Phys. Ed. 103	R(0-2)	Gen. Engr. 101	R
		Physical Education M-II	
		Phys. Ed. 104	R(0-2)
FIRST SEMESTER		SOPHOMORE	SECOND SEMESTER
Engineering Physics I		Engineering Physics II	
Physics 145	5(4-3)	Physics 150	5(4-3)
Plane Analytical Geometry		Calculus I	
Math. 110	4(4-0)	Math. 205	5(5-0)
American Industrial History		General Geology	
Hist. 105	3(3-0)	Geol. 103	3(3-0)
Mechanism		Machine Drawing I	
Mach. Design 121	3(3-0)	Mach. Design 111	2(0-6)
Surveying I		Surveying II	
Civ. Engr. 102	2(0-6)	Civ. Engr. 111	2(0-6)
Artillery III		Artillery IV	
Mil. Tr. 115	1½(0-4)	Mil. Tr. 116	1½(0-4)
Seminar		Seminar	
Gen. Engr. 105	R	Gen. Engr. 105	R
Physical Education M-III		Physical Education M-IV	
Phys. Ed. 105	R(0-2)	Phys. Ed. 106	R(0-2)
FIRST SEMESTER		JUNIOR	SECOND SEMESTER
Applied Mechanics		Strength of Materials	
Ap. Mech. 101A	4(4-0)	Ap. Mech. 110, 120	6(5-3)
Calculus II		Farm Motors	
Math. 206	3(3-0)	Ag. Engr. 125, 126	3(2-3)
Soils		Farm Crops	
Agron. 133	5(4-3)	Agron. 109	5(3-6)
Organic Chemistry (Agr.)		Feeding Live Stock	
Chem. 120	3(2-3)	An. Husb. 172	3(3-0)
Power Machinery		Metallography	
Ag. Engr. 111, 112	2(1-3)	Shop 167	1(0-3) or
Seminar		Foundry Practice	
Gen. Engr. 105	R	Shop 160	1(0-3)
		Seminar	
		Gen. Engr. 105	R

SENIOR

FIRST SEMESTER	SECOND SEMESTER
Economics	Farm Organization
Econ. 101 3(3-0)	Ag. Ec. 106 3(2-3)
Tractors and Trucks	Drainage and Irrigation I
Ag. Engr. 116, 117 3(2-3)	Civ. Engr. 161 2(2-0)
Farm Buildings	Electrical Engineering C
Ag. Engr. 103 3(1-6)	Elect. Engr. 160, 165 3(2-2, 1)
Highway Engineering I	Steam and Gas Engineering C
Civ. Engr. 230 and	Mech. Engr. 120, 125 3(2-3)
Ap. Mech. 250 3(2-3)	Machine Tool Work I
Hydraulics	Shop 170 2(0-6)
Ap. Mech. 130, 135 4(3-3)	Engineering English
Commercial Law	Engl. 110 2(2-0)
Hist. 160 1(1-0)	Business Organization
Seminar	Econ. 106 1(1-0)
Gen. Engr. 105 R	Seminar
Thesis	Gen. Engr. 105 R
Ag. Engr. 175 1(0-3)	Thesis
	Ag. Engr. 175 2(0-6)

Curriculum in Architecture

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
Plane Trigonometry	College Algebra
Math. 101 3(3-0)	Math. 104 3(3-0)
History of Architecture I	History of Architecture II
Arch. 154A 2(2-0)	Arch. 157A 2(2-0)
College Rhetoric I	College Rhetoric II
Engl. 101 3(3-0)	Engl. 104 3(3-0)
Engineering Drawing	Descriptive Geometry
Mach. Design 101 2(0-6)	Mach. Design 106 2(0-6)
Freehand Drawing I	Freehand Drawing II
Arch. 111 2(0-6)	Arch. 114 2(0-6)
Elements of Architecture I	Elements of Architecture II
Arch. 106A 3(0-9)	Arch. 107A 3(0-9)
Shades and Shadows	Perspective
Arch. 130 1(0-3)	Arch. 126 1(0-3)
Artillery I	Artillery II
Mil. Tr. 113 1½(0-4)	Mil. Tr. 114 1½(0-4)
Engineering Lectures	Engineering Lectures
Gen. Engr. 101 R	Gen. Engr. 101 R
Physical Education M-I	Physical Education M-II
Phys. Ed. 103 R(0-2)	Phys. Ed. 104 R(0-2)

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
Engineering Physics I	Engineering Physics II
Physics 145 5(4-3)	Physics 150 5(4-3)
History of Architecture III	History of Architecture IV
Arch. 158A 2(2-0)	Arch. 160A 2(2-0)
Building Materials and Construction	Working Drawings and Specifications
Arch. 187A 3(3-0)	Arch. 191 3(0-9)
Freehand Drawing III	Freehand Drawing IV
Arch. 116 2(0-6)	Arch. 117 2(0-6)
Design I	Design II
Arch. 142 3(0-9)	Arch. 144 3(0-9)
Advanced Composition I	Advanced Composition II
Engl. 113 2(2-0)	Eng. 116 2(2-0)

SOPHOMORE—*Concluded*

FIRST SEMESTER	SECOND SEMESTER
Artillery III Mil. Tr. 115..... 1½(0-4)	Artillery IV Mil. Tr. 116..... 1½(0-4)
Seminar Gen. Engr. 105..... R	Seminar Gen. Engr. 105..... R
Physical Education M-III Phys. Ed. 105..... R(0-2)	Physical Education M-IV Phys. Ed. 106..... R(0-2)

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
Applied Mechanics A Ap. Mech. 102..... 3(3-0)	Strength of Materials A Ap. Mech. 116, 121..... 4(3-3)
Theory of Structures I Arch. 192..... 4(2-6)	Theory of Structures II Arch. 194..... 3(1-6)
Freehand Drawing V Arch. 118..... 2(0-6)	Freehand Drawing VI Arch. 120..... 2(0-6)
Design III Arch. 145..... 5(0-15)	Design IV Arch. 147..... 5(0-15)
French I Mod. Lang. 151..... 3(3-0)	French II Mod. Lang. 152..... 3(3-0)
Business Organization Econ. 106..... 1(1-0)	Commercial Law Hist. 160..... 1(1-0)
Seminar Gen. Engr. 105..... R	Seminar Gen. Engr. 105..... R

SENIOR

FIRST SEMESTER	SECOND SEMESTER
History of Civilization and Art I Arch. 178..... 2(3-0)	History of Civilization and Art II Arch. 182..... 2(3-0)
Freehand Drawing VII Arch. 121..... 2(0-6)	Freehand Drawing VIII Arch. 123..... 2(0-6)
Design V Arch. 148..... 3(0-24)	Design VI Arch. 151..... 3(0-24)
Structural Design I Arch. 196..... 3(1-6)	Structural Design II Arch. 198..... 3(1-6)
Economics Econ. 101..... 3(3-0)	Engineering English Engl. 110..... 2(2-0)
Seminar Gen. Engr. 105..... R	Seminar Gen. Engr. 105..... R

Curriculum in Landscape Architecture

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
College Algebra Math. 104..... 3(3-0)	Plane Trigonometry Math. 101..... 3(3-0)
College Rhetoric I Engl. 101..... 3(3-0)	College Rhetoric II Engl. 104..... 3(3-0)
Freehand Drawing I Arch. 111..... 2(0-6)	Freehand Drawing II Arch. 114..... 2(0-6)
Engineering Drawing Mach. Design 101..... 2(0-6)	Descriptive Geometry Mach. Design 106..... 2(0-6)
General Botany I Bot. 101..... 3(1-4, 2)	General Botany II Bot. 105..... 3(1-4, 2)
Elements of Architecture I Arch. 106A..... 3(0-9)	Elements of Architecture II Arch. 107A..... 3(0-9)
Artillery I (Men) Mil. Tr. 113..... 1½(0-4)	Artillery II (Men) Mil. Tr. 114..... 1½(0-4)
Physical Education M-I (Men) Phys. Ed. 103..... R(0-2) or	Physical Education M-II (Men) Phys. Ed. 104..... R(0-2) or
Physical Education W-I (Women) Phys. Ed. 151A..... 1(0-3)	Physical Education W-II (Women) Phys. Ed. 152A..... 1(0-3)
Engineering Lectures Gen. Engr. 101..... R	Engineering Lectures Gen. Engr. 101..... R

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
History of Architecture I Arch. 154A 2(2-0)	History of Architecture II Arch. 157A 2(2-0)
Surveying I Civ. Engr. 102 2(0-6)	Surveying II Civ. Engr. 111 2(0-6)
Chemistry E-I Chem. 107A 4(2-6)	Chemistry E-II Chem. 108A 4(2-6)
Landscape Gardening I Hort. 126 2(1-3)	Landscape Gardening II Hort. 238 3(0-9)
Shades and Shadows Arch. 130 1(0-3)	General Geology Geol. 103 3(3-0)
Plant Physiology I Bot. 208 3(3-0)	
Design I Arch. 142 3(0-9)	Design II Arch. 144 3(0-9)
Artillery III (Men) Mil. Tr. 115 1½(0-4)	Artillery IV (Men) Mil. Tr. 116 1½(0-4)
Physical Education M-III (Men) Phys. Ed. 105 R(0-2) <i>or</i>	Physical Education M-IV (Men) Phys. Ed. 106 R(0-2) <i>or</i>
Physical Education W-III (Women) Phys. Ed. 153 1(0-3)	Physical Education W-IV (Women) Phys. Ed. 154 1(0-3)
Seminar Gen. Engr. 105 R	Seminar Gen. Engr. 105 R

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
History of Architecture III Arch. 158A 2(2-0)	History of Architecture IV Arch. 160A 2(2-0)
Freehand Drawing III Arch. 116 2(0-6)	Freehand Drawing IV Arch. 117 2(0-6)
Surveying III Civ. Engr. 151, 155 3(2-3)	Plant Materials in Landscape Gardening Hort. 225 3(2-3)
Soils Agron. 133 5(4-3)	Elements of Horticulture Hort. 108 4(3-3)
History and Literature of Landscape Gardening Hort. 222 2(2-0)	Civic Art Hort. 223 3(3-0)
Theory and Aesthetics of Landscape Gardening Hort. 242 3(2-3)	Silviculture Hort. 119 3(2-3)
Seminar Gen. Engr. 105 R	Perspective Arch. 126 1(0-3)
	Seminar Gen. Engr. 105 R

SENIOR

FIRST SEMESTER	SECOND SEMESTER
Plant Pathology I Bot. 205 3(1-4, 2)	Economics Econ. 101 3(3-0)
Highway Engineering I Civ. Engr. 230, Ap. Mech. 250 3(2-3)	City Planning Arch. 249 3(0-9)
Landscape Gardening III Hort. 245 2(1-3)	Working Drawings and Specifications Arch. 191 3(0-9)
Clay Modeling Arch. 199 2(0-6)	Elective 5(-)
Elective 2(-)	Tree Surgery Hort. 233 2(1-3)
Greenhouse Construction and Management Hort. 128 3(3-0)	Engineering English Engl. 110 2(2-0)
Building Materials and Construction Arch. 187A 3(3-0)	Seminar Gen. Engr. 105 R
Seminar Gen. Engr. 105 R	

Curriculum in Chemical Engineering

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
Chemistry E-I Chem. 107A 4(2-6)	Chemistry E-II Chem. 108A 4(2-6)
Plane Trigonometry Math. 101 3(3-0)	College Algebra Math. 104 3(3-0)
College Rhetoric I Engl. 101 3(3-0)	College Rhetoric II Engl. 104 3(3-0)
Engineering Drawing Mach. Des. 101 2(0-6)	Descriptive Geometry Mach. Des. 106 2(0-6)
Extempore Speech I Pub. Spk. 106 2(2-0)	Machine Drawing I Mach. Des. 111 2(0-6)
Engineering Woodwork I Shop 101 1(0-3)	Metallurgy Shop 165 2(2-0)
Forging I Shop 150 1(0-3)	
Artillery I Mil. Tr. 113 1½(0-4)	Artillery II Mil. Tr. 114 1½(0-4)
Engineering Lectures Gen. Engr. 101 R	Engineering Lectures Gen. Engr. 101 R
Physical Education M-I Phys. Ed. 103 R(0-2)	Physical Education M-II Phys. Ed. 104 R(0-2)

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
Engineering Physics I Physics 145 5(4-3)	Engineering Physics II Physics 150 5(4-3)
Plane Analytical Geometry Math. 110 4(4-0)	Calculus I Math. 205 5(5-0)
Quantitative Analysis Chem. 241 5(1-12)	Adv. Inorg. Chemistry Chem. 207 3(3-0)
American Industrial History Hist. 105 3(3-0)	Inorganic Preparations Chem. 202 2(0-6)
	Metallography Shop 167 1(0-3)
	Library Methods Lib. Ec. 101 1(1-0)
Artillery III Mil. Tr. 115 1½(0-4)	Artillery IV Mil. Tr. 116 1½(0-4)
Seminar Gen. Engr. 105 R	Seminar Gen. Engr. 105 R
Physical Education M-III Phys. Ed. 105 R(0-2)	Physical Education M-IV Phys. Ed. 106 R(0-2)

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
Calculus II Math. 206 3(3-0)	Strength of Materials E Ap. Mech. 115, 120 4(3-3)
Applied Mechanics Ap. Mech. 101A 4(4-0)	Industrial Electrochemistry Chem. 205 2(2-0)
Steam and Gas Engineering I Mech. Engr. 101, 105* 5(4-3)	Steam and Gas Engineering II Mech. Engr. 110, 115* 4(3-3)
Organic Chemistry I Chem. 218 4(2-6)	Organic Chemistry II Chem. 219 4(2-6)
Commercial Law Hist. 160 1(1-0)	Economics Econ. 101 3(3-0)
Seminar Gen. Engr. 105 R	Seminar Gen. Engr. 105 R

SENIOR

FIRST SEMESTER	SECOND SEMESTER
Industrial Chemistry I Chem. 203 5(3-6)	Industrial Chemistry II Chem. 204 5(3-6)
Electrical Engineering M-I Elect. Engr. 230, 231* 4(3-2, 1)	Electrical Engineering M-II Elect. Engr. 242, 243* 4(3-2, 1)
Physical Chemistry Chem. 206 5(3-6)	Engineering English Engl. 110 2(2-0)
Organic Preparations Chem. 223 2(0-6) <i>or</i>	Fire Assaying Chem. 242 2(0-6)
Qualitative Organic Analysis Chem. 224 2(0-6)	Gas Analysis Chem. 243 1(0-3)
Business Organization Econ. 106 1(1-0)	History of Chemistry Chem. 208 1(1-0)
Thesis 1(0-3)	Thesis 2(0-6)
Seminar Gen. Engr. 105 R	Seminar Gen. Engr. 105 R

Curriculum in Civil Engineering

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
Chemistry E-I Chem. 107A 4(2-6)	Chemistry E-II Chem. 108A 4(2-6)
Plane Trigonometry Math. 101 3(3-0)	College Algebra Math. 104 3(3-0)
College Rhetoric I Engl. 101 3(3-0)	College Rhetoric II Engl. 104 3(3-0)
Engineering Drawing Mach. Design 101 2(0-6)	Descriptive Geometry Mach. Design 106 2(0-6)
Surveying I Civ. Engr. 102 2(0-6)	Surveying II Civ. Engr. 111 2(0-6)
Extempore Speech I Pub. Spk. 106 2(2-0)	Engineering Woodwork I Shop 101 1(0-3)
Artillery I Mil. Tr. 113 1½(0-4)	Forging I Shop 150 1(0-3)
Engineering Lectures Gen. Engr. 101 R	Artillery II Mil. Tr. 114 1½(0-4)
Physical Education M-I Phys. Ed. 103 R(0-2)	Engineering Lectures Gen. Engr. 101 R
	Physical Education M-II Phys. Ed. 104 R(0-2)

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
Engineering Physics I Physics 145 5(4-3)	Engineering Physics II Physics 150 5(4-3)
Plane Analytical Geometry Math. 110 4(4-0)	Calculus I Math. 205 5(5-0)
American Industrial History Hist. 105 3(3-0)	Metallurgy Shop 165 2(2-0)
Surveying III Civ. Engr. 151, 155 3(2-3)	Surveying IV Civ. Engr. 156, 157 3(2-3)
Machine Drawing I Mach. Design 111 2(0-6)	Civil Engineering Drawing I Civ. Engr. 125 2(0-6)
Artillery III Mil. Tr. 115 1½(0-4)	Artillery IV Mil. Tr. 116 1½(0-4)
Seminar Gen. Engr. 105 R	Seminar Gen. Engr. 105 R
Physical Education M-III Phys. Ed. 105 R(0-2)	Physical Education M-IV Phys. Ed. 106 R(0-2)

* Students who wish to do so may replace the starred courses by German I (3 semester credits), German II (3 semester credits), Scientific German (4 semester credits), Steam and Gas Engineering C (3 semester credits), Electrical Engineering C (3 semester credits), Elective (1 semester credit).

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
Applied Mechanics Ap. Mech. 101A 4(4-0)	Strength of Materials Ap. Mech. 110, 120 6(5-3)
Calculus II Math. 206 3(3-0)	Hydraulics Ap. Mech. 130, 135 4(3-3)
Engineering Geology Geol. 102 4(2-6)	Railway Engineering I Civ. Engr. 145 2(2-0)
Masonry and Foundations Civ. Engr. 120 2(2-0)	Drainage and Irrigation I Civ. Engr. 161 2(2-0)
Economics Econ. 101 3(3-0)	Steam and Gas Engineering C Mech. Engr. 120, 125 3(2-3)
Commercial Law Hist. 160 1(1-0)	
Seminar Gen. Engr. 105 R	Seminar Gen. Engr. 105 R

SENIOR

FIRST SEMESTER	SECOND SEMESTER
Bridge Stresses Civ. Engr. 201 4(4-0)	Bridge Design Civ. Engr. 246 3(0-9)
Civil Engineering Drawing II Civ. Engr. 205 2(0-6)	Electrical Engineering C Elect. Engr. 160, 165 3(2-2, 1)
Astronomy and Geodesy Civ. Engr. 211, 216 4(2-6)	Engineering English Engl. 110 2(2-0)
Water Supply Civ. Engr. 220 2(2-0)	Business Organization Econ. 106 1(1-0)
Sewerage Civ. Engr. 225 2(2-0)	Concrete Design Civ. Engr. 250, 255 3(2-3)
	Railway Engineering II Civ. Engr. 260, 265 4(2-6)or
Highway Engineering I Civ. Engr. 230 and Ap. Mech. 250 3(2-3)	Highway Engineering II Civ. Engr. 270, 275 4(2-6)or
Seminar Gen. Engr. 105 R	Drainage and Irrigation II Civ. Engr. 280, 285 4(2-6)
Thesis Ap. Mech. 150 or Civ. Engr. 170 1(0-3)	Seminar Gen. Engr. 105 R
	Thesis Ap. Mech. 150 or Civ. Engr. 170 2(0-6)

Curriculum in Electrical Engineering

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN	
FIRST SEMESTER	SECOND SEMESTER
Chemistry E-I Chem. 107A 4(2-6)	Chemistry E-II Chem. 108A 4(2-6)
Plane Trigonometry Math. 101 3(3-0)	College Algebra Math. 104 3(3-0)
College Rhetoric I Engl. 101 3(3-0)	College Rhetoric II Engl. 104 3(3-0)
Engineering Drawing Mach. Design 101..... 2(0-6)	Descriptive Geometry Mach. Design 106..... 2(0-6)
Engineering Woodwork I Shop 101 1(0-3)	Extempore Speech I Pub. Spk. 106..... 2(2-0)
Forging I Shop 150 1(0-3)	
Electrical Machinery and Construction Elect. Engr. 170..... 2(0-6) or	Electrical Machinery and Construction Elect. Engr. 170..... 2(0-6) or
Surveying I Civ. Engr. 102..... 2(0-6)	Surveying I Civ. Engr. 102..... 2(0-6)
Artillery I Mil. Tr. 113..... 1½(0-4)	Artillery II Mil. Tr. 114..... 1½(0-4)
Engineering Lectures Gen. Engr. 101..... R	Engineering Lectures Gen. Engr. 101..... R
Physical Education M-I Phys. Ed. 103..... R(0-2)	Physical Education M-II Phys. Ed. 104..... R(0-2)
SOPHOMORE	
FIRST SEMESTER	SECOND SEMESTER
Engineering Physics I Physics 145 5(4-3)	Engineering Physics II Physics 150 5(4-3)
Plane Analytical Geometry Math. 110 4(4-0)	Calculus I Math. 205 5(5-0)
Mechanism Mach. Design 121..... 3(3-0)	American Industrial History Hist. 105 3(3-0)
Machine Drawing I Mach. Design 111..... 2(0-6)	Machine Drawing II Mach. Design 116..... 3(0-9)
Metallurgy Shop 165 2(2-0)	
Foundry Practice Shop 160 1(0-3)	Metallography Shop 167 1(0-3)
Artillery III Mil. Tr. 115..... 1½(0-4)	Artillery IV Mil. Tr. 116..... 1½(0-4)
Seminar Gen. Engr. 105..... R	Seminar Gen. Engr. 105..... R
Physical Education M-III Phys. Ed. 105..... R(0-2)	Physical Education M-IV Phys. Ed. 106..... R(0-2)
JUNIOR	
FIRST SEMESTER	SECOND SEMESTER
Applied Mechanics Ap. Mech. 101A..... 4(4-0)	Strength of Materials E Ap. Mech. 115, 120..... 4(3-3)
Calculus II Math. 206 3(3-0)	Hydraulics Ap. Mech. 130, 135..... 4(3-3)
Economics Econ. 101 3(3-0)	Pattern Making Shop 145 1(0-3)
Direct-current Machines I Elect. Engr. 203, 204..... 4(3-2, 1)	Direct-current Machines II Elect. Engr. 206, 207..... 3(2-2, 1)
Electrical Measurements Elect. Engr. 227, 228..... 3(2-2, 1)	Alternating-current Machines I Elect. Engr. 209, 211..... 5(4-2, 1)
Seminar Gen. Engr. 105..... R	Seminar Gen. Engr. 105..... R

SENIOR

FIRST SEMESTER	SECOND SEMESTER
Steam and Gas Engineering I Mech. Engr. 101, 105..... 5(4-3)	Steam and Gas Engineering II Mech. Engr. 110, 115..... 4(3-3)
Alternating-current Machines II Elect. Engr. 213, 215..... 6(4-4, 2)	Electric Railways Elect. Engr. 240..... 2(2-0) or
Electrical Machine Design I Elect. Engr. 270..... 1(0-3)	Electrical Machine Design II Elect. Engr. 271..... 2(0-6)
Telephony Elect. Engr. 220, 225..... 3(2-3)	Illuminating Engineering Elect. Engr. 235, 236..... 3(2-3)
Factory Engineering Shop 245, 250..... 2(1-3)	Commercial Law Hist. 160 1(1-0)
	Business Organization Econ. 106 1(1-0)
	Engineering English Engl. 110 2(2-0)
	Machine Tool Work I Shop 170 2(0-6)
Seminar Gen. Engr. 105..... R	Seminar Gen. Engr. 105..... R
Thesis Elect. Engr. 195..... 1(0-3)	Thesis Elect. Engr. 195..... 2(0-6)

Curriculum in Flour-mill Engineering

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
Chemistry E-I Chem. 107A 4(3-6)	Chemistry E-II Chem. 108A 4(2-6)
Plane Trigonometry Math. 101 3(3-0)	College Algebra Math. 104 3(3-0)
College Rhetoric I Engl. 101 3(3-0)	College Rhetoric II Engl. 104 3(3-0)
Extempore Speech I Pub. Spk. 106 2(2-0)	
Engineering Drawing Mach. Design 101..... 2(0-6)	Descriptive Geometry Mach. Design 106 2(0-6)
Engineering Woodwork I Shop 101 1(0-3)	Elements of Steam and Gas Power Mech. Engr. 130 2(0-6)
Forging I Shop 150 1(0-3)	Surveying I Civ. Engr. 102 2(0-6)
Artillery I Mil. Tr. 113 1½(0-4)	Artillery II Mil. Tr. 114 1½(0-4)
Engineering Lectures Gen. Engr. 101 R	Engineering Lectures Gen. Engr. 101..... R
Physical Education M-I Phys. Ed. 103 R(0-2)	Physical Education M-II Phys. Ed. 104 R(0-2)

SOPHOMORE

FIRST SEMESTER		SECOND SEMESTER	
Engineering Physics I		Engineering Physics II	
Physics 145	5(4-3)	Physics 150	5(4-3)
Plane Analytical Geometry		Calculus I	
Math. 110	4(4-0)	Math. 205	5(5-0)
Organic Chemistry (Agr.)		Mechanism	
Chem. 120	3(2-3)	Mach. Design 121	3(3-0)
Machine Drawing I		Machine Drawing II	
Mach. Design 111	2(0-6)	Mach. Design 116	3(0-9)
Quantitative Analysis A		Principles of Milling	
Chem. 250	3(1-6)	Mill. Ind. 101	1(0-3)
Artillery III		Artillery IV	
Mil. Tr. 115	1½(0-4)	Mil. Tr. 116	1½(0-4)
Seminar		Seminar	
Gen. Engr. 105	R	Gen. Engr. 105	R
Physical Education M-III		Physical Education M-IV	
Phys. Ed. 105	R(0-2)	Phys. Ed. 106	R(0-2)

JUNIOR

FIRST SEMESTER		SECOND SEMESTER	
Applied Mechanics		Strength of Materials E	
Ap. Mech. 101A	4(4-0)	Ap. Mech. 118, 120	4(3-3)
Calculus II		Hydraulics	
Math. 206	3(3-0)	Ap. Mech. 130, 135	4(3-3)
Grain Crop Production		Advanced Quantitative Analysis	
Agron. 101	3(2-3)	Chem. 260	1(0-3)
American Industrial History		Commercial Law	
Hist. 105	3(3-0)	Hist. 160	1(1-0)
		Economics	
Milling Practice I		Econ. 101	3(3-0)
Mill. Ind. 109	3(1-6)	Grain Products	
Milling Entomology		Mill. Ind. 103	2(2-0)
Ent. 116	1(1-0)	Milling Practice II	
Seminar		Mill. Ind. 110	2(0-6)
Gen. Engr. 105	R	Seminar	
		Gen. Engr. 105	R

SENIOR

FIRST SEMESTER		SECOND SEMESTER	
Wheat and Flour Testing		Experimental Baking A	
Mill. Ind. 203	4(1-9)	Mill. Ind. 204	2(0-6)
Grain Marketing		Steam and Gas Engineering II	
Ag. Ec. 203	3(3-0)	Mech. Engr. 110, 115	4(3-3)
Flour-mill Design		Refrigeration, Heating and Ventilation	
Mach. Design 215	2(0-6)	Mech. Engr. 210, 215	3(2-3)
Steam and Gas Engineering I		Electrical Engineering C	
Mech. Engr. 101, 105	5(4-3)	Elect. Engr. 160, 165	3(2-2, 1)
Business Organization		Engineering English	
Econ. 106	1(1-0)	Engl. 110	2(2-0)
Factory Engineering		Machine Tool Work I	
Shop 245, 250	2(1-3)	Shop 170	2(0-6)
Seminar		Seminar	
Gen. Engr. 105	R	Gen. Engr. 105	R
Thesis		Thesis	
Mach. Design 126, Mech. Engr. 195, Mill. Ind. 112, or Shop 195	1(0-3)	Mach. Design 126, Mech. Engr. 195, Mill. Ind. 112, or Shop 195	2(0-6)

Curriculum in Mechanical Engineering

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
Chemistry E-I Chem. 107A	4(2-6)	Chemistry E-II Chem. 108A	4(2-6)
Plane Trigonometry Math. 101	3(3-0)	College Algebra Math. 104	3(3-0)
College Rhetoric I Engl. 101	3(3-0)	College Rhetoric II Engl. 104	3(3-0)
Engineering Drawing Mach. Design 101	2(0-6)	Descriptive Geometry Mach. Design 106	2(0-6)
Extempore Speech I Pub. Spk. 106	2(2-0)	Surveying I Civ. Engr. 102	2(0-6)
Engineering Woodwork I Shop 101	1(0-3)	Elements of Steam and Gas Power Mech. Engr. 130	2(0-6) or
Forging I Shop 150	1(0-3)	Engineering Woodwork I Shop 101	1(0-3)
Elements of Steam and Gas Power Mech. Engr. 130	2(0-6)	Forging I Shop 150	1(0-3)
Artillery I Mil. Tr. 113	1½(0-4)	Artillery II Mil. Tr. 114	1½(0-4)
Engineering Lectures Gen. Engr. 101	R	Engineering Lectures Gen. Engr. 101	R
Physical Education M-I Phys. Ed. 103	R(0-2)	Physical Education M-II Phys. Ed. 104	R(0-2)

SOPHOMORE

FIRST SEMESTER		SECOND SEMESTER	
Engineering Physics I Physics 145	5(4-3)	Engineering Physics II Physics 150	5(4-3)
Plane Analytical Geometry Math. 110	4(4-0)	Calculus I Math. 205	5(5-0)
Mechanism Mach. Design 121	3(3-0)	American Industrial History Hist. 105	3(3-0)
Machine Drawing I Mach. Design 111	2(0-6)	Machine Drawing II Mach. Design 116	3(0-9)
Metallurgy Shop 165	2(2-0)	Foundry Practice Shop 160	1(0-3)
Metallography Shop 166	1(0-3)	Artillery IV Mil. Tr. 116	1½(0-4)
Artillery III Mil. Tr. 115	1½(0-4)	Seminar Gen. Engr. 105	R
Seminar Gen. Engr. 105	R	Physical Education M-IV Phys. Ed. 106	R(0-2)
Physical Education M-III Phys. Ed. 105	R(0-2)		

JUNIOR

FIRST SEMESTER		SECOND SEMESTER	
Applied Mechanics Ap. Mech. 101A	4(4-0)	Strength of Materials Ap. Mech. 110, 120	6(5-3)
Calculus II Math. 206	3(3-0)	Hydraulics Ap. Mech. 130, 135	4(3-3)
Steam and Gas Engineering I Mech. Engr. 101, 105	5(4-3)	Steam and Gas Engineering II Mech. Engr. 110, 115	4(3-3)
Commercial Law Hist. 160	1(1-0)	Machine Design I Mach. Design 202	1(0-3)
Pattern Making Shop 145	1(0-3)	Machine Tool Work II Shop 192	2(0-6)
Graphic Statics Ap. Mech. 125	1(0-3)	Seminar Gen. Engr. 105	R
Machine Tool Work I Shop 170	2(0-6)		
Seminar Gen. Engr. 105	R		

SENIOR

FIRST SEMESTER	SECOND SEMESTER
Electrical Engineering M-I Elect. Engr. 230, 231..... 4(3-2, 1)	Electrical Engineering M-II Elect. Engr. 242, 243..... 4(3-2, 1)
Power Plant Engineering Mech. Engr. 206 3(0-9)	Refrigeration, Heating and Ventilation Mech. Engr. 210, 215..... 3(2-3) <i>or</i>
	Aërodynamics Mech. Engr. 220, 225..... 3(2-3)
Machine Design II Mach. Design 204, 205..... 5(3-6)	Machine Design III Mach. Design 210 2(0-6)
Factory Engineering Shop 245, 250 2(1-3)	Factory Design Shop 255 2(0-6) <i>or</i>
	Automotive Engineering Shop 270, 275 2(1-3)
Economics Econ. 101 3(3-0)	Engineering English Engl. 110 2(2-0)
	Business Organization Econ. 106 1(1-0)
	Machine Tool Work III Shop 193 1(0-3)
Seminar Gen. Engr. 105..... R	Seminar Gen. Engr. 105..... R
Thesis Ap. Mech. 150, Mach. Design 126, Mech. Engr. 195, <i>or</i> Shop 195..... 1(0-3)	Thesis Ap. Mech. 150, Mach. Design 126, Mech. Engr. 195, <i>or</i> Shop 195..... 2(0-6)

Agricultural Engineering

Professor WALKER
Associate Professor SANDERS
Assistant Professor DRIFTMIER

Assistant Professor HILLMAN
Assistant SMITH

This department gives instruction in such branches of engineering as are directly related to agriculture. It also correlates and gives general supervision to such courses presented in other engineering departments as are open to students in agriculture and agricultural engineering, in order that the agricultural application and uses of engineering principles, methods, and materials may be kept clearly before the student.

In all the courses given, the time is carefully apportioned between the classroom and the laboratory, in order to present the subject in the clearest and most forceful way. The practical application of theoretical principles is emphasized.

The laboratory equipment is unusually ample and complete; all kinds of modern farm implements and equipment, to the value of \$30,000, are available, whereby their construction, operation, adjustment, and care may be fully covered in the field and laboratory studies. The study of traction engines is arranged to cover thoroughly the construction, operation and repair of the numerous modern tractors which are part of the regular equipment; traction tests in conjunction with various types of farm power machinery are also made. The tractor laboratory is equipped with four tractor power units mounted on bases, with various types of tractor ignition apparatus, and with complete apparatus for power and draft tests. All farm machinery and tractor equipment is kept up to date through a system of exchange with the manufacturers whereby old machines are replaced, when advisable, by new ones.

The comparatively recent development of this work, and its rapidly growing importance, renders investigational study very valuable, and special attention is given to the courses covering this phase of the subject.

COURSES IN AGRICULTURAL ENGINEERING

FOR UNDERGRADUATES

103. FARM BUILDINGS. Senior year and elective, both semesters. Class work, one hour. Drafting-room practice, six hours. Three semester credits. Professor Walker.

This course includes lectures on the requirements, details of arrangement, and materials of construction for barns, storage, and work buildings for the farm. The preparation of specifications, bills of material, and estimates of costs is an essential part of the course. In the drafting-room, plans are prepared for typical farm buildings. Text: Foster and Carter's *Farm Buildings*.

106. FIELD MACHINERY RECITATION. Freshman year and elective, both semesters. Class work, one hour. One semester credit. Assistant Professor Driftmier.

The fundamentally important definitions and principles relating to farm machinery are first given, this being followed by material concerning the development, construction, operation, and use of soil preparation, seeding, cultivating, harvesting, and miscellaneous machinery. The importance of proper selection and care of farm machinery is emphasized. Text: Davidson and Chase's *Farm Machinery and Farm Motors*.

107. FIELD MACHINERY LABORATORY. Freshman year, and elective, both semesters. Laboratory, three hours. One semester credit. Assistant Professor Driftmier and Mr. Smith.

A detailed study of the machines taken up in the classroom is conducted both in the laboratory and in the field. Laboratory charge, \$1.

111. POWER MACHINERY RECITATION. Junior year, first semester. Class work, one hour. One semester credit. Prerequisite: Field Machinery (Ag. Engr. 106). Assistant Professor Driftmier.

This course continues the study of field machinery with special reference to those machines requiring mechanical power for their operation, including engine plows, hay balers, feed mills, corn shellers, ensilage cutters, and threshing machines.

112. POWER MACHINERY LABORATORY. Junior year, first semester. Laboratory, three hours. One semester credit. Assistant Professor Driftmier.

Laboratory and field instruction is given and tests are conducted upon the machines discussed in the classroom. Laboratory charge, \$1.

116. TRACTORS AND TRUCKS RECITATION. Senior year, and elective, first semester. Lectures and recitations, two hours. Two semester credits. Prerequisite: Farm Motors (Ag. Engr. 125). Associate Professor Sanders.

This course covers the study of the construction and operation of tractors and trucks, with special reference to machines using internal combustion engines as power units.

117. TRACTORS AND TRUCKS LABORATORY. Senior year, and elective, first semester. Laboratory, three hours. One semester credit. Associate Professor Sanders.

A study is made of the construction of steam and gas tractors and trucks and practice is given in the operation and testing of these machines under belt, road, and field conditions. Laboratory charge, \$2.

119. FARM SANITATION AND WATER SUPPLY. Elective, second semester. Class work, two hours. Two semester credits. No prerequisite. Professor Walker.

A study is made of water geology, development of water supplies for the farm, water contamination, water systems, pumping equipment, cisterns, household sewage disposal, collection of farm wastes, and the sanitary arrangement of the farm buildings.

120. FARM EQUIPMENT RECITATION. Elective, second semester. Lectures and recitations, one hour. One semester credit. Assistant Professor Driftmier.

A study of handy farm practices and important items of equipment for the farmstead is made in this course. Text: Ramsower's *Equipment for the Farm and Farmstead*.

121. FARM EQUIPMENT LABORATORY. Elective, second semester. Laboratory, three hours. One semester credit. Assistant Professor Driftmier.

Practice is given in rope work, belt lacing and splicing, soldering and pipe fitting, fencing, concrete work, and farm survey. Laboratory charge, \$1.

125. FARM MOTORS RECITATION. Junior year, and elective, second semester. Lectures and recitations, two hours. Two semester credits. Associate Professor Sanders.

This course involves a descriptive study of steam engines, boilers, internal-combustion engines and automobiles, with special reference to their utilization on the farm. Text: Streeter's *Internal Combustion Engines*.

126. FARM MOTORS LABORATORY. Junior year, and elective, second semester. Laboratory, three hours. One semester credit. Associate Professor Sanders and assistants.

In the laboratory, tests are conducted upon the machines discussed in the classroom. Draft tests are made on various types of farm machines. A study is made also of the cost of operating these machines. Laboratory charge, \$2.

130. GAS ENGINES AND TRACTORS. Elective, first semester. Lectures and recitations, two hours; laboratory, three hours. Three semester credits. Associate Professor Sanders.

This course is a study of gas engines and tractors with special reference to their application to power work on the farm. The classroom work covers the principles and application of the internal-combustion engine. The laboratory work includes the operation, testing, adjustment, care and use of the stationary gas engine and tractor for farm work. Text: Potter's *Farm Motors*. Laboratory charge, \$2.

140. ELEMENTS OF IRRIGATION AND DRAINAGE RECITATION. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: Soils (Agron. 133). Professor Walker.

This course comprises a study of the fundamental principles of land reclamation by drainage and irrigation with special reference to agricultural development. Texts: Elliott's *Engineering for Land Drainage*, Fortier's *Use of Water in Irrigation*.

145. ELEMENTS OF IRRIGATION AND DRAINAGE LABORATORY. Elective, first semester. Field and drafting-room work, three hours. One semester credit. Professor Walker.

Practice work in the field and drafting room is developed in the laying out and plotting of farm drainage and irrigation systems. Texts: Same as for Ag. Engr. 140. Laboratory charge, \$1.

175. THESIS. Senior year, continuing through both semesters. First semester: laboratory, three hours; one semester credit. Second semester: laboratory, six hours; two semester credits. Professor Walker, Associate Professor Sanders, and Assistant Professor Driftmier.

Original problems relating to subjects taught in this department are assigned for investigation, after consultation with the head of the department, at the beginning of the first semester of the senior year.

FOR GRADUATES AND UNDERGRADUATES

205. FARM MACHINERY RESEARCH. Elective, second semester. Six to fifteen hours laboratory or reading. Two to five semester credits. Assignment by permission. Prerequisites: Field Machinery and Power Machinery and such other preparation as may be necessary to conduct properly the investigation assigned. Associate Professor Sanders and Assistant Professor Driftmier.

Farm machinery offers a broad field for original investigation along the lines of draft requirements, power consumption, and cost of operating. Students admitted to this course are assigned to one project. Laboratory charge, \$1 for each hour of credit.

215. TRACTOR RESEARCH. Elective, first semester. Six to fifteen hours laboratory, computation, or reading. Two to five semester credits. Prerequisites: Tractors and Trucks, and such other preparation as may be necessary to conduct properly the problem assigned. Associate Professor Sanders and Assistant Professor Driftmier.

Intensive studies are made of problems relating to tractor operation and construction. Laboratory charge, \$2 for each hour credit.

FOR GRADUATES

301. AGRICULTURAL ENGINEERING RESEARCH. Elective, first or second semester. One semester credit for each three hours of laboratory work. Prerequisites: Soils (Agron. 133) and Engineering Physics II (Engr. Physics 150) or its equivalent. Professor Walker.

Many agricultural engineering problems in the design, use and application of machinery and equipment in the development of agriculture are open for extensive research. The laboratories of the College are available for this work. The results of such investigations, if suitable, may be incorporated in bulletins of the Engineering Experiment Station. This work may furnish material for the master's thesis.

Applied Mechanics

Professor SCHOLER
Associate Professor ROBERT
Assistant Professor WOJTASZAK
Assistant Professor DAWLEY

Assistant Professor CHBEK
Instructor ALLEN
Instructor SMITH

The aim of the courses in applied mechanics is to give to the engineering student a practical working knowledge of those fundamental principles of mechanics upon which his future work in structural and machine design may be based.

The materials-testing laboratory is well equipped with machines and apparatus for making physical tests of materials of construction, such as tension, compression, flexure, shear, torsion, hardness and impact tests, and tests under repeated load. Some of the machines are of sufficient capacity to test full size structural and machine members to destruction, among them being a universal machine of 200,000 pounds capacity, with extension members for testing long beams and columns. Facilities are provided for making, curing, and testing concrete and reinforced concrete test specimens.

The materials-testing laboratory also has complete equipment for the testing of highway materials, and has been designated as the official laboratory of the Kansas Highway Commission.

The hydraulics laboratory has facilities for furnishing water under a considerable range of pressures and volumes. It contains devices for measuring and recording the flow of water, including measuring pits, water meters, weirs, nozzles, pitometer, and a Venturi meter. It is also provided with pumps, a standpipe, water motors, and a turbine water wheel for testing purposes, and a supply of pressure gauges, weighing scales, and other auxiliary apparatus.

COURSES IN APPLIED MECHANICS

FOR UNDERGRADUATES

101A. APPLIED MECHANICS. Junior year, both semesters and summer school. Class work, four hours. Four semester credits. Prerequisites: Calculus I (Math. 205) and Engineering Physics II (Physics 150). Professor Scholer, Associate Professor Robert and Assistant Professor Wojtaszak.

A study is made of the analytical and graphical composition, resolution, and conditions of equilibrium of concurrent and nonconcurrent forces; center of gravity; friction; laws of rectilinear and curvilinear motion of material points; moments of inertia; relations between forces acting on rigid bodies and the resulting motions; and of work, energy, and power. Text: Poorman's *Applied Mechanics*.

102. APPLIED MECHANICS A. Junior year, first semester. Class work, three hours. Three semester credits. Prerequisites: Plane Trigonometry (Math. 101), and Engineering Physics 1 (Physics 145). Associate Professor Robert and Assistant Professor Cheek.

This course comprises a study of statics, with applications to stresses in structures; center of gravity; and moment of inertia. Algebraic methods are generally employed, supplemented by graphic construction and numerous examples.

110. STRENGTH OF MATERIALS RECITATION. Junior year, both semesters and summer school. Class work, five hours. Five semester credits. Prerequisite: Applied Mechanics (Ap. Mech. 101A). Professor Scholer, Associate Professor Robert, Assistant Professor Wojtaszak and Mr. Allen.

This course embraces a study of behavior of materials subjected to tension, compression, and shear; riveted joints; torsion; shafts, and the transmission of power; strength and stiffness of simple and continuous beams and cantilevers; bending moments and shear forces in beams; design of beams of wood, steel and reinforced concrete; design of built-up beams and box girders; resilience of beams; stresses in columns and hooks; and the design of columns of wood, steel and reinforced concrete. Text: Boyd's *Strength of Materials* and Hool's *Reinforced Concrete Construction*, Vol. 1. Carnegie's *Pocket Companion* is used for reference.

115. STRENGTH OF MATERIALS E RECITATION. Junior year, both semesters and summer school. Class work, three hours. Three semester credits. Prerequisite: Applied Mechanics. (Ap. Mech. 101A). Associate Professor Robert and Assistant Professor Wojtaszak.

The subject matter of this course is similar to that of Strength of Materials, but much less time is devoted to the study of continuous girders and of reinforced concrete. Text: Boyd's *Strength of Materials*. Carnegie's *Pocket Companion* is used for reference.

116. STRENGTH OF MATERIALS A RECITATION. Junior year, second semester. Class work, three hours. Three semester credits. Prerequisites: Applied Mechanics A (Ap. Mech. 102). Associate Professor Robert and Assistant Professor Cheek.

Behavior of materials subjected to tension, compression, and shear; strength and stiffness of simple beams; moment and shear in flexure of beams, with diagrams; design of beams of wood, steel and reinforced concrete, and design and investigation of columns.

120. STRENGTH OF MATERIALS LABORATORY. Junior year, both semesters and summer school. Laboratory work, three hours. One semester credit. Must accompany or follow Strength of Materials or Strength of Materials E Recitation. Associate Professor Robert, Assistant Professor Wojtaszak, Dawley and Mr. Allen.

Tension, compression, shear and bending tests are made on specimens of iron, steel, wood, and concrete. These include standard commercial tests and tests to determine the elastic properties of the materials. Torsion tests are also made on steel shafting. Standard tests are made on fine and coarse aggregates for concrete. Text: Hatt and Schofield's *Laboratory Manual for Testing Materials*. Laboratory charge, \$2.

121. STRENGTH OF MATERIALS A LABORATORY. Junior year, second semester. Laboratory work, three hours. One semester credit. Must accompany or follow Strength of Materials A Recitation. Assistant Professor Cheek.

This course comprises a study of the various testing machines. Tension, compression, shear, and bending tests are made on specimens of iron, steel,

wood, and concrete. Tests are also made on cement and on the fine and coarse aggregates for concrete. Laboratory charge, \$2.

125. GRAPHIC STATICS. Junior year, first semester. Drafting-room practice, supplemented by lectures, three hours. One semester credit. Must accompany or follow Applied Mechanics or Applied Mechanics A. Assistant Professor Wojtaszak.

Graphical solutions are made of the stresses existing in a number of typical trusses, under a variety of loadings. Text: Hudson and Squire's *Elements of Graphic Statics*.

130. HYDRAULICS RECITATION. Junior and senior years, both semesters and summer school. Class work, three hours. Three semester credits. Prerequisite: Applied Mechanics (Ap. Mech. 101A). Associate Professor Robert and Assistant Professor Wojtaszak.

This course comprises a study of fluid pressures, stresses in containing vessels and pipes, center of pressure, immersion and flotation; Bernoulli's theorem, with applications; flow through orifices, weirs, short and long pipes; loss of head due to various causes; flow of water in open channels, and its measurement; Kutter's formula; impulse and reaction of a jet; elements of water power, impulse wheels, reaction turbines, and centrifugal pumps. Text: Daugherty's *Hydraulics*.

135. HYDRAULICS LABORATORY. Junior and senior years, both semesters. Laboratory work, three hours. One semester credit. Must accompany or follow Hydraulics Recitation (Ap. Mech. 130). Associate Professor Robert and Assistant Professor Wojtaszak.

Tests are made to determine the coefficients of weirs and orifices; use and calibration of water meters are studied; tests are taken to determine loss of head in pipes due to various causes, and tests are made on water wheels, water turbines, rams, and pumps. Laboratory charge, \$1.

150. THESIS. Senior year, continuing through the year. First semester: laboratory, three hours; one semester credit. Second semester: laboratory, six hours; two semester credits. Professor Scholer, and Associate Professor Robert.

The laboratories of the department furnish an excellent opportunity for experimental work in strength of materials, road materials, concrete and hydraulics, suitable for thesis projects of students in any branch of engineering. The subject of the investigation should be selected in consultation with the head of the department at the beginning of the first semester of the senior year.

FOR GRADUATES AND UNDERGRADUATES

250. HIGHWAY ENGINEERING I LABORATORY. Senior year, first semester. Laboratory work, three hours. One semester credit. Prerequisite: Strength of Materials Laboratory (Ap. Mech. 120). Professor Scholer and Mr. Allen.

This is a comprehensive course in the examination and testing of bituminous and nonbituminous road materials. Text: Blanchard's *Highway Engineers' Handbook*. Laboratory charge, \$1.50.

260. ADVANCED APPLIED KINETICS. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Strength of Materials (Ap. Mech. 110), or Strength of Materials E (Ap. Mech. 115). Associate Professor Robert.

Advanced problems in kinetics are given with special attention to the kinetics of rigid bodies.

265. ADVANCED MECHANICS OF MATERIALS. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: Strength of Materials (Ap. Mech. 110), or Strength of Materials E (Ap. Mech. 115). Professor Scholer.

A study is made of the theory of elasticity and its applications, of elastic and masonry arches, and advanced problems in continuous girders involving the general three moment equations.

270. **HYDRAULIC MACHINERY.** Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: Hydraulics (Ap. Mech. 130). Associate Professor Robert.

A study is made of the characteristics and applications of water wheels, turbines, pumps, and other hydraulic machinery.

275. **ROAD MATERIALS.** Elective, second semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Highway Engineering I Laboratory (Ap. Mech. 250). Professor Scholer.

An advanced course in the properties and testing of the various materials used in road construction is here given.

280. **MECHANICS OF REINFORCED CONCRETE.** Elective, first semester. Class work, two hours. Two semester credits for students who have not taken Strength of Materials (Ap. Mech. 110) or its equivalent. Prerequisite: Strength of Materials E (Ap. Mech. 115). Professor Scholer.

The behavior of reinforced-concrete structural elements, including slabs, rectangular beams, T-beams, columns and special floor systems under load, is studied.

FOR GRADUATES

301. **RESEARCH IN MATERIALS OF CONSTRUCTION.** Elective, first or second semester. One semester credit for each three hours of laboratory work. Professor Scholer and Associate Professor Robert.

Many problems related to materials used in engineering construction offer attractive fields for research. A number of special pieces of apparatus in addition to the usual equipment of strength of materials laboratory are available for this work. The results of such investigations, if suitable, may be incorporated in bulletins of the Engineering Experiment Station.

This work may furnish material for the master's thesis.

Architecture

Professor _____
 Professor WALTERS (Emeritus)
 Associate Professor WEIGEL
 Assistant Professor KLEINSCHMIDT

Assistant Professor CHEEK
 Assistant Professor DEHNER
 Instructor _____

The courses in architecture are offered not only to provide for the fundamental training necessary for the practice of architecture, but also to give the student a facility and working knowledge which will be of immediate value to him upon graduation. The foundation which the student acquires in college should be supplemented by continual professional study, especially during those years immediately following graduation, when it is desirable that he should acquire practical experience in the employ and under the guidance of capable and experienced members of the profession. Students are most urgently advised to acquire practical experience in an architect's office during the summer vacations of their college course.

Throughout the course the instruction by lectures, recitations and drafting-room practice is fully amplified and expanded by a free use of the equipment of the Department of Architecture. Within the department is housed a good working library of the standard architectural works and leading professional magazines, together with the collections of lantern slides and photographs to all of which the student has free access. Placed about the amply lighted and well-equipped rooms of the department is a generous collection of plaster casts, including important examples of architectural fragments and ornament from historical monuments. On the walls of the drafting rooms, where they are constantly before the student, are hung selected examples from the department's collection of original drawings, including specimens of both academic and current professional work. From time to time this exhibit is changed.

At frequent intervals, representative men actually engaged in the practice of architecture and the allied arts and trades are invited to talk to and to advise the student. During the junior or senior year under the direction of and in company with a member of the departmental faculty, each student is expected to make a visit to one or more of the neighboring cities, thus enabling him to acquaint himself with the representative work of the profession as well as with the operations and processes involved in the conduct of allied professions and industries.

All drawings or designs made during the student's course are to become the property of the department, to be used or returned at the discretion of the faculty.

COURSES IN ARCHITECTURE

FOR UNDERGRADUATES

106A. ELEMENTS OF ARCHITECTURE I. Freshman year, first semester. Drafting room, nine hours. Three semester credits. Associate Professor Weigel.

This course is outlined to give the student a thorough knowledge of the orders and of the fundamental elements of architectural forms. Throughout the course special attention is given to the development of a high standard of lettering and of draftsmanship. Text: Pierre Esquire's *Traité Élémentaire d'Architecture Comprenant l'Étude Complète des Cinq Ordres*. Laboratory charge, \$1.

107A. ELEMENTS OF ARCHITECTURE II. Freshman year, second semester. Drafting room, nine hours. Three semester credits. Prerequisite: Elements of Architecture (Arch. 106A). Associate Professor Weigel.

This is a continuation of Elements of Architecture I, and consists of simple applications of the forms studied in the previous course. In preparation for the courses in design, attention is given to simple architectural rendering. Laboratory charge, \$1.

111. FREE-HAND DRAWING I. Freshman year, first semester. Drafting room, six hours. Two semester credits. Assistant Professor Dehner.

This course comprises the drawing of simple objects and groups as exercises in developing the powers of observation as well as in training the hand. Special attention is given to representations of the third dimension. In the latter half of the semester, drawings are made in charcoal from casts.

114. FREE-HAND DRAWING II. Freshman year, second semester. Drafting room, six hours. Two semester credits. Prerequisite: Free-hand Drawing I (Arch. 111). Assistant Professor Dehner.

This is an amplification and expansion of the principles taught in Free-hand Drawing I, as applied to architectural forms and architectural ornament. The work consists of drawing in charcoal or pencil from casts.

116. FREE-HAND DRAWING III. Sophomore year, first semester. Drafting room, six hours. Two semester credits. Prerequisite: Free-hand Drawing II (Arch. 114). Assistant Professor Dehner.

This is a continuation of Free-hand Drawing II, and consists of drawing from casts of architectural ornament and of the human figure, with occasional exercises in pencil sketching.

117. FREE-HAND DRAWING IV. Sophomore year, second semester. Drafting room, six hours. Two semester credits. Prerequisite: Free-hand Drawing III (Arch. 116). Assistant Professor Dehner.

In this course Free-hand Drawing III is continued.

118. FREE-HAND DRAWING V. Junior year, first semester. Drafting room, six hours. Two semester credits. Prerequisite: Free-hand Drawing IV (Arch. 117). Assistant Professor Dehner.

This is a continuation of Free-hand Drawing III and IV, and consists of drawing from life in charcoal. In the latter half of the semester the theory of color, together with simple water-color sketching, is studied.

120. FREE-HAND DRAWING VI. Junior year, second semester. Drafting room, six hours. Two semester credits. Prerequisite: Free-hand Drawing V (Arch. 118). Assistant Professor Dehner.

In this course Free-hand Drawing V is continued. Laboratory charge, \$5.

121. FREE-HAND DRAWING VII. Senior year, first semester. Drafting room, six hours. Two semester credits. Prerequisite: Free-hand Drawing VI (Arch. 120). Assistant Professor Dehner.

This course comprises drawing from life in various mediums. Laboratory charge, \$5.

123. FREE-HAND DRAWING VIII. Senior year, second semester. Drafting room, six hours. Two semester credits. Prerequisite: Free-hand Drawing VII (Arch. 121). Assistant Professor Dehner.

This is a continuation of Free-hand Drawing VII, with the addition of some work in original composition. Laboratory charge, \$5.

126. PERSPECTIVE. Freshman year, second semester. Drafting room, three hours. One semester credit. Prerequisites: Elements of Architecture I (Arch. 106A) and Engineering Drawing (Mach. Design 155). Assistant Professor Cheek.

This course consisting of drafting-room exercises and examinations, covers the study and practical application of the theory of perspective as related to architectural practice. In the latter part of the course drafting-room exercises are given to train the student to visualize, in perspective, objects represented in orthographic projection. Laboratory charge, \$1.

130. SHADES AND SHADOWS. Freshman year, first semester. Drafting room, three hours. One semester credit. Prerequisite: Must be taken with Elements of Architecture I (Arch. 106A) and Engineering Drawing (Mach. Design 155). Assistant Professor Cheek.

The course consists of a series of examinations, applying the principles of descriptive geometry in casting conventional architectural shadows. In these exercises the student is required to give careful consideration to the elemental architectural forms and principles of rendering used in his study of this subject. Laboratory charge, \$1.

142. DESIGN I. Sophomore year, first semester. Drafting room, nine hours. Three semester credits. Prerequisites: Elements of Architecture II (Arch. 107A), Free-hand Drawing II (Arch. 114), and simultaneously with Shades and Shadows (Arch. 130). Associate Professor Weigel and Assistant Professor Kleinschmidt.

This course is outlined to develop the student's understanding of architectural composition and his ability to present architectural conceptions, thus laying the foundation for his esthetic training. By means of problems in original design, accompanied by a constant study and analysis of the best historical examples, the student is led to develop his sense of proportion and conception of beauty, at the same time acquiring through the training of hand and eye a facility in architectural composition and rendering. In this course each student receives individual instruction, accompanied by frequent criticisms of student's work before the entire class.

144. DESIGN II. Sophomore year, second semester. Drafting room, nine hours. Three semester credits. Prerequisite: Design I (Arch. 142). Associate Professor Wiegel and Assistant Professor Kleinschmidt.

In this course Design I is continued.

145. DESIGN III. Junior year, first semester. Drafting room, fifteen hours. Five semester credits. Prerequisites: Free-hand Drawing IV (Arch. 117) and Design II (Arch. 144). Assistant Professor Kleinschmidt.

This is a continuation of Design I and II. At frequent intervals during the year, time problems or rapid design sketches are required to test the student's development and to give him practice in clear and concise expression. It is also required that at least one problem be presented in perspective.

147. DESIGN IV. Junior year, second semester. Drafting room, fifteen hours. Five semester credits. Prerequisite: Design III (Arch. 145). Assistant Professor Kleinschmidt.

In this course Design III is continued.

148. DESIGN V. Senior year, first semester. Drafting room, twenty-four hours. Eight semester credits. Prerequisites: Free-hand Drawing VI (Arch. 120) and Design IV (Arch. 147). Assistant Professor Kleinschmidt.

In this course Design IV is continued.

151. DESIGN VI. Senior year, second semester. Drafting room, twenty-four hours. Eight semester credits. Prerequisite: Design V (Arch. 148). Assistant Professor Kleinschmidt.

In this course Design V is continued.

154A. HISTORY OF ARCHITECTURE I. Freshman year, first semester. Lectures, two hours. Two semester credits. Associate Professor Weigel.

This is a lecture and recitation course covering the history of architecture from the dawn of civilization to the end of the Roman empire. Throughout the courses in the history of architecture the relation of architecture to the development of civilization is constantly emphasized. The lectures are given with the aid of lantern slides, and written papers, with sketches, are required of each student.

157A. HISTORY OF ARCHITECTURE II. Freshman year, second semester. Lectures, two hours. Two semester credits. Prerequisite: History of Architecture (Arch. 154A). Associate Professor Weigel.

This course continues History of Architecture I.

158A. HISTORY OF ARCHITECTURE III. Sophomore year, first semester. Lectures, two hours. Two semester credits. Prerequisites: Free-hand Drawing (Arch. 114) and History of Architecture II (Arch. 157A). Assistant Professor Kleinschmidt.

This course continues History of Architecture II.

160A. HISTORY OF ARCHITECTURE IV. Sophomore year, second semester. Lectures, two hours. Two semester credits. Prerequisite: History of Architecture III (Arch. 158A). Assistant Professor Kleinschmidt.

This course continues History of Architecture III and finishes the History of Architecture to modern times.

178. HISTORY OF CIVILIZATION AND ART I. Senior year, first semester. Lectures, three hours. Two semester credits. Prerequisite: History of Architecture IV (Arch. 160A). Associate Professor Weigel.

This course comprises a survey of civilization from earliest history, laying special emphasis on the Hellenic and Roman periods; tracing the economic, political, racial, and religious phases of history simultaneously with the artistic developments of each epoch. The course consists of lectures, recitations, written papers, and research; the accomplishment of which is greatly aided by a free use of lantern slides, photographs, and library references.

182. HISTORY OF CIVILIZATION AND ART II. Senior year, second semester. Lectures, three hours. Two semester credits. Prerequisite: History of Civilization and Art I (Arch. 178). Associate Professor Weigel.

In this course History of Civilization and Art I is continued to the close of the Renaissance.

187A. BUILDING MATERIALS AND CONSTRUCTION. Sophomore year, first semester. Lectures, three hours. Three semester credits. Prerequisite: Elements of Architecture II (Arch. 107A). Assistant Professor Cheek.

This course takes up the study of the properties and uses of the materials of construction. Attention is also given to the properties of these materials in their relation to design. Occasional visits to buildings under construction are made, to familiarize the student with various forms of construction and with the methods employed in building operations.

191. WORKING DRAWINGS AND SPECIFICATIONS. Sophomore year, second semester. Drafting room, nine hours. Three semester credits. Prerequisite: Building Materials and Construction (Arch. 187A). Associate Professor Weigel.

The course comprises the preparing of working drawings and specifications for suburban residences. The complete details for buildings are drawn. Heating, plumbing and structural problems are also worked out in connection with the course. It is attempted in this course to meet problems very much as they are met with by the architect in the profession.

192. THEORY OF STRUCTURES I. Junior year, first semester. Class work, two hours; drafting room, six hours. Four semester credits. Prerequisite: Working Drawings and Specifications (Arch. 191). Must be taken simultaneously with or subsequent to Applied Mechanics A (Ap. Mech. 102). Assistant Professor Cheek.

This course covers the study of the simple design and the various methods of framing wooden structures.

194. THEORY OF STRUCTURES II. Junior year, second semester. Class work, one hour; drafting room, six hours. Three semester credits. Prerequisite: Theory of Structures I (Arch. 192). Must be taken simultaneously with or subsequent to Strength of Materials A (Ap. Mech. 116) and Strength of Materials A Laboratory (Ap. Mech. 121). Assistant Professor Cheek.

This course comprises the study of the general principles of building design with both the algebraic and graphic solutions of these principles.

196. STRUCTURAL DESIGN I. Senior year, first semester. Class work, one hour; drafting room, six hours. Three semester credits. Prerequisite: Theory of Structures II (Arch. 194). Assistant Professor Cheek.

This course covers the solution of problems in modern steel construction, giving special attention to the relation of steel to other building materials.

198. STRUCTURAL DESIGN II. Senior year, second semester. Class work, one hour; drafting room, six hours. Three semester credits. Prerequisite: Structural Design I (Arch. 196). Assistant Professor Cheek.

This course is a continuation of Structural Design I, and deals more specifically with reinforced concrete design.

FOR GRADUATES AND UNDERGRADUATES

201. ADVANCED FREE-HAND DRAWING I. Elective, first semester. Drafting room, six hours. Two semester credits. Assistant Professor Dehner.

This course includes the study of the human figure and exercises in original composition of architectural ornament. Work is done in various mediums.

206. ADVANCED FREE-HAND DRAWING II. Elective, second semester. Drafting room, six hours. Two semester credits. Assistant Professor Dehner.

This is a continuation of Advanced Free-hand Drawing I.

211. ADVANCED HISTORY OF CIVILIZATION AND ART I. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: History of Civilization and Art II (Arch. 182). Associate Professor Weigel.

This course comprises a detailed study of civilization from the Babylonian and Assyrian Empires to the fifteenth century, tracing the artistic developments of each epoch. Instruction is by means of lectures, recitations, written papers, and research.

216. ADVANCED HISTORY OF CIVILIZATION AND ART II. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Advanced History of Civilization and Art I (Arch. 211). Associate Professor Weigel.

This is a continuation of Advanced History of Civilization and Art I.

221. PROBLEMS IN ARCHITECTURAL DEVELOPMENT. Elective, first and second semesters. Drafting-room and class work. Credit as determined by Associate Professor Weigel.

This course comprises the study of historic problems in architectural development. Such work must be pursued under the direct supervision of some member of the departmental staff.

FOR GRADUATES

301. **ADVANCED DESIGN I.** Elective, first semester. Drafting room, thirty hours. Ten semester credits. Associate Professor Weigel.

In this course a study of the planning of important buildings and groups of buildings is made, together with occasional rapid-sketch problems of minor buildings or plan projects.

304. **ADVANCED DESIGN II.** Elective, second semester. Drafting room, thirty hours. Ten semester credits. Associate Professor Weigel.

This is a continuation of Advanced Design I.

This course may furnish material for the master's thesis.

324. **RESEARCH IN ARCHITECTURE.** Elective, first and second semesters. Drafting-room or class work. Credit as determined by Associate Professor Weigel and Graduate Council.

This course comprises the study of a research problem in architecture, determined by conferences between Associate Professor Weigel and the student, and approved by the Graduate Council.

This course may furnish material for the master's thesis.

Civil Engineering

Professor CONRAD
Professor FRAZIER
Associate Professor FURR

Assistant Professor WHITE
Instructor CRAWFORD
Instructor MORSE

The purpose of the instruction in the Department of Civil Engineering is to give the student a thorough knowledge of the fundamental principles of engineering and to develop his ability to analyze engineering problems, and thus prepare the graduate to enter any one of the many special fields which are usually included under the title of civil engineering.

In addition to the laboratory equipment of the other engineering departments, which is available to civil-engineering students, the Department of Civil Engineering possesses a good assortment of transits, levels, plane tables, compasses, tapes and chains. It also owns a precise level, a direction theodolite, a repeating theodolite, four different kinds of solar attachments, and a base-line outfit.

Approximately 90 per cent of the graduates of this department are now engaged in engineering work in cities, in the oil fields, in the government reclamation and valuation service, in consulting engineering, in highway work, in construction work, and in other work in which a knowledge of civil engineering is a prerequisite.

COURSES IN CIVIL ENGINEERING

FOR UNDERGRADUATES

102. **SURVEYING I.** Freshman year, both semesters. Field work, plotting, and supervised study, six hours. Two semester credits. Prerequisite or parallel: Plane Trigonometry (Math. 101). Assistant Professor White, Mr. Crawford and Mr. Morse.

This is a brief course in the use and care of engineers' surveying instruments. Text: Breed and Hosmer's *Surveying*, Vol. I. Laboratory charge, \$1.

111. **SURVEYING II.** Freshman year, both semesters. Field work, plotting and supervised study, six hours. Two semester credits. Prerequisite: Surveying I (Civ. Engr. 102). Associate Professor Furr and Assistant Professor White.

The course is devoted to land and topographic surveying. Text: Breed and Hosmer's *Surveying*, Vol. I. Laboratory charge, \$1.

120. MASONRY AND FOUNDATIONS. Junior year, first semester. Class work, two hours. Two semester credits. Prerequisite: Engineering Physics II (Physics 150); Applied Mechanics I (Ap. Mech. 101, 105) must be taken with this course or precede it. Professor Frazier.

In this course a study is made of the principles underlying the design and construction of foundations, the stresses in plain masonry structures, and the method of designing such structures. Text: Baker's *Treatise on Masonry Construction*.

125. CIVIL ENGINEERING DRAWING. Sophomore year, second semester. Drafting room, six hours. Two semester credits. Prerequisite: Machine Drawing I (Mach Design 111). Assistant Professor White.

This course is devoted to the application of stereotomy, shades and shadows, isometric and perspective drawing, and copying working drawings of engineering structures. The principles are explained to the students by such short lectures as seem necessary for the purpose. No textbook is used.

145. RAILWAY ENGINEERING I. Junior year, second semester. Class work, two hours. Two semester credits. Prerequisites: Surveying IV and Civil Engineering Drawing I (Civ. Engr. 111, 125). Professor Frazier.

This is a short course in the theory of railway engineering based on Wellington's economic theory. Considerable time is also devoted to the study of track construction and maintenance, and to the design of yards and terminals. Text: Raymond's *Elements of Railroad Engineering*.

151. SURVEYING III RECITATION. Sophomore year, first semester. Class work, two hours. Two semester credits. Prerequisite: Surveying II (Civ. Engr. 111). Associate Professor Furr.

This course comprises a study of topographic, hydrographic, city, and mine surveying. Text: Breed and Hosmer's *Surveying*, Vols. I and II.

155. SURVEYING III LABORATORY. Sophomore year, first semester. Field and drafting-room work, three hours. One semester credit. Prerequisite: Surveying II (Civ. Engr. 111). Associate Professor Furr.

The field exercises are devoted to practice work in topographic surveying. Time in the drafting room is devoted principally to topographic mapping. Texts: Same as in Civ. Engr. 151.

156. SURVEYING IV RECITATION. Sophomore year, second semester. Class work, two hours. Two semester credits. Prerequisite: Surveying III (Civ. Engr. 151, 155). Calculus I (Math. 205) must be taken with this course or precede it. Associate Professor Furr.

This course is devoted to a study of railroad curves and earthwork. Text: Allen's *Railroad Curves and Earthwork*, with tables.

157. SURVEYING IV LABORATORY. Sophomore year, second semester. Field and drafting room, three hours. One semester credit. Prerequisite: Surveying III (Civ. Engr. 151, 155). Associate Professor Furr.

The time is devoted to field and drafting room exercises in railroad curves and earthwork.

161. DRAINAGE AND IRRIGATION I. Junior year, second semester. Class work, two hours. Two semester credits. Hydraulics (Ap. Mech. 130 and 135) must be taken with this course or precede it. Professor Conrad.

In this course a study is made of the application of engineering principles to the design and construction of drainage and irrigation works. Texts: Elliott's *Engineering for Land Drainage*, and Davis and Wilson's *Irrigation Engineering*.

170. THESIS. Senior year, continuing through both semesters. First semester, three hours; one semester credit. Second semester, six hours; two semester credits. Professor Conrad.

All candidates for the degree of Bachelor of Science in civil engineering are

required during their senior year to prepare a thesis, or to do an equivalent amount of work in an elective subject approved by the dean of engineering. This thesis may be a report on a proposed design, an original investigation, or a library research. Civil engineering students may, with the approval of the head of the department, take their thesis work outside of the department. The thesis subject may be selected and approved by the head of the department in which the work is done before October first next preceding the commencement at which the candidate proposes to graduate.

FOR GRADUATES AND UNDERGRADUATES

201. BRIDGE STRESSES. Senior year, first semester. Class work, four hours. Four semester credits. Prerequisite: Strength of Materials (Ap. Mech. 110). Professor Conrad.

This course involves a study of the methods of computing the stresses in bridges, leading up to the subject of bridge design in the following semester. Text: Ketchum's *Design of Highway Bridges*.

205. CIVIL ENGINEERING DRAWING II. Senior year, first semester. Drafting room, six hours. Two semester credits. Prerequisite: Civil Engineering Drawing I (Civ. Engr. 125). Professor Conrad.

This course is devoted to graphic statics and the design of simple roof trusses in timber and steel. Text: Same as for course 201.

211. ASTRONOMY AND GEODESY RECITATION. Senior year, first semester. Class work, two hours. Two semester credits. Prerequisite: Surveying III (Civ. Engr. 151, 155). Professor Frazier.

This is a brief course in the elements of practical astronomy, followed by a study of the precise methods of surveying and leveling. Text: Ingram's *Geodetic Surveying*.

216. ASTRONOMY AND GEODESY LABORATORY. Senior year, first semester. Field work, six hours. Two semester credits. Prerequisite: Surveying III Laboratory (Civ. Engr. 155). Professor Frazier.

The work is devoted to simple astronomical observations, principally for determining the true meridian and latitude; to base-line measurements and triangulation work. Each student is also required to run a short circuit with the precise level.

220. WATER SUPPLY. Senior year, first semester. Class work, two hours. Two semester credits. Prerequisite: Hydraulics (Ap. Mech. 130 and 135). Professor Frazier.

The course deals with the water supply for cities from the standpoint of consumption, collection, storage, distribution, and purification.

225. SEWERAGE. Senior year, first semester. Class work, two hours. Two semester credits. Prerequisite: Hydraulics (Ap. Mech. 130). Professor Frazier.

A study is made of the problems met in the design and construction of sewer systems and disposal plants for cities of moderate size.

230. HIGHWAY ENGINEERING I RECITATION. Senior year, first semester. Class work, two hours. Two semester credits. Prerequisite: Applied Mechanics (Ap. Mech. 101A). Associate Professor Furr.

A study is made of the principles underlying the location, construction, and maintenance of all ordinary types of roads and pavements. Text: Agg's *Construction of Roads and Pavements*. (For laboratory work in connection with this course, see Ap. Mech. 250.)

246. BRIDGE DESIGN. Senior year, second semester. Drawing, nine hours. Three semester credits. Prerequisite: Bridge Stresses (Civ. Engr. 201). Professor Conrad.

This course comprises the making of general drawings for a highway truss bridge, a railroad truss bridge, and a railroad deck plate girder. Text: Ketchum's *Structural Engineers' Handbook*.

250. CONCRETE DESIGN RECITATION. Senior year, second semester. Class work, two hours. Two semester credits. Prerequisite: Strength of Materials (Ap. Mech. 110). Professor Conrad.

An application of the principles of reinforced concrete to the design of chimneys, buildings, retaining walls, dams, and bridges. Text: *Concrete Engineers' Handbook* by Hool and Johnson.

255. CONCRETE DESIGN LABORATORY. Senior year, second semester. Drafting-room work, three hours. One semester credit. Prerequisite: Strength of Materials (Ap. Mech. 110). Professor Conrad.

In this course the students make drawings of reinforced concrete retaining walls, dams, slab bridges and girder bridges. Text: *Concrete Engineers' Handbook*, by Hool and Johnson.

256. REINFORCED CONCRETE ARCHES. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Concrete Design (Civ. Engr. 250, 255). Professor Conrad.

A study of the various types of reinforced-concrete arches adapted for use in bridges, buildings and dams, including the computation of stresses and arrangement of details.

260. RAILWAY ENGINEERING II RECITATION. Optional, senior year, second semester. Class work, two hours. Two semester credits. Prerequisite: Railway Engineering I (Civ. Engr. 145). Professor Frazier.

This course comprises the study of railway operation and maintenance.

265. RAILWAY ENGINEERING II LABORATORY. Optional, senior year, second semester. Field and drafting room, six hours. Two semester credits. Prerequisite: Railway Engineering I (Civ. Engr. 145). Professor Frazier.

In the field, reconnaissance and survey of a short railroad is made, and the office work consists in making the maps, profiles, and estimates from the survey. Text: Allen's *Railroad Curves and Earthwork*, with tables.

270. HIGHWAY ENGINEERING II RECITATION. Optional, senior year, second semester. Class work, two hours. Two semester credits. Prerequisite: Highway Engineering I (Civ. Engr. 230). Associate Professor Furr.

This course consists in a study of highway laws, highway administration in the various states, and highway economics. Text: Harger's *Rural Highway Pavements*.

275. HIGHWAY ENGINEERING II LABORATORY. Optional, senior year, second semester. Field and drafting room, six hours. Two semester credits. Prerequisite: Highway Engineering I (Civ. Engr. 230). Associate Professor Furr.

In the field, a reconnaissance and survey for a highway a few miles long is made. The work in the drafting room consists in making the maps, profiles, and estimates from the survey.

276. HIGHWAY ECONOMICS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Highway Engineering II (Civ. Engr. 270, 275). Associate Professor Furr.

A study of highway transport and construction problems as affected by recent findings of research agencies in this field.

280. DRAINAGE AND IRRIGATION II RECITATION. Optional, senior year, second semester. Class work, two hours. Two semester credits. Prerequisite: Drainage and Irrigation I (Civ. Engr. 161). Professor Conrad.

A continuation of the former course in Drainage and Irrigation, dealing with the design of irrigation structures and the management of irrigation projects.

285. DRAINAGE AND IRRIGATION II LABORATORY. Optional, senior year, second semester. Field and drafting room, six hours. Two semester credits. Professor Conrad.

The field work consists in making the survey for a drainage or irrigation project. In the office the maps, estimates, and designs are made, using the survey as a basis.

FOR GRADUATES.

301. **ADVANCED BRIDGE STRESSES.** Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Bridge Stresses (Civ. Engr. 201). Professor Conrad.

A study of deflections; stresses in continuous, movable, cantilever, suspension, multiple intersection, and steel arch bridges; and secondary stresses.

316. **RAILROAD TRANSPORTATION.** Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Railway Engineering I (Civ. Engr. 145). Professor Frazier.

A study of the function of the railway system; its relation to industrial development and its correlation with other methods of transportation.

Electrical Engineering

Professor REID
 Professor KLOEFFLER
 Assistant Professor BRENNEMAN
 Instructor KERCHNER

Instructor HUNT
 Instructor WILSON
 Instructor CHURCH

Instruction in the Department of Electrical Engineering is planned to give the student a thorough training in the underlying principles of electrical phenomena, direct and alternating current, and in the application of electrical theory to the solution of the practical problems in the many fields of the industry. The textbook, lecture and classroom instruction is accompanied by extended courses in the laboratories, which include commercial tests on standard types of machinery and also special tests designed to exemplify the theory.

The laboratories include a measurement laboratory, well equipped with standards of resistance, electromotive force, self-induction and capacity, and with standard instruments of high precision of both American and foreign manufacture.

The telephone laboratory is unusually well supplied with several demonstration panels of and switchboards for magneto, common battery (manual) and automatic telephone systems, and a large supply of telephone instruments and parts for assembling complete circuits.

An illumination laboratory is equipped with standard apparatus for all kinds of photometric measurements. Lamps, reflectors and luminaries covering almost every type used in practice are maintained for experimental purposes.

Equipment for the study of radiotelephony is also available.

The main dynamo laboratory contains examples of all types of electrical machinery and control apparatus, including more than 50 direct- and alternating-current generators and motors, from 1 to 30 kilowatts and totaling more than 450 horsepower. The instrument room in connection contains more than 100 instruments of more than 250 ranges for the measurement of current, voltage, power, frequency and other electrical quantities. The dynamo laboratory also includes a complete electric-railway test set, consisting of two modern railway motors, geared to a load and controlled by a complete H L type control equipment.

In addition, there is a repair shop for the department; a repair laboratory for instruction in armature winding and dynamo and apparatus repair; and a wiring laboratory for the freshman course, in which sixteen booths or rooms, in imitation of buildings both finished and in process of construction, and a complete stock of supplies for cleat, concealed knob and tube, conduit, and conduit construction afford students actual practice in wiring buildings by the commonly used methods.

COURSES IN ELECTRICAL ENGINEERING

FOR UNDERGRADUATES

160. ELECTRICAL ENGINEERING C RECITATION. Senior year, second semester. Recitations or lectures, two hours. Two semester credits. Prerequisite: Engineering Physics II (Physics 150). Mr. Church.

This work is designed to cover briefly the fundamental principles of direct-current and alternating-current electricity. Emphasis is laid upon the proper installation and operation of the different classes of machines and the use of electricity for lighting and power. Text: Bailey's *Dynamo-Electric Machinery*.

165. ELECTRICAL ENGINEERING C LABORATORY. Senior year, second semester. Laboratory work, three hours. One semester credit. Mr. Church.

The laboratory practice is designed to give the student a knowledge of the most important commercial tests. The proper use of electrical instruments is emphasized. A written report of each laboratory test is required. Text: Wilson's *Dynamo Laboratory Outlines*. Laboratory charge, \$1.

170. ELECTRICAL MACHINERY AND CONSTRUCTION. Freshman year, first and second semesters. Laboratory work, six hours. Two semester credits. Professor Reid, Mr. Hunt and Mr. Wilson.

This is an introductory course in applied electricity. About one-half the time is devoted to acquainting the student with the various modern methods of interior wiring, approved by the National Board of Fire Underwriters, including open, cleat wiring, knob and tube-concealed wiring, flexible and rigid iron-pipe conduit, and metal molding. The wiring "code" is used as a reference in this part of the course, and on its completion the student should be competent to plan, lay out and install the wiring for the usual residence or business building.

The remainder of the time is devoted to the installation, care, operation, and repair of electrical machinery. It includes armature winding of direct- and alternating-current motors and generators; the diagnosis and location of faults—short circuits, open circuits, grounds—and the repair of these various types of electrical-machine troubles. It also includes the installation and connection of motors, generators, meters, compensators, and other of the usual types of electrical apparatus. Texts: Croft's *Wiring for Light and Power*, Timbie's *Essentials of Electricity*. Laboratory charge, \$3.

195. THESIS. Senior year, continuing through both semesters. First semester: three hours; one semester credit. Second semester: six hours; two semester credits. Professor Reid, Professor Kloeffler, Assistant Professor Brenneman, Kerchner, Mr. Hunt, Mr. Wilson and Mr. Church.

The subject for thesis work is selected in consultation with the head of the department, at the beginning of the first semester of the senior year. The work is continued during the second semester. Every opportunity is given the student to work out original ideas as to design and operation of electrical apparatus and machinery.

FOR GRADUATES AND UNDERGRADUATES

203. DIRECT-CURRENT MACHINES I RECITATION. Junior year, both semesters and summer school. Recitations or lectures, three hours. Three semester credits. Prerequisites; Calculus I (Math. 205) and Engineering Physics II (Physics 150). Assistant Professor Brenneman and Mr. Kerchner.

The work consists of a detailed study of the fundamental principles of magnetic and electric circuits and their application to the various types of direct-current machines. Numerous problems involving the application of the principles are given as a part of the course. The class work is planned to coordinate with the work in the electrical engineering laboratory. Text: Langsdorf's *Principles of Direct-current Machines*.

204. DIRECT-CURRENT MACHINES I LABORATORY. Junior year, both semesters. Laboratory work, three hours. One semester credit. This course should ac-

company or follow Direct-current Machines I Recitation. Assistant Professor Brenneman and Mr. Kerchner.

A series of experiments outlined which is designed to necessitate careful, accurate measurement. The student is obliged to make all electrical connections with necessary instruments in the circuit, and to record the required data. From the laboratory records a written report upon each experiment or test must be submitted. The laboratory exercises include tests for armature and field resistance, potential curves, machine characteristics, motor and generator efficiencies. Text: Swenson and Frankenfield's *Testing of Electromagnetic Machinery, Vol. I*. Laboratory charge, \$1.

206. DIRECT-CURRENT MACHINES II RECITATION. Junior year, both semesters and summer school. Lectures or recitations, two hours. Two semester credits. Prerequisites: Direct-current Machines I (Elec. Engr. 203) and Electrical Measurements (Elec. Engr. 227). Assistant Professor Brenneman and Mr. Kerchner.

This course is a continuation of Direct-current Machines I. It involves a detailed study of the various types of direct-current machinery with respect to theory and operation. Text: Langsdorf's *Principles of Direct-current Machines*.

207. DIRECT-CURRENT MACHINES II LABORATORY. Junior year, both semesters and summer school. Laboratory work, three hours. One semester credit. This course should accompany or follow Direct-current Machines II Recitation. Professor Kloeffler and Mr. Kerchner.

Special attention is given in this course to the different methods of determining generator and motor efficiencies and to the proper tabulation and interpretation of results. The latter part of the course is devoted to the calibration of electrical instruments. Text: Swenson and Frankenfield's *Testing of Electromagnetic Machinery, Vol. I*. Laboratory charge, \$1.

209. ALTERNATING-CURRENT MACHINES I RECITATION. Junior year, second semester and summer school. Recitations or lectures, four hours. Four semester credits. Prerequisites: Calculus II (Math. 206) and Direct-current Machines I (Elec. Engr. 203, 204). Professor Reid and Mr. Kerchner.

The work consists of a mathematical treatment of alternating-current phenomena. A study is made of the vector method of treating alternating-current problems. The solution of problems involving single and polyphase circuits forms an important part of the course. Text: Lawrence's *Principles of Alternating Currents*.

211. ALTERNATING-CURRENT MACHINES I LABORATORY. Junior year, second semester. Laboratory work, three hours. One semester credit. This course should accompany or follow Alternating-current Machines I Recitation. Professor Reid, Mr. Kerchner, Mr. Hunt, and Mr. Church.

It is the aim of this course to provide a series of experiments illustrating the theoretical work of the lecture room. Practice is given in the accurate measurement of capacity and inductance, and the effect of each upon the circuit. The latter part of the course is devoted to a study of polyphase circuits. Laboratory charge, \$1.

213. ALTERNATING-CURRENT MACHINES II RECITATION. Senior year, first semester. Recitations or lectures, four hours. Four semester credits. Prerequisite: Alternating-current Machines I (Elec. Engr. 209, 211). Professor Reid and Mr. Kerchner.

This is a continuation of Alternating-current Machines I. The course consists of a study of the theory of alternating-current machinery, alternators, synchronous motors, induction motors, transformers, and the various devices used in connection with alternating-current work. A study is also made of the application of the different types of machinery to industrial uses. Text: Lawrence's *Principles of Alternating-current Machinery*.

215. ALTERNATING-CURRENT MACHINES II LABORATORY. Senior year, first semester. Laboratory work, six hours. Two semester credits. This course

should accompany or follow Alternating-current Machines II Recitation. Professor Reid, Mr. Kerchner, Mr. Hunt and Mr. Church.

A series of experiments involving special and commercial tests of alternators, synchronous motors, transformers, and the different types of alternating-current machinery and apparatus are carried out. Laboratory charge, \$1.50.

220. TELEPHONY RECITATION. Senior year, first semester. Class work, two hours. Two semester credits. Prerequisite: Alternating-current Machines I (Elec. Engr. 209, 211). Professor Kloeffler.

This course covers the principles of telephonic communication as applied to the apparatus and circuits used on magneto, common battery (manual). Strowger automatic and machine switching systems. Toll telephone practice, involving the use of line loading, repeaters and carrier currents is likewise included. Text: Kloeffler's *Telephone Communication Systems*.

225. TELEPHONE LABORATORY. Senior year, first semester. Laboratory, three hours. One semester credit. This course should accompany or follow Telephony Recitation. Professor Kloeffler.

This course includes the study and measurement of telephone parts, the actual wiring of telephone circuits on the magneto, common battery and automatic systems, location of line trouble, and transmission efficiency tests on various types of apparatus and circuits. Laboratory charge, \$1.

227. ELECTRICAL MEASUREMENTS RECITATION. Junior year, first semester. Lectures and recitations, two hours. Two semester credits. Prerequisites: Calculus I (Math. 205) and Engineering Physics II (Physics 150). Professor Kloeffler.

This course is an extension of the work in electricity in Engineering Physics II. It treats of the various methods for the measurement of resistance, current, electromotive force, capacity, and inductance. Text: A. W. Smith's *Principles of Electrical Measurements*.

The latter part of the course is devoted to a study of the construction and testing of the various types of voltmeters, ammeters, wattmeters, and watthour meters. Text: Jansky's *Electrical Meters*.

228. ELECTRICAL MEASUREMENTS LABORATORY. Junior year, first semester. Laboratory work, three hours. One semester credit. This course should accompany or follow Electrical Measurements Recitation. Professor Kloeffler.

The laboratory course follows the work of the classroom by giving applications of the fundamental principles studied. Laboratory charge, \$1.

230. ELECTRICAL ENGINEERING M-I RECITATION. Senior year, first semester. Lectures or recitations, three hours. Three semester credits. Prerequisites: Engineering Physics II (Physics 150) and Calculus I (Math. 205). Assistant Professor Brenneman.

This course covers the subject of direct-current machines with reference to the fundamental laws of the electric circuit, the principles of direct-current machinery, and the more important commercial tests. Text: Bailey's *Dynamo Electric Machinery*.

231. ELECTRICAL ENGINEERING M-I LABORATORY. Senior year, first semester. Laboratory, three hours. One semester credit. This course should accompany or follow Electrical Engineering M-I Recitation. Assistant Professor Brenneman.

Practice is given in the proper use of electrical measuring instruments. The experiments include a variety of tests requiring accurate observation and a knowledge of the theory of dynamo machines. The various standard characteristics and efficiency tests are given. A written report on each test is required. Laboratory charge, \$1.

235. ILLUMINATING ENGINEERING RECITATION. Senior year, second semester. Lectures and recitation, two hours. Two semester credits. Prerequisites: Calculus II (Math. 206) and Engineering Physics II (Physics 150). Professor Kloeffler.

This course is devoted to a study of photometry, light standards, the principles of illumination, and illumination design. Texts: Ferguson's *Electric Lighting*, and bulletins of the National Lamp Works.

236. ILLUMINATING ENGINEERING LABORATORY. Senior year, second semester. Laboratory, three hours. One semester credit. This course should accompany or follow Illuminating Engineering Recitation. Professor Kloeffler.

The laboratory work involves photometric measurements of light intensity, luminous flux, brightness and illumination, and the determination of light distribution about various illuminants and luminaries. Each student makes a lighting survey of some commercial establishment and works out a practical illumination design problem as a part of the course.

240. ELECTRIC RAILWAYS. Optional with Electrical Machine Design II (Elec. Engr. 271). Senior year, second semester. Recitations or lectures, two hours. Two semester credits. Prerequisite: Alternating-current Machines II (Elec. Engr. 213, 215). Professor Reid and Mr. Kerchner.

A study is made of the development of electric traction; traffic conditions and train schedules; speedtime curves; power generation and distribution for electric railway signal systems; types of cars and locomotives in use; various control systems; and adaptability of electric traction to steam road. Text: Harding's *Electric Railway Engineering*.

242. ELECTRICAL ENGINEERING M-II RECITATION. Senior year, second semester. Lectures and recitations, three hours. Three semester credits. Prerequisite: Electrical Engineering M-I (Elec. Engr. 230, 231). Assistant Professor Brenneman.

The work covers briefly the important principles of alternating-current phenomena. The leading types of alternating-current machinery and apparatus are discussed with reference to their operation and their adaptability to different classes of service. Text: Bailey's *Dynamo-Electric Machinery*.

243. ELECTRICAL ENGINEERING M-II LABORATORY. Senior year, second semester. Laboratory work, three hours. One semester credit. Assistant Professor Brenneman and Mr. Hunt.

This course includes practice in the use of alternating-current instruments; standard tests of alternators, motors, and transformers; and methods of operating the different types of alternating-current machinery. Laboratory charge, \$1.

245. STORAGE BATTERY ENGINEERING. Elective, first semester. Class work, three hours. Three semester credits. Prerequisites: Chemistry E-II (Chem. 108 A), and Engineering Physics II (Physics 150). Knowledge of generators will be valuable. Assistant Professor Brenneman.

This course includes a study of process of manufacture, molecular and chemical theory of operation, behavior on charge and discharge, rating and life of a battery; battery diseases, their causes, methods of recognition, and remedies; methods of charge and discharge; and features of batteries that determine their adaptability to central stations, farm lighting service and gas and electric vehicles. Attention is given to the features of each application that are most likely to cause the various troubles. Text: Lyndon's *Storage Battery Engineering*, with other books for reference on automobile practice.

250. COMMERCIAL ENGINEERING. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Economics (Econ. 101). Professor Kloeffler.

This course develops the relation of the engineer to commercial life. It covers the work of the sales engineer and the routine of an order through an industrial concern. It likewise includes the principles of salesmanship as applied to the selling of materials and apparatus, plans and services.

255. ELECTRIC HEATING. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: Direct-current Machines I (Elec. Engr. 203). Professor Kloeffler.

This course covers the theory and practice of electricity as applied to cooking, room heating, japanning ovens, spot welding, arc welding, and the various types of electric arc and induction furnaces.

260. INDUSTRIAL ELECTRICAL APPLICATIONS. For advanced students in courses other than electrical engineering. Elective, first or second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Electrical Engineering M-II (Elec. Engr. 242). Professor Reid.

The course comprises a study of the principal types of electrical machinery and apparatus encountered in practice, and the transmission and distribution of electric power for industrial purposes, including electric motor drive, electric lighting and electric heating in industrial plants. Choice of equipment for performing specified duties is discussed.

270. ELECTRICAL MACHINE DESIGN I. Senior year, first semester. Laboratory work, three hours. One semester credit. Prerequisite: Direct-current Machines II (Elec. Engr. 206, 207). Professor Kloeffler.

The purpose of the course is to acquaint the student with the principles of commercial design of direct-current machinery. Each student is required to make the necessary calculations and drawings for a direct-current generator. Text: Gray's *Electrical Machine Design*.

271. ELECTRICAL MACHINE DESIGN II. Optional with Electric Railways (Elec. Engr. 240). Senior year, second semester. Laboratory, six hours. Two semester credits. Prerequisites: Alternating-current Machines II (Elec. Engr. 213, 215) and Electrical Machine Design I (Elec. Engr. 270). Professor Kloeffler.

This is a continuation of Electrical Machine Design I. Drawings are made from the direct-current generator previously calculated. A study is made of the principles of alternating-current design as applied to transformers, and each student makes the necessary design calculations for a transformer.

275. SYMBOLIC NOTATION IN ELECTRICITY. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Alternating-current Machines II (Elec. Engr. 213). Assistant Professor Brenneman and Mr. Kerchner.

In this course use is made of the vector methods in solving alternating-current problems. Single-phase, balanced or unbalanced three-phase problems in net works are solved; computations of real and reactive power on the reverse are handled by symbolic notation. Problems are illustrated by the corresponding vector diagram.

280. GENERATION, TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Alternating-current Machines II (Elec. Engr. 213). Assistant Professor Brenneman.

This course is designed to cover selection of equipment for powerhouses and substations, station operation and management, and problems of power transmission and systems of distribution, including electrical, mechanical and economic calculations for low-, medium- and high-potential systems.

FOR GRADUATES

316. TRANSIENT ELECTRICAL PHENOMENA. Elective, second semester. Class work, three hours. Three semester credits. Prerequisites: Symbolic Notation in Electricity (Elec. Engr. 275), and Differential Equations (Math. 201). Assistant Professor Brenneman.

In this course two phases of electrical phenomena are discussed, namely:

(a) Transients in time: Condensers and inductances in direct- and alternating-current circuits at time of make or break of circuit; transient conditions in divided circuits; transient conditions during short circuit of generators; connecting induction motors and transformers to a line.

(b) Transients in space: Current and voltage relations along a transmission line; distribution of current density throughout body of magnetic and non-

magnetic conductors; rate of flux penetration. Text: Steinmetz, *Transient Electrical Phenomena*.

321. **ADVANCED TELEPHONY.** Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Telephony (Elec. Engr. 220). Professor Kloeffler.

This is an advanced course dealing with some of the most recent phases of telephone engineering. It includes types of equipment, circuits, and methods of trunking in the Strowger automatic and the machine-switching systems, and the theory and application of telephone repeaters and carrier currents used in toll practice.

326. **ADVANCED ILLUMINATION.** Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Illuminating Engineering (Elec. Engr. 235). Professor Kloeffler.

A study is made of the lighting systems adapted for the illumination of stores, offices, drafting rooms, machine shops, railway shops, hospitals and city streets. Two specific designs are required of each student.

336. **ELECTRICAL ENGINEERING RESEARCH.** Elective, first or second semester. One semester credit for each three hours laboratory. Prerequisite: Alternating-current Machines II (Elec. Engr. 213). Professor Reid, Professor Kloeffler and Assistant Professor Brenneman.

An advanced laboratory course intended as an introduction to more elaborate work of special investigation. The course will be adapted to meet the needs and attainments of individual students. Particular problems will be assigned which must be studied by reference to existing literature and by experimental work, and on which completed reports must be submitted.

General Engineering

DEAN SEATON

101. **ENGINEERING LECTURES.** Freshman year, continuing through both semesters. Lectures, one hour a week. Dean Seaton, other members of the engineering faculty, and visiting practicing engineers.

These lectures are designed to acquaint students who are beginning the study of engineering and architecture with the fundamental principles of their profession and to give them a general survey of the field of engineering.

105. **SEMINAR.** Sophomore, junior, and senior years. Required throughout each year. Lectures, papers, and discussions, one hour a week. Members of the engineering faculty.

This work differs for the various curricula, and as far as possible is conducted by the student branches of the professional engineering societies. In the case of electrical engineering students the work is conducted by the student branch of the American Institute of Electrical Engineers; the student branch of the American Society of Mechanical Engineers has charge of the work for students in mechanical engineering; the Kansas State Agricultural College Civil Engineering Society and the Architects' Club conduct the seminars for students in civil engineering and architecture, respectively; the student branch of the American Society of Agricultural Engineers conducts the work for the students in agricultural engineering; the seminar for students in flour-mill engineering is devoted to the milling industry. Students are required to present abstracts and reviews of articles appearing in the journals of their respective societies or in the technical press of their profession or to prepare original articles. Occasionally these individual groups unite in the general Engineering Society, under whose auspices lectures are given by practicing engineers and by members of the engineering and college Faculty on topics of general interest to engineering students.

Machine Design

Professor PEARCE
Assistant Professor SMUTZ
Assistant Professor DURLAND

Instructor HUNT
Instructor GINGRICH
Instructor VOLL

The courses in engineering drawing and machine drawing deal principally with the training of the freshman and sophomore students in visualization, and the application of graphical language to engineering problems, with particular reference to commercial drafting-room methods. The object of these courses is primarily to develop this graphical language as a tool to be used in all future engineering work.

The courses in machine design deal with the mechanical transmission of power, the analysis of the action of machine parts, and the design of machine elements and of complete machines with regard to strength, stiffness and general operating efficiency. In this group may be included also the course in flour-mill design, which deals with the layout of flow sheets and the selection and arrangement of milling machinery.

COURSES IN DRAWING AND MACHINE DESIGN

FOR UNDERGRADUATES

101. ENGINEERING DRAWING. Freshman year, both semesters and summer school. Drafting, supplemented by lectures and recitations, six hours. Two semester credits. Assistant Professor Smutz, Mr. Hunt, and Mr. Gingrich.

Instruction is given in the selection and use of drawing instruments, construction of geometrical figures, lettering, orthographic projections and sections, and pictorial methods of representation. Text: French's *Engineering Drawing*, and French and Turnbull's *Lessons in Lettering, Book II*.

106. DESCRIPTIVE GEOMETRY. Freshman year, both semesters and summer school. Drafting practice with lectures and recitations, six hours. Two semester credits. Prerequisites: Engineering Drawing (Mach. Design 101) and Solid Geometry. Assistant Professor Smutz, Mr. Hunt, and Mr. Gingrich.

This course, which is a continuation of Engineering Drawing, takes more advanced problems, involving the point, line, and plane; the intersection and development of the surfaces of geometric solids; single-curved, and double-curved surfaces, with their sections, tangents and tangent planes, as well as the practical applications of the principles involved. Emphasis is laid on developing the student's ability to visualize drawings in the third angle. Text: *Descriptive Geometry* by Cutter.

111. MACHINE DRAWING I. Sophomore year, both semesters and summer school. Drafting, with lectures and recitations, six hours. Two semester credits. Prerequisite: Descriptive Geometry (Mach. Design 106). Professor Pearce, Assistant Professor Durland, and Mr. Voll.

A study is made of conventional representations, working drawings, modern drafting-room systems, and the reproduction of drawings. Additional practice is given the inclined Gothic and Reinhardt systems of lettering. Working drawings, both detail and assembly, are made from assigned plates. Special emphasis is given to the proper selection of views to present the necessary information in convenient forms, dimensioning, checking for errors, and the subject matter and arrangement of titles and notes. Text: French's *Engineering Drawing*.

116. MACHINE DRAWING II. Sophomore and junior years, second semester and summer school. Drafting, nine hours. Three semester credits. Prerequisites: Machine Drawing I (Mach. Design 111), Mechanism (Mach. Design 121) must accompany or precede this course. Professor Pearce, Assistant Professor Durland, and Mr. Voll.

About one-half of the time is occupied in making free-hand sketches of simple machine parts and complete working drawings from these sketches without further reference to the objects. At least one drawing is traced, and a blue print made from the tracing. The remainder of the semester is devoted to kinematic problems, including belting, cams, linkages, and gears to fulfill specified conditions. Center line drawings are first made, embodying the solution of the problems, and upon these are built working drawings of the machine parts. An effort is made to follow standard practice in the design of those details usually determined by empirical methods. Displacement and velocity diagrams are drawn for linkages and cams.

121. MECHANISM. Sophomore and junior years, both semesters and summer school. Lectures and recitations, three hours. Three semester credits. Prerequisites: Plane Trigonometry (Math. 101) and Descriptive Geometry (Mach. Design 106). Professor Pearce, and Assistant Professor Durland.

A careful study is made of the fundamental elements of machinery with reference to the transmission of motion and force, and to their forms and arrangements in actual machines. Among the subjects discussed are: bearings; screws; worms and wheels; rolling cylinders, cones and discs; belts, ropes, and chains; cams, levers, and linkwork, with their motion, velocity, and force diagrams; special forms of linkages, such as quick return and straight-line motions; gear-tooth outlines, and trains of gears. The solution of a large number of graphical and mathematical problems is required in this course. Text: Schwamb and Merrill's *Elements of Mechanism*.

126. THESIS. Senior year, continuing through the year. First semester: laboratory, three hours; one semester credit. Second semester: laboratory, six hours; two semester credits. Professor Pearce.

Projects in machine design or flour-mill design furnish excellent material for thesis study. The subject of the investigation should be selected in consultation with the head of the department at the beginning of the first semester of the senior year.

FOR GRADUATES AND UNDERGRADUATES

202. MACHINE DESIGN I. Junior year, second semester. Drafting, three hours. One semester credit. Prerequisite: Machine Drawing II (Mach. Design 116) and Steam and Gas Engineering I (Mech. Engr. 101). Professor Pearce.

This includes the solution of a problem on the slide valve by the Bilgram diagram, followed by the design, mostly by empirical methods, of the cylinder, piston, steam chest, and valve of a steam engine. All calculations and sketches are carefully kept in notebooks. Mark's *Mechanical Engineers' Handbook* is extensively used for reference. Manufacturers' catalogues and blue prints are also used for reference.

204. MACHINE DESIGN II RECITATION. Senior year, first semester. Lectures and recitations, three hours. Three semester credits. Prerequisites: Strength of Materials (Ap. Mech. 110); Machine Drawing II (Mach. Design 116); Steam and Gas Engineering II (Mech. Engr. 110). Must accompany Machine Design II Laboratory (Mach. Design 205). Professor Pearce.

A study is made of the straining actions in machine elements in general with special attention to the design of springs, riveted fastenings, screw fastenings, keys, force fits, cylinders, plates, journals, bearings, shafting, clutches, couplings, and belt, rope chain and gear transmissions. Some time is devoted to a study of friction and lubrication to the action of reciprocating parts in engines, and to the problems arising in the design of high-speed machinery. Text: Leutwiler's *Machine Design* and Lanza's *Dynamics of Machinery*.

205. MACHINE DESIGN II LABORATORY. Senior year, first semester. Drafting, six hours. Two semester credits. Must accompany Machine Design II Recitation (Mach. Design 204). Professor Pearce.

A steam boiler is designed in strict conformity to the *A. S. M. E. Boiler Code*. Calculations are made for all parts except standard fittings, and work-

ing drawings are made. In the latter part of the course designs are made for a large pulley, shaft, and shaft coupling. All calculations and sketches are kept in notebooks.

210. MACHINE DESIGN III. Senior year, second semester. Drafting, six hours. Two semester credits. Prerequisites: Machine Design II (Mach. Design 204, 205). Professor Pearce.

This is a continuation of Machine Design II Laboratory. A small power shear is designed. Calculations are made for all parts, and a graphical analysis is made of the stress in the shaft. Working drawings are made.

215. FLOUR-MILL DESIGN. Senior year, first semester. Drafting, supplemented by lectures and assigned reading, six hours. Two semester credits. Prerequisites: Strength of Materials E (Ap. Mech. 115) and Milling Practice I (Mill. Ind. 109). Professor Pearce.

A design is made for a medium capacity flour mill, including the selection and planning of the arrangement of the machinery.

220. MECHANISM G. Elective, first semester. Lectures and recitations, three hours. Three semester credits. Prerequisites: Plane Trigonometry (Math. 101), Engineering Physics II (Physics 150), and Descriptive Geometry (Mach. Design 106). Professor Pearce and Assistant Professor Durland.

This course is similar to Mechanism (Mach. Design 121), but somewhat more advanced. In addition to the subjects discussed in the latter course, attention is given to the pressure angles in cams, multiple speed drives for machine tools, epicyclic trains, and graphical analysis of motions in linkages. Considerable library reference work is required. Text: Schwamb and Merrill's *Elements of Mechanics*.

225. GRAPHICS OF ENGINEERING FORMULAS. Elective, second semester. Lectures and recitations, two hours. Two semester credits. Prerequisite: Plane Analytical Geometry (Math. 110). Professor Pearce.

This course is intended to satisfy the needs of two classes of technical workers: (1) Those who wish to find equations to satisfy experimental data; and (2) those who wish to plot known formulas so that the latter can be solved graphically. The first section deals with the design of empirical equations according to the methods of selected points, averages, or least squares, and a consideration of general methods of plotting. The second section deals with the diagramming of formulas so that a solution may be read directly without computation. A particular study is made of the construction of nomographic or alignment charts, in which all the variables of a formula will be along any straight transversal cutting the lines of the diagram. Text: *Design of Diagrams for Engineering Formulas*, by Hewes and Seward.

FOR GRADUATES

355. ADVANCED MACHINE DESIGN. Elective, first or second semester. One semester credit for each three hours of drafting-room work. Professor Pearce.

At the option of the student, this course may include a study of the advanced dynamics of machinery, with special reference to the inertia effects, torque characteristics, flywheel design, and balancing of multiple cylinder engines and compressors, the design of turbine drums and disks, the critical speed of rotating parts, and gyroscopic action.

This course may furnish material for the master's thesis.

Mechanical Engineering

Professor CALDERWOOD
Associate Professor MACK
Instructor WILLIS
Instructor BRAINARD

The object of the instruction in this department is to give to the student the fundamental principles underlying the design, construction, selection, operation and testing of steam boilers; steam engines and steam turbines; gas producers; gas and petroleum engines; compressed-air and refrigerating machinery; condensers and evaporators. These subjects are developed by courses in engineering thermodynamics and in steam and gas engineering, and are followed in the fourth year by courses in power-plant engineering, in refrigeration, and in heating and ventilation. The classroom instruction of every course consists of lectures and recitations, which are paralleled by work in the drafting room and laboratory, and supplemented by numerous practical problems, trade catalogues, notes, and inspection trips requiring written reports.

The mechanical-engineering laboratories are well equipped for the testing of boilers, steam engines, gas engines, refrigeration machinery, fuels, lubricants, and other equipment and materials met with in the practice of mechanical engineering. In addition to the equipment installed especially for experimental purposes, all the heating, power, ventilating, and pumping equipment of the College subserves the further purpose of experimental work.

COURSES IN MECHANICAL ENGINEERING

FOR UNDERGRADUATES

101. STEAM AND GAS ENGINEERING I RECITATION. Junior and senior years, first semester. Lectures and recitations, four hours. Four semester credits. Prerequisites: Mechanism (Mach. Design 121) and Calculus II (Math. 206). Professor Calderwood and Associate Professor Mack.

This is a study of heat-power engineering, including valve gears and thermodynamics. Special stress is put upon the theory of the thermodynamics of gases and vapors, and gas and vapor cycles. Texts: Fessenden's *Valve Gears*; and Moyer, Calderwood, and Potter's *Elements of Engineering Thermodynamics*.

105. STEAM AND GAS ENGINEERING I LABORATORY. Junior and senior years, first semester. Laboratory, three hours. One semester credit. Taken with Steam and Gas Engineering I Recitation. Associate Professor Mack, Mr. Willis and Mr. Brainard.

The study and calibration of steam gauges, indicators, and planimeters; valve-setting and steam-engine operations; study of calorimeters, flow meters, and feed-water heaters; determination of the indicated and brake horsepower, mechanical efficiency, and the steam consumption of high-speed automatic cut-off, Corliss, simple and compound engines; tests of DeLaval, Kerr and Terry steam turbines are included in this course. Text: Carpenter and Diederchs' *Experimental Engineering* is used in this and subsequent laboratory courses. Laboratory charge, \$1.

110. STEAM AND GAS ENGINEERING II RECITATION. Junior and senior years, second semester. Lectures and recitations, three hours. Three semester credits. Prerequisite: Steam and Gas Engineering I (Mech. Engr. 101). Professor Calderwood and Associate Professor Mack.

This is a continuation of the study of heat-power engineering and includes a detailed study of steam engines, steam boilers, steam turbines, internal combustion engines, fuels and combustion, gas producers, and other power-plant equipment. Text: Gebhardt's *Steam Power Plant Engineering*.

115. STEAM AND GAS ENGINEERING II LABORATORY. Junior and senior years, second semester. Laboratory, three hours. One semester credit. Taken with

Steam and Gas Engineering II Recitation. Associate Professor Mack, Mr. Willis and Mr. Brainard.

This course involves the approximate analysis of coal; determination of the calorific values of solid, liquid, and gaseous fuels; evaporative tests of steam boilers; testing of internal-combustion engines, including a study of the various auxiliaries for gas and oil engines; tests of compressed-air and refrigerating machinery. Laboratory charge, \$1.

120. STEAM AND GAS ENGINEERING C RECITATION. Junior and senior years, second semester. Lectures and recitations, two hours. Two semester credits. Prerequisites: Engineering Physics II (Physics 150) and Calculus II (Math. 206). Mr. Willis.

A descriptive study is made of steam boilers, steam engines, steam turbines, gas and oil engines, including the various auxiliaries. Text: Allen and Bursley's *Heat Engines*.

125. STEAM AND GAS ENGINEERING C LABORATORY. Junior and senior years, second semester. Laboratory, three hours. One semester credit. Taken with Steam and Gas Engineering C Recitation. Mr. Willis and Mr. Brainard.

The study and calibration of steam gauges, indicators, and planimeters; calorimeters; evaporative tests of steam boilers; determination of the heating value of liquid and gaseous fuels; tests of steam engines; valve setting; tests of steam turbines; tests of internal-combustion engines; operation and testing of refrigerating machines are involved in this course. Laboratory charge, \$1.

130. ELEMENTS OF STEAM AND GAS POWER. Freshman year, both semesters. Lectures, recitations, and laboratory, six hours. Two semester credits. Professor Calderwood, Mr. Willis and Mr. Brainard.

An elementary study is made of steam engines, steam turbines, steam boilers, steam power-plant auxiliaries, gas and oil engines, natural and manufactured gas, gas power-plant auxiliaries, and the elements of automotive engineering. Text: Potter and Calderwood's *Elements of Steam and Gas Power Engineering*. Laboratory charge, \$1.

170. DAIRY REFRIGERATION RECITATION. Elective, first semester. Lectures and recitations, one hour. One semester credit. Mr. Willis.

The elementary theory and principles of operation of various refrigerating and ice-making machinery and of cold storage, with special reference to the dairy industry, are considered.

175. DAIRY REFRIGERATION LABORATORY. Elective, first semester. Laboratory work, three hours. One semester credit. Mr. Willis.

Various types of refrigeration systems and their operation are studied; steam-engine operation is studied, and refrigeration machines are tested. Laboratory charge, \$1.

195. THESIS. Senior year, continuing through both semesters. First semester: Laboratory, three hours; one semester credit. Second semester: Laboratory, six hours; two semester credits. Professor Calderwood and Associate Professor Mack.

The laboratories of the department are well furnished with apparatus suitable for experimental and research work in the field of heat-power engineering. The subject of the investigation should be selected in consultation with the head of the department at the beginning of the first semester.

FOR GRADUATES AND UNDERGRADUATES

206. POWER-PLANT ENGINEERING. Senior year, first semester. Laboratory, nine hours. Three semester credits. Prerequisite: Steam and Gas Engineering II (Mech. Engr. 110). Professor Calderwood, Associate Professor Mack and Mr. Brainard.

One-half of the semester is devoted to complete power-plant testing; special investigations of steam-engine performance; operation of gas producers, and advanced laboratory work on internal-combustion engines. The remainder of the time is spent in designing a complete power plant. Laboratory charge, \$2.

210. REFRIGERATION, HEATING, AND VENTILATION RECITATION. Senior year, second semester. Lectures and recitations, two hours. Two semester credits. Prerequisite: Steam and Gas Engineering II (Mech. Engr. 110). Professor Calderwood.

This course is planned to acquaint the student with the fundamental principles of refrigerating systems, and the application of refrigeration to ice making, cold storage, and the cooling of air, liquids, and solids; also the fundamental principles of heating and ventilation, including the direct and indirect systems, hot-air, hot-water and steam systems of heating. Text: Allen and Walker's *Heating and Ventilation*, and notes on refrigeration.

215. REFRIGERATION, HEATING, AND VENTILATION LABORATORY. Senior year, second semester. Laboratory, three hours. One semester credit. Taken with Refrigeration, Heating and Ventilation Recitation. Professor Calderwood and Associate Professor Mack.

The laboratory work includes tests of refrigerating machinery and of the thermal conductivity of insulating materials; tests on fans and blowers, radiators and house-heating boilers. The remainder of the time is devoted to the design of heating and ventilating systems for buildings. Laboratory charge, \$1.

220. AERODYNAMICS RECITATION. Elective, senior year, second semester. Lectures and recitations, two hours. Two semester credits. Prerequisite: Steam and Gas Engineering II (Mech. Engr. 110). Professor Calderwood.

This course is planned to acquaint the student with the fundamental principles of airplane construction and the theory of wind forces. A careful study of aeronautical instruments and current practice in the design of airplanes is included. Text: William's *The Dynamics of the Airplane*, and references to various publications and notes.

225. AERODYNAMICS LABORATORY. Elective, senior year, second semester. Laboratory, three hours. One semester credit. Taken with Aërodynamics Recitation. Professor Calderwood and Associate Professor Mack.

The laboratory work includes tests of various types and forms of airplane wing models, efficiency tests of propellers, and investigation of theory advanced in Aërodynamics Recitation. Laboratory charge, \$1.

230. ADVANCED THERMODYNAMICS. Elective, first semester. Lectures and recitations, two hours. Two semester credits. Prerequisite: Steam and Gas Engineering I (Mech. Engr. 101). Professor Calderwood.

A study is made of the advanced phases of engineering thermodynamics, including research work along fundamental properties of gases and vapors. Reports are made of recent investigations along thermodynamic lines.

235. STEAM TURBINES. Elective, second semester. Lectures and recitations, two hours. Two semester credits. Prerequisite: Power Plant Engineering (Mech. Engr. 206). Professor Calderwood.

A study is made of the theoretical principles involved in the various important types of steam turbines, and the construction and operation of some of the commercial types. The selection of a steam turbine as a prime mover for power plants operating under particular operating conditions, and the effect of factors such as superheat, vacuum and pressure are fully discussed.

FOR GRADUATES

305. ENGINEERING RESEARCH. Elective, first or second semester. One semester credit for each three hours of laboratory work. Professor Calderwood and Associate Professor Mack.

The laboratory work is correlated with the work of the Engineering Experiment Station. Investigations on lubricants, fuels, combustion, internal-combustion engines, steam engines, steam turbines, steam boilers, gas producers, refrigeration, heat insulating materials, heating and ventilation, compressed air and similar subjects are carried on.

Data secured in this course may be used as the basis for a master's thesis.

Shop Practice

Professor CARLSON
Associate Professor SELLERS
Assistant Professor JONES
Assistant Professor LYNCH
Assistant Professor FLAGG
Instructor GRANT
Instructor AIMAN
Instructor STROM

Instructor WINTER
Instructor COOL
Instructor PINKERTON
Instructor GRANELL
Instructor GRAHAM
Assistant GREELEY
Assistant IRWIN

The work in the shops is planned to meet the needs of three classes of students: (1) those in the special courses related to engineering and agriculture who expect to make use of the knowledge gained in their subsequent work in the shops and on the farm; (2) those who are training themselves for teaching and need to secure a general knowledge of the principles underlying shop work, and sufficient skill in the performance of various operations, to be able to instruct others; and (3) those in the courses in engineering whose need is to secure a thorough knowledge of the methods of performing various kinds of shop work; of the machines best suited for the different purposes; of the amount of work that may be expected of the different machines and of the workman under different conditions.

The shop building is a series of connected structures. The wood shop is a room 40 by 90 feet and is devoted entirely to bench work. The pattern shop is 45 by 81 feet and contains modern apparatus for pattern making. The wood machinery room is 35 by 42 feet and contains an excellent assortment of machines used in exemplifying commercial woodworking methods. The machine shop, 40 by 170 feet, is one of the best-equipped shops of its kind in the country. The blacksmith shop is 50 by 100 feet, and is equipped with forty-eight modern down-draft forges, oxyacetylene welding outfits and other important equipment. The iron and brass foundries, 27 by 100 and 24 by 34 feet, respectively, are modern in every respect.

A locker room of ample capacity is conveniently located near the shops building for the use of students taking work in the department.

COURSES IN SHOP PRACTICE

FOR UNDERGRADUATES

101. ENGINEERING WOODWORK I. Freshman year, both semesters and summer school. Laboratory, three hours. One semester credit. Prerequisite: None. Mr. Aiman and Mr. Irwin.

This is a course for engineering students and is devoted to such work as the selection, installing, and operation of woodworking machines, under as nearly as possible actual factory conditions.

The lecture work which accompanies the course covers forestry conditions, wastage in the woodworking industries, the structural growth of wood and the kiln drying of lumber. Laboratory charge, \$1.75.

103. ENGINEERING WOODWORK II. Elective, both semesters. Laboratory, three hours. One semester credit. Prerequisite: Engineering Woodwork I (Shop 101). Mr. Aiman.

This course is a continuation of Engineering Woodwork I, giving special attention to commercial methods. The effect of heat, humidity, evaporation, circulation, and the piling of lumber in the operation of drykilns is given special treatment. The routing of material through a woodworking factory, the selection of woodworking machinery and its location, labor-saving devices and other important features are studied. Laboratory charge, \$1.75.

117. MANUAL TRAINING FOR PRIMARY GRADES. Elective, summer school. Laboratory, six hours. Two semester credits. Mr. Aiman.

This course is planned to meet the needs of teachers of primary work. Exercises suitable for the various grades are studied, and a short time is devoted to the selection of suitable materials and equipment. The work includes paper

cutting, cardboard construction, raffia, cord work, weaving, reed work, and elementary tool work in woodworking. Laboratory charge, \$3.50.

120. WOODWORKING FOR GRAMMAR GRADES. Elective, first semester and summer school. Laboratory, six hours. Two semester credits. Prerequisite: None. Mr. Aiman, and Mr. Cool.

This course is designed for those who are preparing to teach manual training. It takes up the beginning work, and the exercises given are such as would be suitable for the grammar grades. Laboratory charge, \$3.50.

125. WOODWORKING I FOR HIGH SCHOOLS. Elective, second semester and summer school. Laboratory, six hours. Two semester credits. Prerequisite: Woodworking for Grammar Grades (Shop 120). Mr. Aiman and Mr. Cool.

In this continuation of Woodworking for Grammar Grades, problems suitable for students in the high schools are given. Special attention is given to the study of woods and methods of finishing them, as well as to the use and care of tools. Laboratory charge, \$3.50.

130. WOODWORKING II FOR HIGH SCHOOLS. Elective, first semester and summer school. Laboratory, six hours. Two semester credits. Prerequisite: Woodworking I for High Schools (Shop 125). Mr. Aiman and Mr. Cool.

This is a continuation of Woodworking I for High Schools, with advanced work in cabinet construction by the use of woodworking machinery, and such bench work as necessary. Special emphasis is placed upon the quantity as well as the quality of the work, in order that a proper use may be made of time. Assignments are given which cover woodworking machinery, tools, and sharpening, and the drawing up of sketches for a completely equipped woodworking shop. Laboratory charge, \$3.50.

135. WOODTURNING. Elective, second semester and summer school. Laboratory, six hours. Two semester credits. Prerequisite: Woodworking II for High Schools (Shop 130). Mr. Aiman and Mr. Irwin.

This work is such as will give the student a thorough training in handling a lathe and turning tools. Those taking this work are expected to arrange their assignments so that a portion of the time can be devoted to assisting with the teaching of the more elementary classes in the wood shop. This training will be found valuable to those who have had no teaching experience. Laboratory charge, \$3.50.

140. ADVANCED WOODWORK. Elective, both semesters and summer school. Laboratory, six hours. Two semester credits. Prerequisite: Woodwork II for High Schools (Shop 130). Mr. Aiman and Mr. Cool.

This course is a continuation of Woodwork II for High Schools and gives an opportunity to specialize in wood finishing, cabinet work, or some other work of special interest to the student. Laboratory charge, \$3.50.

145. PATTERN MAKING. Junior and senior years, both semesters. Laboratory, three hours. One semester credit. Prerequisite: Foundry Practice (Shop 160) and Engineering Woodwork I (Shop 101). Mr. Aiman.

A series of exercises is given embodying the principles governing the construction of plain and split patterns, including core prints and core boxes, after which practical patterns of machine parts are made. Laboratory charge, \$1.75.

147. FARM CARPENTRY I. Elective, first semester and summer school. Lectures and recitations, one hour; laboratory, six hours. Three semester credits. Mr. Graham.

This course is designed for the training of teachers who must solve problems in connection with carpentry work on the farm. It consists of rafter cutting and erection, studding and siding work, making window and door frames, hanging doors, and similar operations on full-size construction work. A bill of material will be made before each exercise is started. Instruction is also given in saw filing, tool sharpening and the general care and upkeep of tools. Laboratory charge, \$3.50.

148. FARM CARPENTRY II. Elective, second semester and summer school. Laboratory, six hours. Two semester credits. Prerequisite: Farm Carpentry I (Shop 147). Mr. Graham.

This course is a continuation of Farm Carpentry I. It consists of work on projects that will be most useful to those who are preparing to teach in rural communities. Laboratory charge, \$3.50.

150. FORGING I. Freshman year, both semesters and summer school. Laboratory, three hours. One semester credit. Prerequisite: None. Assistant Professor Lynch and assistants.

This course in the forging of iron and steel is designed to teach the principles and operations of drawing, bending, upsetting, welding, twisting, splitting, and punching, and the proper methods of making forgings and tools. Tools required: a two-foot rule and a pair of five-inch outside calipers, a center punch, and a ball pein hammer weighing with handle about two pounds. Laboratory charge, \$4.

157. FARM BLACKSMITHING I. Elective, first semester and summer school. Laboratory, three hours. One semester credit. Mr. Graham.

The preliminary work of this course is the same as Forging I (Shop 150). The exercises are closely related to the work of the farm. The course is designed to train teachers for service in rural communities. Laboratory charge, \$4.

158. FARM BLACKSMITHING II. Elective, second semester and summer school. Laboratory, three hours. One semester credit. Prerequisite: Farm Blacksmithing I (Shop 157). Mr. Graham.

This course is a continuation of Farm Blacksmithing I. It covers more advanced instruction in the working of iron and steel, and in the annealing, hardening and tempering of tools useful to the farmer. Laboratory charge, \$4.

160. FOUNDRY PRACTICE. Sophomore year, both semesters. Laboratory, three hours. One semester credit. Prerequisite: None. Mr. Grant.

Practice is given in floor, bench, and machine molding, in core making, and in casting in iron, copper, brass, and special alloys. A study is also made of modern foundry construction, equipment, materials, and methods. Laboratory charge, \$1.

165. METALLURGY. Sophomore year, both semesters and summer school. Lectures and recitations, two hours. Two semester credits. Prerequisites: Chemistry E-I (Chem. 107A); and Chemistry E-II, or may be taken with Chemistry E-II. Associate Professor Sellers.

This course deals with the manufacture and use of iron, steel, copper and their alloys, as well as their proper selection and use in the manufacturing industries.

167. METALLOGRAPHY. Sophomore year, both semesters. Laboratory, three hours. One semester credit. Prerequisites: Forging I (Shop 150) and Metallurgy (Shop 165); may be taken simultaneously with Metallurgy. Associate Professor Sellers and Assistant Professor Lynch.

A study is made of the microscopic constituents of the different grades of iron, steel, and the more common nonferrous alloys. The changes in the structure and properties of the metals as produced by heat treatment, mechanical working and composition are also studied. Laboratory charge, \$4.

170. MACHINE TOOL WORK I. Junior year, both semesters and summer school. Laboratory, six hours. Two semester credits. Prerequisite: Foundry Practice (Shop 160). Assistant Professor Jones, and Mr. Pinkerton.

Practice is given in chipping, filing, shaper and planer work, scraping, drilling and turning on the lathe. Tools required: A four-inch scale, one nine-inch combination square, one pair five-inch outside calipers, one pair five-inch inside calipers, one center drill, and one B. & S. center gauge. Text: Smith's *Advanced Machine Work*. Laboratory charge, \$6.

175. FARM SHOP METHODS. Elective, first semester and summer school. Lectures and recitations, one hour; laboratory six hours. Three semester credits. Prerequisites: Farm Carpentry II (Shop 148), Farm Blacksmithing II (Shop 158) and Farm Equipment (Agr. Engr. 120, 121). Mr. Graham.

This course is designed to train teachers in farm shop work. It includes babbitting, soldering, drilling and drill grinding, thread cutting with dies and taps, tool sharpening, belt lacing, repair of machinery, and other practical operations. Laboratory charge, \$3.50.

180. ADVANCED PATTERN MAKING. Elective, both semesters. Laboratory, three hours. One semester credit. Prerequisite: Pattern Making (Shop 145). Professor Carlson and Mr. Aiman.

This is a continuation of Pattern Making, with more advanced work, including match-board work, patterns for molding machines, and general pattern work. Laboratory charge, \$1.75.

183. ADVANCED FOUNDRY PRACTICE. Elective, both semesters. Laboratory, three hours. One semester credit. Prerequisite: Foundry Practice (Shop 160). Professor Carlson and Mr. Grant.

This is a continuation of Foundry Practice, including green and dry sand and loam molding. A study is also made of the different mixtures of iron, of handling the cupola and brass furnace, of difficult molding and core work, and of making steel castings. Laboratory charge, \$1.

192. MACHINE TOOL WORK II. Junior year, both semesters and summer school. Laboratory, six hours. Two semester credits. Prerequisite: Machine Tool Work I (Shop 170). Assistant Professor Jones and Mr. Pinkerton.

Progressive problems are given in turning and calipering, in boring, in reaming and taper turning and in threading on the lathe with exercise in chucking, the use of forming tools, and gear cutting. A study is made of cutting edges and tool adjustments best suited to the different metals, and of cutting speeds and feeds. Tools and text required: same as for Machine Tool Work I. Laboratory charge, \$6.

193. MACHINE TOOL WORK III. Senior year, both semesters and summer school. Laboratory, three hours. One semester credit. Prerequisite: Machine Tool Work II (Shop 192). Assistant Professor Jones and Mr. Pinkerton.

This course takes up work on the turret lathe, boring mill, screw machines, automatic screw machines, and grinder. Practical work is also given with the jigs and templets and a study is made of the rapid production of duplicate parts, of belts, lacings, and other methods of belt connection, and of compound and differential indexing. Laboratory charge, \$3.

195. THESIS. Senior year, continuing through both semesters. First semester: laboratory, three hours; one semester credit. Second semester: laboratory, six hours; two semester credits. Professor Carlson and Associate Professor Sellers.

A thesis gives an opportunity for the student to work out problems of interest and value to himself under his own initiative, but subject to the supervision of the instructors. The shops have ample facilities for carrying on work of this character, of a constructive or investigative nature, and every possible aid is given those who select theses along this line.

FOR GRADUATES AND UNDERGRADUATES

235. MACHINE TOOL WORK IV. Elective, both semesters. Laboratory, three hours. One semester credit. Prerequisite: Machine Tool Work III (Shop 193). Associate Professor Sellers and Assistant Professor Jones.

The time of this course is devoted to the shop phases of efficiency engineering, including time studies and routing of materials. Complete machines and machine parts are constructed from drawings and blue prints. A study is made of the different machine tools from assigned catalogue work, with regard to the economical and efficient production of different classes of products. Laboratory charge, \$3.

245, 250. **FACTORY ENGINEERING.** Senior year, first semester. Lectures and recitations, one hour; drafting-room, three hours. Two semester credits. Prerequisite: Strength of Materials (Ap. Mech. 110). Professor Carlson.

This course deals with the problems of the factory executive, such as the selection, installation, and arrangement of direct and indirect equipment, the standardization of machines and tools, stock and store methods, production orders, routing and dispatching, time study and rate setting, instruction and operation cards, wage systems, cost systems, and the various factors that have to do with the design and control of factories.

255. **FACTORY DESIGN.** Senior year, second semester. Drafting, six hours. Two semester credits. Prerequisite: Factory Engineering (Shop 245, 250). Professor Carlson.

The knowledge gained in the shops and laboratories and in the course in factory engineering is used in the design of a complete factory.

260. **ADVANCED SHOP PRACTICE.** Elective, first semester. One semester credit for each three hours of laboratory. Professor Carlson and assistants.

Opportunity is offered those having the necessary preliminary training to specialize to a limited degree along certain lines of shop practice, such as the heat treatment of steel, oxyacetylene welding, jig and die work, cutting speeds and feeds, shop management, and systems. Laboratory charge, \$3.

265. **SHOP-PRACTICE RESEARCH.** Elective, both semesters. One semester credit for each three hours of laboratory. Professor Carlson and Associate Professor Sellers.

Those who wish to investigate some phase of shop-practice work in which they are greatly interested are given opportunity to do so. The wonderful improvements in the methods of present-day production amply justify investigative work along this line, and every possible aid will be accorded those wishing to take this work.

270, 275. **AUTOMOTIVE ENGINEERING.** Elective, second semester. Lectures and recitations, one hour; laboratory, three hours. Two semester credits. Prerequisites: Strength of Materials (Ap. Mech. 110, 120), Machine Design II (Mach. Design 204, 205). Professor Carlson and Assistant Professor Flagg.

This course deals with the construction and operation of the various parts of the automobile, and is especially adapted to the needs of those who expect to follow some phase of automobile work or to take up employment in automobile factories. Laboratory charge, \$3.

Engineering in the Summer School

In order to encourage the introduction of manual training and industrial drawing in the common schools and high schools of the state, and to improve the quality of work now being given, the College offers summer courses in mechanical drawing, manual training, and shop practice for high-school and grade teachers.

In addition various courses required in the several engineering curricula are offered in the Summer School. This enables teachers who wish to take an engineering curriculum to get a considerable start on the work during their summer vacations, and also enables College students who are irregular to make up their back courses.

For full information in regard to the courses offered, a special circular giving details concerning the Summer School may be had upon application to the vice president of the College.

Special Courses Related to Engineering

Special short courses dealing with automobile repair, tractor operation, carpentry, machine-shop work, foundry practice, blacksmithing, and electrical repair work are grouped with other special courses in another part of this catalogue, and are there described in detail. Reference should be made to the general index in the back of this book. A special circular describing this work may be had on application to the vice president of the College.

The Division of Home Economics

MARGARET M. JUSTIN, Dean

Modern research in the sciences and present-day development of the industries, arts, and profession have brought a recognition of the value of technical training as a part of the preparation for life's work. An educational plan which combines industrial, technical, and scientific subjects with the older general studies results to the student in the power to express, in everyday activities, the knowledge acquired in the classroom. It increases the capacity for productive work and develops the desire to realize in practical form the theories and principles studied. The aim of a collegiate course in home economics is not merely to increase the student's stock of information, but to stimulate interest in continued study or research, to train in accuracy in detail, to teach discrimination with regard to criteria by which to interpret results of work, and to cultivate an attitude of economic and social responsibility.

The course as outlined below is arranged to meet the needs of the following groups of students: those who wish to teach, those who wish to enter graduate courses leading to technical or professional work, and those who wish to apply their knowledge to various problems of home life or in fields of industry and social service in which an understanding of home-economics subjects is essential to intelligent action. While emphasis is laid on the material and practical side of life, the training does not stop here. The young women are constantly reminded that life is not drudgery; that technical knowledge and scientific skill even fail to include the full meaning of education in its highest sense. They are taught that any training that fails to develop harmoniously body, mind, and spirit is inadequate and incomplete. They are brought face to face with ideals as well as with actualities, and are made to see that, while skillful labor gives dignity to life, grace, refinement, and self-poise are the highest requisites for true service.

The training given is as varied as it is broad. It includes a knowledge of the laws of health, an understanding of the sanitary requirements of the home; the study of values, both absolute and relative, of the various articles used in the home; the wise expenditure of money, time, and energy; the scientific principles underlying the selection and preparation of food; the right care of children; and the ability to secure efficient service from others. Instruction is methodical and thorough, and is suited to the circumstances of the students. Experience shows that such training teaches contentment, industry, order, and cleanliness, and fosters a woman's independence and feeling of responsibility.

The work in home economics includes:

A four-year curriculum, leading to the degree of Bachelor of Science.

A five-year curriculum leading to the degree of Bachelor of Science and a diploma in nursing.

A housekeeper's course, about fifteen weeks in length, for which a certificate of proficiency is granted.

CURRICULUM IN HOME ECONOMICS

The training in the four-year curriculum is both general and specific. Since scientific training is fundamental in the intelligent and successful administration of the home, strong courses in the sciences are given as a foundation for the special training in home economics. To the end that well-rounded culture may be attained, courses in English, history, economics, sociology, and psychology receive due prominence. The time of the student is about equally

divided among the purely technical subjects, the fundamental sciences, and studies of general interest. The courses in the related subjects are given in the different departments of the College, while the technical courses are given by the home economics departments. In the junior and senior years opportunity is given for choice of electives, which makes it possible for students to specialize in some chosen line. To this end electives are to be chosen in groups combined logically in courses approved by the Faculty or by the student's dean.

The four-year curriculum is recommended for all who desire to teach home economics, or to enter any professional field in which home economics may be applied.

The five-year curriculum, offered in affiliation with the Charlotte Swift Hospital of Manhattan, enables the student wishing to take the Bachelor of Science degree and the full professional training in nursing to complete this work in five years. The first two years are spent at the College. The third and fourth years are spent at the Nursing School of the hospital, where both theoretical and practical training in nursing is given. During the fifth year required courses for the Bachelor of Science degree are completed at the College and electives are chosen which will prepare the student for the field of nursing in which she is most interested.

The demand for trained women to fill administrative and teaching positions in schools of nursing and to enter the various branches of public-health nursing is greater than the supply and offers a growing and attractive field of work for the college graduate.

Before entering upon this curriculum the student must have her plan of study approved by the dean of the Division of Home Economics.

Further information concerning the work at the hospital may be obtained from the director of the Training School for Nurses of the Charlotte Swift Hospital, Manhattan.

The College does not assume the responsibility of insuring employment to graduates, but the latter rarely experience difficulty in obtaining remunerative positions.

Curriculum in Home Economics

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FIRST SEMESTER		FRESHMAN	SECOND SEMESTER	
College Rhetoric I		College Rhetoric II		
Engl. 101	3(3-0)	Engl. 104	3(3-0)	
Chemistry I		Chemistry II		
Chem. 101	5(3-6)	Chem. 102	5(3-6)	
Design or Design A		Household Physics		
Ap. Art. 101 or 106	3(1-6)	Physics 101	4(3-3)	
Foods I*		Clothing I*		
Food and Nut. 101	3(1-6)or	Clo. and Text. 101	2(1-3)or	
Elem. Hygiene and Home Nursing		House Furnishings		
Hshld. Econ. 103	3(2-3)	Ap. Art. 108	2(1-3)	
Library Methods		Costume Design I		
Lib. Ec. 101	1(1-0)	Clo. and Text. 106	2(0-6)	
Current History		Physical Education W-II		
Hist. 126	1(1-0)	Phys. Ed. 152A	1(0-3)	
Physical Education W-I				
Phys. Ed. 151A	1(0-3)			

* Students should not select Clothing I and Foods I if Domestic Art and Domestic Science have been pursued in high school.

SOPHOMORE

FIRST SEMESTER		SECOND SEMESTER	
Organic Chemistry HE		Foods II	
Chem. 121	5(3-6)	Food and Nut. 106.....	5(3-6)
English Literature		American Literature	
Engl. 172	3(3-0)	Engl. 175	3(3-0)
General Zoölogy		Embryology and Physiology	
Zoöl. 105	5(3-6)	Zoöl. 201	5(3-6)
Clothing II		Gardening	
Clo. and Text. 111.....	3(1-6)	Hort. 122	3(3-0)
Physical Education W-III		Physical Education W-IV	
Phys. Ed. 153.....	1(0-3)	Phys. Ed. 154	1(0-3)

JUNIOR

FIRST SEMESTER		SECOND SEMESTER	
German I†		German II†	
Mod. Lang. 101	3(3-0) or	Mod. Lang. 102	3(3-0) or
French I†		French II†	
Mod. Lang. 151	3(3-0)	Mod. Lang. 152	3(3-0)
Human Nutrition		Household Management	
Food and Nut. 112.....	3(3-0)	Hshld. Econ. 107	3(2-3)
Household Microbiology		Textiles	
Bact. 121	5(3-6)	Clo. and Text. 116.....	3(2-3)
Economics		Psychology C	
Econ. 101	3(3-0)	Educ. 103	3(3-0)
Elective	3(-)	Elective	5(-)

SENIOR

FIRST SEMESTER		SECOND SEMESTER	
German Readings		American Government	
Mod. Lang. 111	3(3-0) or	Hist. 151, 152 or 153.....	3(3-0)
French Readings		Sanitation and Public Health	
Mod. Lang. 161	3(3-0)	Hshld. Econ. 211	3(3-0)
American History I		Elective	11(-)
Hist. 101	3(3-0)		
Dietetics			
Food and Nut. 201.....	5(3-6)		
Elective	6(-)		

Curriculum in Home Economics and Nursing

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
College Rhetoric I		College Rhetoric II	
Engl. 101	3(3-0)	Engl. 104	3(3-0)
Chemistry (Vet.)		Organic Chemistry (Vet.)	
Chem. 105	5(3-6)	Chem. 106	5(3-6)
Library Methods		General Zoölogy	
Lib. Ec. 101	1(1-0)	Zoöl. 105	5(3-6)
German I		German II	
Mod. Lang. 101	3(3-0)	Mod. Lang. 102	3(3-0)
Psychology C			
Educ. 103	3(3-0)		
Physical Education W-I		Physical Education W-II	
Phys. Ed. 151A	1(0-3)	Phys. Ed. 152A	1(0-3)

† Students in the Division of Home Economics take a minimum of nine hours of French or German unless they have had previously one or more years high-school work in the language in question. In case French or German has been taken previously in high school only two more advanced courses of that language are required. Students who under these circumstances take less than nine semester credits in modern language are required to take additional elective hours, so that their total requirement is the same as for other students.

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
Foods II	Physiological Chemistry
Food and Nut. 106 5(3-6)	Chem. 231 5(3-6)
Embryology and Physiology	Human Nutrition
Zoöl. 201 5(3-6)	Food and Nut. 112 3(3-0)
General Microbiology	Household Physics
Bact. 101 3(1-6)	Physics 101 4(3-3)
American History I	Current History
Hist. 101 3(3-0)	Hist. 126 1(1-0)
Physical Education W-III	English Literature
Phys. Ed. 153 1(0-3)	Engl. 172 3(3-0)
	Physical Education W-IV
	Phys. Ed. 154 1(0-3)

JUNIOR

(Replaced by two years at Charlotte Swift Hospital)

Theoretical and practical work during the time includes:

FIRST YEAR	SECOND YEAR
History and Ethics of Nursing	Surgery and Surgical Nursing and
Hospital Economics	Bandaging
Personal Hygiene	Obstetrics and Gynecology
Nursing Methods	Pediatrics
Anatomy	Diseases of Eye, Ear, Nose and Throat
Medical Nursing	Nervous and Mental Diseases
Communicable Diseases	Materia Medica
Special Therapeutics and Massage	

SENIOR

FIRST SEMESTER	SECOND SEMESTER
(Specialized work in affiliated hospitals)	Dietetics
	Food and Nut. 201 5(3-6)
	American Government
	Hist. 151, 152, or 153 3(3-0)
	American Literature
	Engl. 175 3(3-0)
	Sociology
	Econ. 151 3(3-0)
	Elective 3(-)

Groups of Electives for Students in the Division of Home Economics

The groups given below are selected with a view to training students for the vocations in which home economics may be directly applied.

A sufficient number of hours may be chosen from any group to fill the elective requirement, or a smaller number of hours may be taken from a group and, for the remaining elective hours, advanced courses of related subject matter may be chosen.

Music may be added to any group.

Advertising, Buying and Salesmanship

FIRST SEMESTER	SECOND SEMESTER
Design A	Principles of Advertising
App. Art. 106 3(1-6)	Ind. Jour. 179 3(3-0)
Clothing Salesmanship	Written and Oral Salesmanship
Clo. and Text. 130 2(2-0)	Engl. 123 3(3-0)
Commercial Correspondence	Applied Psychology
Engl. 122 3(3-0)	Educ. 215 2(2-0)
Oral English	Accounting Practice I
Engl. 128 3(3-0)	Math. 140A 3(2-3)
Industrial Feature Writing I	Business Management
Ind. Jour. 167 2(2-0)	Econ. 126 2(2-0)
Technical Writing	
Engl. 207 2(2-0)	

Certificate Requirements for Vocational Home Economics Teaching

FIRST SEMESTER	SECOND SEMESTER
Educational Administration A or B Educ. 105 or 106..... 3(3-0)	Educational Sociology A or B Educ. 118 or 119..... 3(3-0)
Special Methods in Teaching of Home Economics Educ. 132 3(3-0)	Supervised Observation and Teaching in Home Economics Educ. 160 3(-)
Child Welfare Hshld. Econ. 203 3(3-0)	Practice Course in Household Management Hshld. Econ. 116 3(-)
Vocational Education A Educ. 125 3(3-0)	Electives 5(-)

Clothing and Textile Work

FIRST SEMESTER	SECOND SEMESTER
Household Entomology Ent. 106 2(2-0)	Principles of Art and their Ap- plication Ap. Art. 124 3(3-0)
Problems in Household Economics Hshld. Econ. 243 2(2-0)	Labor Problems Econ. 233 2(2-0)
Clothing Salesmanship Clo. and Text. 130 2(2-0)	Clothing Economics Clo. and Text. 237 2(2-0)
Problems in Hygiene of Clothing Clo. and Text. 240..... 2 to 4	Social Problems Econ. 257 2(2-0)
American Industrial History Hist. 105 3(3-0)	

Designing and Decorating

FIRST SEMESTER	SECOND SEMESTER
Free-hand Drawing I Arch. 111 2(0-6)	Free-hand Drawing II Arch. 114 2(0-6)
Woodwork I Shop 105 1(0-3)	Woodwork II Shop 110 1(0-3)
Photography Physics 120 2(1-3)	Principles of Art and their Ap- plication Ap. Art 124 3(3-0)
Landscape Gardening I Hort. 126 2(1-3)	Landscape Gardening II Hort. 233 3(0-9)
Principles of Topography I Ind. Jour. 101 3(2-3)	Principles of Topography II Ind. Jour. 104 3(2-3)
	Handicraft Ap. Art. 112 2(0-6)
	Interior Decoration and Furnishing Ap. Art 114 3(1-6)
	The Arts and Crafts Movement Engl. 295 2(2-0)

Food and Nutrition

(Research; Hospital Dietetics; Public Health Work; Specialized Teaching)

FIRST SEMESTER	SECOND SEMESTER
Physical Chemistry Chem. 206 5(3-6)	Physiological Chemistry Chem. 231 5(3-6)
Microchemical Methods of Analysis Chem. 245 1(0-3)	Biochemical Preparations Chem. 234 5(0-15)
Anatomy and Physiology Anat. 131 3(2-3)	Quantitative Analysis Chem. 241 5(1-12)
Hygienic Bacteriology Bact. 206 4(2-6)	Food Analysis Chem. 257 3(0-9)
Problems in Food Economics and Nutrition I Food and Nut. 248 2 to 5	Household Chemistry Chem. 265 3(1-6)
Food Economics and Nutrition Seminar I Food and Nut. 251 2(2-0)	Histology I Path. 101 3(1-6)
Field Work in Nutrition Food and Nut. 215..... 1 to 3	Food Economics and Nutrition Seminar II Food and Nut. 252..... 2(2-0)

Home-making

FIRST SEMESTER	SECOND SEMESTER
Child Welfare Hshld. Econ. 203 3(3-0)	Interior Decoration and Furnishing Ap. Art 114 3(1-6)
Home Nursing Hshld. Econ. 109 1(0-3)	Principles of Art and their Ap- plication Ap. Art 124 3(3-0)
The Modern Family Hshld. Econ. 231 2(2-0)	Problems in Household Economics Hshld. Econ. 243 1 to 5
Household Entomology Ent. 106 2(2-0)	Household Chemistry Chem. 265 3(1-6)
Sociology Econ. 151 3(3-0)	Rural Sociology Econ. 156 3(3-0)
Community Organization Econ. 267 3(3-0)	Clothing III Clo. and Text. 125 2(0-6)

Home-making

(Special Rural Problems)

FIRST SEMESTER	SECOND SEMESTER
Poultry Bacteriology Bact. 216 3(1-6)	Small Fruits Hort. 110 2(2-0)
Rural Sociology Econ. 156 3(3-0)	Market Gardening Hort. 210 3(2-3)
Home Nursing Hshld. Econ. 109 1(0-3)	Home Dairying Dairy Husb. 112 1½(2-3)
Community Organization Econ. 267 3(3-0)	Dairy Bacteriology Bact. 211 3(1-6)
	Apiculture Ent. 111 3(2-3)
	Farm Sanitation and Water Supply Ag. Engr. 119 2(2-0)

Institutional Management

FIRST SEMESTER	SECOND SEMESTER
Institutional Management I Hshld. Econ. 221 3(1-6)	Institutional Management II Hshld. Econ. 226 4(3-3)
Commercial Correspondence Engl. 122 3(3-0)	Problems in Institutional Administration Hshld. Econ. 247 1 to 5
Oral English Engl. 128 3(3-0)	Institutional Furnishings Ap. Art 116 3(1-6)
Business Management Econ. 126 2(2-0)	Institutional Accounting Math. 131 3(3-0)
Technical Writing Engl. 207 2(2-0)	Written and Oral Salesmanship Engl. 123 3(3-0)
	Applied Psychology Educ. 215 2(2-0)
	Labor Problems Econ. 233 2(2-0)

Lecturing and Demonstrating

FIRST SEMESTER	SECOND SEMESTER
Oral English Engl. 128 3(3-0)	Dramatic Reading Pub. Spk. 102 2(2-0)
Oral Interpretation Pub. Spk. 101 2(2-0)	Extempore Speech II Pub. Spk. 108 2(2-0)
Extempore Speech I Pub. Spk. 106 2(2-0)	Applied Psychology Educ. 215 2(2-0)
Sociology Econ. 151 3(3-0)	Rural Sociology Econ. 156 3(3-0)
Technical Writing Engl. 207 2(2-0)	Community Organization Econ. 267 3(3-0)
Practice in Food Demonstrations Food and Nut. 117 1(0-3)	

Sanitary Science; Food and Market Inspection

FIRST SEMESTER	SECOND SEMESTER
Hygienic Bacteriology Bact. 206 4(2-6)	Dairy Chemistry Chem. 254 3(1-6)
Quantitative Analysis A Chem. 250 2(0-6)	Food Analysis Chem. 257 3(0-9)
	Pathogenic Bacteriology I Bact. 111 4(2-6)
	Meat Inspection Path. 216 2(2-0)

Social Welfare Work

FIRST SEMESTER	SECOND SEMESTER
Child Welfare Hshld. Econ. 203 3(3-0)	Labor Problems Econ. 233 2(2-0)
Home Nursing Hshld. Econ. 109 1(0-3)	Rural Sociology Econ. 156 3(3-0)
The Modern Family Hshld. Econ. 231 2(2-0)	Social Problems Econ. 257 2(2-0)
Problems in Household Economics Hshld. Econ. 243 1 to 5	Community Organization Econ. 267 3(3-0)
Sociology Econ. 151 3(3-0)	Modern Europe Hist. 223 3(3-0)
Latin America Hist. 207 2(2-0)	Immigration and International Relations Hist. 228 2(2-0)
Community Organization Econ. 267 3(3-0)	Problems in Child Welfare Hshld. Econ. 253 1 to 5
Field Work in Nutrition Food and Nut. 215 1 to 3	Social Case Work with Families Hshld. Econ. 235 2 to 4

State Certificate Requirements for General Teaching

FIRST SEMESTER	SECOND SEMESTER
Educational Administration A or B Educ. 105 or 106 3(3-0) or	Educational Psychology Educ. 109 3(3-0) or
School Management Educ. 107 3(3-0)	Educational Sociology A or B Educ. 118 or 119 3(3-0)
Additional Educational Courses 9(9-0)	

(NOTE.—Home Economics Education (3 hrs.) and Special Methods in the Teaching of Home Economics (3 hrs.) are recommended for students who wish to teach home economics. Modern Europe or advanced English should be added by those expecting to teach these subjects. Additional courses may be chosen in the line of the student's interests.)

Applied Art

Professor HOLMAN
Instructor EVERHARDY
Instructor ARNOLD
Instructor CLARKE*

Taste is cultivated through the impressions received in everyday surroundings and not through the occasional visits to art galleries. We are not so sensitive to discords in color and line as we are to discords in sound, because we have not trained our eyes as we have our ears. "The study of design furnishes a means of exercising and thus developing good taste in connection with the things which make up environment of everyday life and of awakening appreciation in nature and in art." Home decoration is a study of the factors which produce beautiful surroundings that make for enjoyment and peace. Each course consists of lectures, studio laboratory work, field observation work, and reading.

* Second semester, Department of Clothing and Textiles.

COURSES IN APPLIED ART

FOR UNDERGRADUATES

101. DESIGN. Freshman year, first semester. Class work, one hour; studio, six hours. Three semester credits. Professor Holman and Misses Everhardy and Arnold.

A study is made of the principles which control the use of color and the selection and arrangement of elements in the production of objects themselves and in their uses as parts of a whole. Many exercises are given in which clothing and home furnishings are scored as to design. A natural motif is adapted to material, function and form. Key deposit, 25 cents.

106. DESIGN A. Freshman year, first semester. Class work, one hour; studio, six hours. Three semester credits. To be taken as a substitute for Design by students who have had color and design work acceptable to the department. Professor Holman and Miss Everhardy.

A further study is made of harmonies, adaptation of natural motifs, and design as applied to fabrics and other materials. Art masterpieces and articles of common use are studied according to the principles of design and color. Key deposit, 25 cents.

108. HOUSE FURNISHINGS. Freshman year, second semester. Class work, one hour; studio, three hours. Two semester credits. Prerequisite: Design (Ap. Art 101) or Design A (Ap. Art 106). Professor Holman.

Design is the selection and arrangement of materials for the making of useful and beautiful things. The decorative phase of design is studied in the solving of problems which occur in the furnishings of the house. Key deposit, 25 cents.

112. HANDICRAFT. Elective, second semester. Studio, six hours. Two semester credits. Prerequisite: Design A. Miss Everhardy.

Both constructive and decorative designs are studied in handicraft work. Original designs are carried out in the following mediums: leather, clay, metal, reeds, and other materials. Key deposit, 25 cents.

114. INTERIOR DECORATION AND FURNISHING. Elective, second semester. Class work, one hour; studio, six hours. Three semester credits. Prerequisite: Design or Design A. Professor Holman.

This is a study of color, form and arrangement of home furnishings. Wall coverings, carpets, pictures, furniture, etc., are discussed and studied so that the student may recognize and appreciate what is appropriate and beautiful. A study is made of fine arts, of handicrafts, and of the history of furnishings. Problems in spacing and coloring of side walls are discussed and are developed in water color and decorating materials. Key deposit, 25 cents.

116. INSTITUTIONAL FURNISHINGS. Elective, second semester. Class work, one hour; studio, six hours. Three semester credits. Prerequisite: Design or Design A. Miss Everhardy.

A study is made of the fundamental principles of design, including color, form, and arrangement. These principles are applied to problems involving the selection and use of the following: Wall, floors, furniture, finishes, coverings, linen, china, and silver. Key deposit, 25 cents.

120. SKETCHING. Elective, second semester. Studio, six hours. Two semester credits. Prerequisite: Design or Design A. Professor Holman.

Objects are sketched singly and in groups in the studio and out of doors. The media employed are pencil, charcoal, and brush. The aim is to train the student to see forms in perspective and to represent them with sufficient accuracy to apply in illustrating the more practical problems in the other courses in the department.

124. PRINCIPLES OF ART AND THEIR APPLICATION. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Design or Design A. Professor Holman.

A general survey is made of art periods as an index to what the art quality is. An examination is made of the religious, political, and social aspects of art expression. Architecture, furniture, textiles, sculpture, pictures, and the lesser art objects are compared as to their art quality. The modern fields of landscape, architecture, furnishings, clothing, advertising, etc., are surveyed. The principles controlling art expression are applied to these modern fields of life.

Clothing and Textiles

Professor GLANTON
Associate Professor COWLES.
Instructor FECHT

Instructor WORCESTER
Instructor CLARKE*
Instructor POLSON

Clothing is an important factor in both the physiological and psychological well-being of the individual and of the family. The wise selection of the clothing requires a high degree of skill in the application of hygienic, economic, and æsthetic principles. The preservation and care of clothing are based upon a practical knowledge of chemistry, entomology, and bacteriology. In the construction of garments, art, applied art, and technic are presented in their proper relations in order to train students in fundamental principles and enable them to utilize these principles in their everyday practices. In this department advanced courses are offered for students who wish electives which lead to vocational, professional, and business positions.

COURSES IN CLOTHING AND TEXTILES

FOR UNDERGRADUATES

101. CLOTHING I. Freshman year, second semester. Class work, one hour; laboratory, three hours. Two semester credits. Associate Professor Cowles, Miss Fecht, Miss Worcester, and Miss Polson.

The aim of this course is to train for efficient technic in handling sewing equipment and materials. Adaptation and use of commercial patterns, kinds, qualities, and quantities of materials are discussed. Some attention is paid to the elementary facts which underlie the successful selection of textile fabrics.

Laboratory.—The planning and construction of garments from wash materials for various purposes are taken up in the laboratory. Key deposit, 25 cents.

106. COSTUME DESIGN I. Freshman year, second semester. Laboratory, six hours. Two semester credits. Prerequisite: Design (Ap. Art 101) or Design A (Ap. Art 106). Miss Clarke and Miss Polson.

This course treats of art in dress and comprises the application of the principles of color, harmony, and design; individual requirements in color and line; original problems in designs for decoration of costumes and for costumes in pencil, pen and ink, and water colors. This course is directly related to the construction of garments. The aim is to develop good taste in dress.

108. COSTUME DESIGN II. Elective, first semester. Laboratory, six hours. Two semester credits. Prerequisite: Costume Design I. Miss Clarke.

Historic costume in its relationship to the present-day mode and to costumes for amateur performances or pageants, is studied in this course. Opportunity is offered for draping materials from original designs. Considerable attention is given to color and to the finishing touches of artistry necessary to complete a charming and appropriate costume.

111. CLOTHING II. Sophomore year, first semester. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: The ability to use patterns and to sew correctly without instructions. Associate Professor Cowles, Miss Fecht, and Miss Worcester.

* First semester, Department of Applied Art.

The class work consists of consideration of bases for the selection of clothing; clothing as a financial investment; comparison of home- and factory-made garments; clothing budgets in their relation to the rest of the income; clothing industries and clothing standards in their relations to the economic, social, and æsthetic life of the community. Emphasis is laid on principles of hygiene and sanitation as applied to clothing.

Laboratory.—The laboratory work consists of the planning of clothing budgets of individuals and of family groups as illustrated by the statistical family. Simple millinery problems are undertaken. Garments for children, men, and women are planned and constructed. Rapidity of construction and labor-saving methods are emphasized. Key deposit, 25 cents.

116. **TEXTILES.** Junior year, first and second semesters. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Organic Chemistry (Chem. 121). Professor Glanton and Miss Fecht.

This course considers the social and economic development of the textile industry, from the "industrial revolution" to the present time. The combination of art, science and mechanics that makes possible the elaborateness of modern textiles is given due attention. The principal aim of the course is the development of a clear and sound judgment in the selection of textile fabrics for household and personal use.

Laboratory.—Chemical, physical, microscopic tests on textile fibers, yarns, and fabrics form a large part of the laboratory work. These include the simple tests that may be performed in any home, as well as technical, scientific tests requiring elaborate equipment. Laboratory charge, \$2.

125. **CLOTHING III.** Elective, both semesters. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisites: Clothing I, or its equivalent, and Costume Design. Open to seniors and others upon consultation with the instructor. Miss Polson.

The course deals with the æsthetic and modish adaptation of materials to the individual, and aims to teach self-expression through dress. Several original designs in dressmaking and millinery are carried out in materials approved by the instructor. Students are allowed much freedom in the selection and execution of the problems. Key deposit, 25 cents.

127. **PRACTICE IN CLOTHING DEMONSTRATIONS.** Elective, first semester. Laboratory, three hours. One semester credit. Prerequisite or parallel: Clothing III. Professor Glanton and others.

This course is designed to meet the needs of those who plan to go into extension service or similar work as clothing specialists. Instruction is given in the technic of clothing demonstrations, and in the preparation and exhibition of necessary materials and equipment. Each student is required to give one or more practice demonstrations.

130. **CLOTHING SALESMANSHIP.** Elective, second semester. Offered in 1922-'23 and alternate years thereafter. Class work, two hours. Two semester credits. Prerequisite: Costume Design I. Open to students upon consultation with the instructor. Professor Glanton.

This course provides an introduction to the problems which present themselves to those preparing for positions as executives in department stores, service managers in factories, or teachers of salesmanship in high schools. Study of department-store policies and systems, the psychology of selling, the responsibility of the sales person to the customer. Conferences and reports are required. Actual practice in department stores is very desirable for all students, for whom credit may be arranged if planned before registration.

FOR GRADUATES AND UNDERGRADUATES

237. **CLOTHING ECONOMICS.** Elective, both semesters. Class work, two hours. Two semester credits. Prerequisite: Economics (Econ. 101). Professor Glanton.

This course includes a study of the organization of the clothing trades and industries; of wholesale and retail clothing markets; of wages and standards

of efficiency in workmanship; conditions of work in the textile and clothing industries; standardization of fabrics; study of the budget for clothing and household textiles. Topics are assigned for reading and investigation and written reports are required.

238. PROBLEMS IN ELEMENTARY CLOTHING TECHNIC. Elective, second semester. From two to four semester credits. Prerequisites: Clothing II, and Costume Design, or equivalents. Professor Glanton and Associate Professor Cowles.

Students are assigned problems in relation to the methods and qualities of technic of clothing construction and means of testing and grading progress in accomplishment.

239. PROBLEMS IN THE HISTORY OF TEXTILES. Elective, first semester. From two to four semester credits. Prerequisites: Textiles and American Industrial History, or equivalents. Professor Glanton.

Students are assigned special problems in the relation of the growth of the textiles industries and trades to the other forces of civilization.

240. PROBLEMS IN HYGIENE OF CLOTHING. Elective, both semesters. From two to four semester credits. Prerequisites: Textiles, Embryology and Physiology, and Microbiology, or equivalents. Professor Glanton.

Students are assigned special problems for investigation of clothing in relation to health and its effect upon anatomical form, muscular development and physiological functions.

241. PROBLEMS IN COSTUME. Elective, both semesters. From two to five semester credits. Prerequisites: Costume Design II (Clo. and Text. 108), Psychology (Educ. 103), and Sociology (Econ. 151), or equivalents. Professor Glanton.

Assignments are made of problems in the æsthetic and psychological value of clothing involving the relationships of color, material, cut, and decoration of garments; or to problems in the sociological aspect of costume, including the relation of dress to the state of civilization, the architecture, the religion, the means of transportation, the predominant occupations, the form of amusements, the status of women, and the like.

242. PROBLEMS IN CLOTHING ECONOMICS. Elective, second semester. From two to five semester credits. Prerequisites: Consult instructors. Professor Glanton and Associate Professor Cowles.

Students are assigned special problems for investigation in the selection and care of textiles used in the home and in public or private institutions; or in the administration of clothing budgets for individuals or family groups.

FOR GRADUATES

301. RESEARCH IN CLOTHING AND TEXTILES. Elective, both semesters. Two to ten semester credits. Prerequisites: Consult instructors. Professor Glanton and Associate Professor Cowles.

A research problem in the hygienic or economic aspects of clothing or an investigation of textiles may be chosen as the basis of a thesis for the master's degree. The nature of the problem will depend upon the problem courses which have been elected.

Food Economics and Nutrition

Professor PITTMAN
Associate Professor KRAMER
Associate Professor RUBY
Assistant Professor HUDSON

Instructor BATES
Assistant BENNETT
Graduate Assistant AHLBORN*

Food is one of the determining factors in the health of the individual and of the family. The selection of wholesome and economical food requires the constant application of chemistry and of sanitary science. The preparation and preservation of food involve processes dependent upon physics, chemistry, and bacteriology. In the modern science of nutrition and dietetics, the student learns the chemical and physiological principles involved in the nutritive processes of the body and the quantitative application of these principles in planning food for the individual and the group. Science, applied science, and practice are presented in their proper relations in order to train the student in fundamental principles and to enable her to gain by experience methods of translating these principles into her everyday household practices. Advanced courses in this department provide training for teachers of foods, dietitians, demonstrators, extension workers, and similar professions.

COURSES IN FOOD ECONOMICS AND NUTRITION

FOR UNDERGRADUATES

101. **FOODS I.** Freshman year, both semesters. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: entrance Physics; parallel, Chemistry I (Chem. 101). Miss Bates, Miss Bennett, and Miss Ahlborn.

The class work includes a brief survey of the history and development of cookery and cooking utensils, consideration of the principles involved in the different methods of cooking and in the preservation of foods.

Laboratory.—Experimental work and practical cookery, illustrating the various methods of preparing foods, form the basis of the laboratory work, which also includes the study of stoves, fuels, food preservation, and simple meal planning. Laboratory charge, \$4; key deposit, 25 cents.

106. **FOODS II.** Sophomore year, both semesters. Class work, three hours; laboratory, six hours. Five semester credits. Prerequisites: Organic Chemistry (Chem. 121), Foods I or a knowledge of cookery and the ability to use the laboratory equipment intelligently. Professor Pittman, Assistant Professor Hudson, Miss Bates, and Miss Bennett.

This course emphasizes the classification, composition, occurrence, and general properties of foodstuffs. Food values in relation to cost are considered, together with the legal and sanitary aspects of food products handled in commerce.

Laboratory.—Food products are handled in experiments which demonstrate the presence of the proximate principles and the various inorganic constituents, the changes they undergo in cooking, and their nutritive value as affected by admixture with other food materials. Recipes are compiled. Practice is given in judging food preparations. Laboratory charge, \$4.25; key deposit, 25 cents.

112. **HUMAN NUTRITION.** Junior year, both semesters. Lectures and recitations, three hours. Three semester credits. Prerequisites: Organic Chemistry (Chem. 121), Embryology and Physiology (Zool. 201), and Foods II.† Associate Professor Kramer.

This course comprises a study of the special characteristics and nutritive functions of the food constituents; the methods of investigation which have

* Position open September 1, 1924.

† Students from other divisions desiring to elect Human Nutrition may substitute an equivalent number of hours in other sciences for Embryology and Physiology, and Foods II.

established the quantitative basis in dietetics; the digestive and metabolic processes and products with emphasis upon energy relations; the quantitative relations of the ash constituents; nitrogen and mineral balances; comparative economy in nutrition and growth of different types of food materials.

117. PRACTICE IN FOOD DEMONSTRATIONS. Elective, both semesters. Laboratory, three hours. One semester credit. Prerequisite: Foods II. Professor Pittman, with the assistance of other members of the departmental faculty.

This course is designed to meet the needs of those who plan to enter extension work, to become commercial demonstrators of food products, or to teach food study. Instruction is given in the technic of food demonstrations, and each student is allowed opportunity for practice work in various types of demonstrations. Laboratory charge, \$3; key deposit, 25 cents.

FOR GRADUATES AND UNDERGRADUATES

201. DIETETICS. Senior year, both semesters. Class work, three hours; laboratory, six hours. Five semester credits. Prerequisites: Human Nutrition and Foods II. Professor Pittman, Associate Professor Ruby, and Assistant Professor Hudson.

This course deals with the application of the principles of human nutrition to the practical feeding problems of the individual and the group. The following topics receive attention: daily food requirements in health and in disease throughout infancy, childhood, adolescence, adult life, and old age; typical dietaries for each period of life; milk formulæ; the problem of satisfying the diverse requirements in families and other groups.

Laboratory.—Studies in weight measures and cost of some of the common food materials; calculations and quantitative preparation of standard portions and combinations of foods; analyses of recipes; computation and scoring of dietaries with special regard to nutritive requirements for varying physiologic, economic, and social conditions; practice in marketing and serving, comprise the work in the laboratory. (Graduate students are required to do an assigned problem in place of the practice in marketing and serving included in the laboratory for undergraduates.) Laboratory charge, \$6; key deposit, 25 cents.

215. FIELD WORK IN NUTRITION. Elective, first semester. From two to three semester credits. Hours to be arranged. Prerequisites: Human Nutrition, and Dietetics. Associate Professor Ruby and Assistant Professor Hudson.

This course comprises survey work along nutritional lines and corrective work with malnourished individuals, either separately or in groups. Laboratory charge, \$1.

243. PROBLEMS IN FOODS I. Elective, first semester. From one to three semester credits. Hours to be arranged. Prerequisites: Foods II and Human Nutrition. Professor Pittman and Miss Bates.

Special problems are assigned to students for individual consideration. Laboratory charge, \$2 per credit hour; key deposit, 25 cents.

244. PROBLEMS IN FOODS II. Elective, second semester. From one to three semester credits. Hours to be arranged. Prerequisites: Foods II, and Human Nutrition. Professor Pittman and Miss Bates.

This course may be taken as a continuation of course 243 or may be elected independently. Laboratory charge, \$2 per credit hour; key deposit, 25 cents.

248. PROBLEMS IN FOOD ECONOMICS AND NUTRITION I. Elective, first semester. From two to five semester credits, depending upon the nature of the problem. Conferences, laboratory work, and reports. Open to senior and graduate students. Associate Professors Kramer and Ruby.

The work of this course may consist of an assigned problem in the nutritive value of foods; a feeding experiment; dietary studies; or practice in the methods commonly used in the simpler experiments in nutrition. Laboratory charge depends upon the problem chosen.

249. PROBLEMS IN FOOD ECONOMICS AND NUTRITION II. Elective, second semester. From two to five semester credits, depending upon the nature of the problem. Conferences, laboratory work, and reports. Open to senior and graduate students. Associate Professors Kramer and Ruby.

This course may be taken as a continuation of course 248 or may be elected independently. Laboratory charge depends upon problem chosen.

251. FOOD ECONOMICS AND NUTRITION SEMINAR I. Elective, first semester. Class work, two hours. One or two semester credits. Prerequisite: Human Nutrition. Associate Professor Kramer.

This is a course of assigned reading and discussion of topics in the fields of food economics and nutrition. Special attention is given to recent literature, which bears upon problems in dietetics, in both normal and pathological conditions; upon growth and upon normal and subnormal nutrition in infancy and childhood. Feeding experiments are compared and discussed. A reading knowledge of modern languages, while not a fixed requirement, is urged as of especial advantage in this course.

252. FOOD ECONOMICS AND NUTRITION SEMINAR II. Elective, second semester. Class work, two hours. One or two semester credits. Prerequisite: Human Nutrition. Associate Professor Kramer.

This course may be taken as a continuation of course 251 or may be elected independently.

FOR GRADUATES

305. RESEARCH IN FOOD ECONOMICS AND NUTRITION. Elective, both semesters. Credit as arranged. Prerequisites: Consult instructors. Professor Pittman, and Associate Professor Kramer.

Individual research problems are assigned, which may form the basis for the thesis submitted for a master's degree. Laboratory charge, \$5 and up, depending upon the problem chosen.

Household Economics

Professor LEAZENBY
Associate Professor CARP
Assistant Professor BISHOP
Instructor DOBBS

Instructor DOBBS*
Assistant GINTER
Graduate Assistant, MASON†

The successful administration of the home, whether it be for the family or for the larger institutional group, depends upon the wise expenditure of time, money, and effort, the maintenance of healthful and comfortable home conditions, and an appreciation of the importance of the family and the home and their relation to the rest of society. Through the courses in this department, therefore, training is given in household administration, in standards of living and the use of the family income, in institutional administration, in home nursing and sanitation, and in family and child welfare.

Students who wish to prepare themselves as social workers, directors of residence, cafeteria or lunch-room managers, hospital managers or dietitians, or teachers or demonstrators in home economics, will find suitable electives among the courses offered by this department.

* In charge of correspondence work in Household Economics, Home Study Service, Division of College Extension.

† Position open September 1, 1924.

COURSES IN HOUSEHOLD ECONOMICS

FOR UNDERGRADUATES

103. **ELEMENTARY HYGIENE AND HOME NURSING.**† Freshman year, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Miss Dobbs.

Emphasis is placed upon personal hygiene as a means of maintaining and improving health in the home, and the best methods of caring for the sick in the home are discussed.

Laboratory.—The laboratory work consists of demonstrations and laboratory practice by the student in the home care of the sick, including such problems as bed-making, simple devices for the comfort of patient, bathing, etc., as well as a study of the treatment of emergencies.

107. **HOUSEHOLD MANAGEMENT.** Junior year, both semesters. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: Household Physics (Physics 101), Foods II (Food and Nut. 106), and Clothing II (Clo. and Text. III). Assistant Professor Bishop.

The class work includes a study of the organization and simplification of housework through efficiency in house planning and construction, and in methods of housekeeping; standards of living and family expenditures, budgets, and accounts; problems of household service; experiments of coöperative laundering, kitchens, etc.; the amount of time necessary for housework; and the use of leisure time.

Laboratory.—Comparative studies are made of mechanical household appliances, convenient placing and grouping of equipment; durability and economy tests of cooking utensils, floor and wall finishes, and cleaning agents; and the gathering of data on time studies of various household tasks. Laboratory charge, \$1.

109. **HOME NURSING.** Elective, both semesters. Laboratory, three hours. One semester credit. Prerequisites: Household Microbiology (Bact. 121) and Embryology and Physiology (Zoöl. 201). Miss Dobbs.

Training is given, through class discussions and demonstrations and through laboratory practice by the student, in the home care of the sick and the treatment of injuries, wounds, and other emergencies.

116. **PRACTICE COURSE IN HOUSEHOLD MANAGEMENT.** Elective, both semesters. Required of students who wish to qualify as home economics teachers under the Smith-Hughes requirement for vocational high schools. Three semester credits. Prerequisites: Household Physics (Physics 101) and Foods II (Food and Nut. 106). Prerequisite or parallel: Household Management. Consult instructor. Assistant Professor Bishop.

This course is conducted in the practice house. The students live in a group and perform the usual household tasks, including marketing, planning, cooking and serving meals, caring for the rooms, planning the household budget, and keeping the accounts.

FOR GRADUATES AND UNDERGRADUATES

203. **CHILD WELFARE.** Elective, both semesters. Required of students who wish to qualify as home economics teachers under the Smith-Hughes requirement for vocational high schools. Class work, three hours. Three semester credits. Prerequisites: Embryology and Physiology (Zoöl. 201), Household Microbiology (Bact. 121), Psychology (Educ. 103), Human Nutrition (Food and Nut. 112), Clothing II (Clo. and Text. 111), and Textiles (Clo. and Text. 116). Professor Leazenby.

A study is made of the needs of the child and of the methods of meeting these needs through the care of the child in the home and through community and child-welfare activities. The topics considered include the health problems of mother and child, child mentality and management, play and recrea-

† This course may be taken in place of Foods I, with the approval of the dean of the division.

tion, child labor, juvenile delinquency, and the special needs of defective and dependent children.

211. **SANITATION AND PUBLIC HEALTH.** Senior year, both semesters. Class work, three hours. Three semester credits. Prerequisites: Household Physics (Physics 101), Embryology and Physiology (Zoöl. 201), Household Microbiology (Bact. 121). Dean Justin, Professor Leazenby and Assistant Professor Bishop.

This course deals with the household as a factor in health conservation, emphasis being placed upon the interrelation of home and community health. It includes a study of the influence upon health of the location, ventilation, heating, lighting, and water supply of the house; the sanitary disposal of sewage and other wastes; housing conditions and their control; vital statistics; the prevention and control of communicable and noncommunicable diseases; mental hygiene; public health activities and administration in relation to the home.

221. **INSTITUTIONAL MANAGEMENT I.** Elective, both semesters. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: Foods II (Food and Nut. 106); prerequisite or parallel: Human Nutrition (Food and Nut. 112). Associate Professor Carp and Miss Ginter.

This course deals with food problems of institutions, and includes the study of marketing, preparation of food, arrangement of menus, and cost of service for different types of institutions.

Laboratory.—The laboratory work is carried on in the College cafeteria, where food in large quantities is prepared for serving. Laboratory charge, \$1.

226. **INSTITUTIONAL MANAGEMENT II.** Elective, both semesters. Class work, three hours; laboratory, three hours. Four semester credits. Prerequisite: Institutional Management I. Associate Professor Carp.

This course includes a study of the various types of institutions; the qualifications and duties of the manager; the planning, equipping, and general care of buildings and rooms; the organization of work; the management of employees; institutional accounting; office management.

Laboratory.—The laboratory work consists of practice in the various phases of institutional management in the College cafeteria. Opportunity is given for a visit to representative types of institutions in Kansas City. Laboratory charge, \$1.

231. **THE MODERN FAMILY.** Elective, both semesters. Class work, two hours. Two semester credits. Prerequisite: senior or graduate standing. Consult instructors. Professor Leazenby.

A study is made of the functions of the modern family, based upon a brief survey of the historical background, and of the various problems which confront it, such as marriage rates and marriage laws, birth rates, the influence of the death or illness of parents, of low wages, unemployment and bad housing, the employment of mothers, family neglect, desertion, and divorce. Special emphasis is placed on the conditions met by the social case worker and on social programs for the maintenance and improvement of family welfare.

235. **SOCIAL CASE WORK WITH FAMILIES.** Elective, both semesters. Class work, one hour. Field work, three, six or nine hours. Two to four semester credits. Prerequisites: Household Management, Clothing II (Clo. and Text. 111). Prerequisite or parallel: Sanitation and Public Health, Dietetics (Food and Nut. 201), Child Welfare, The Modern Family, and Sociology (Econ. 151), or Rural Sociology (Econ. 156). Consult instructor. Professor Leazenby.

The class work consists of a study of the methods of social case work and their application to families in need of special care. The problems of investigation, weighing of evidence, sources of aid, plans of action, and follow-up work are considered. The rest of the time is spent in supervised field work with local social agencies.

243. PROBLEMS IN HOUSEHOLD ECONOMICS. Elective, both semesters. One to five semester credits. Prerequisite: Household Management. Consult instructors. Professor Leazenby, and Assistant Professor Bishop.

Special problems are selected for individual investigation in standards of living and family expenditures, housing, household equipment, organization and methods of housework, use of time freed from housework, or social aspects of the household and of the family. Conferences are held and reports are made at hours arranged by appointment.

247. PROBLEMS IN INSTITUTIONAL ADMINISTRATION. Elective, both semesters. One to five semester credits. Prerequisite: Institutional Management I. Prerequisite or parallel: Institutional Management II. Consult instructor. Associate Professor Carp.

Special problems in the administration of cafeteria, lunch and tea rooms, dining halls, dormitories, clubs, and other institutions, are selected for individual investigation. Conferences are held and reports are made at hours arranged by appointment.

253. PROBLEMS IN CHILD WELFARE. Elective, both semesters. One to five semester credits. Prerequisite: Child Welfare. Consult instructor. Professor Leazenby.

A special problem in some phase of child welfare is selected for individual investigation. Conferences are held and reports are made at hours arranged by appointment.

FOR GRADUATES

301. RESEARCH IN HOUSEHOLD ECONOMICS I. Elective, first semester. Two to ten semester credits. Prerequisites: Consult instructors. Professor Leazenby, Associate Professor Carp, and Assistant Professor Bishop.

An individual research problem is investigated in the field of household administration, institutional administration, child welfare, or family welfare. The work of the course may form part or all of the basis for the master's thesis.

306. RESEARCH IN HOUSEHOLD ECONOMICS II. Elective, second semester. Two to ten semester credits. Prerequisites: Consult instructors. Professor Leazenby, Associate Professor Carp, and Assistant Professor Bishop.

This course may be taken as a continuation of course 301, or may be elected independently. The work of the course may form part or all of the basis for a master's thesis.

Home Economics in the Summer School

In addition to instruction in various branches of home economics available to teachers during the regular College year, the College offers several courses in this subject in the Summer School. Instruction in these courses is intended to present correctly that which may be introduced successfully into graded schools and high schools. Students will be enrolled upon presentation of a teacher's certificate, or of a certified statement showing that two years' high-school work or its equivalent has been completed.

A special circular giving in detail the courses offered in the Summer School may be had by applying to the vice president of the College. See, also, the article on Summer School in this catalogue.

Special Course in Home Economics

The housekeeper's course, which is completed in fifteen weeks or less, is described with other special courses in another part of this catalogue. It may be found by reference to the general index in the back of this book.

The Division of General Science

JULIUS TERRASS WILLARD, *Dean*

In the class of colleges to which this institution belongs the classical studies of the older type of college are replaced by work in the sciences and in vocational subjects. A sound basis for technical training includes thorough training in mathematics, physical science, and biological science. It is believed also that education should include some preparation for the discharge of one's duties to the state and to the community in which he lives. It should afford him that discipline and culture which alone can give him a grasp of the relations among persons and activities, peoples and events, with breadth of view and tolerance of attitude, and hence an influence over his associates and fellow citizens of every station of life.

It is the province of the departments grouped in this division of the College to give this basic, scientific, cultural and disciplinary training. Their work is not only foundational, but it penetrates through all of the characteristic vocational courses of the institution, as the structural steel of the modern skyscraper penetrates the entire building and forms a secure framework and support for the more readily visible, and evidently important parts. These departments thus give unity to all of the four-year curricula, although presenting but few curricula that are distinctive of their own work. These, however, by means of electives and options, are susceptible of manifold modification and application.

CURRICULUM IN GENERAL SCIENCE

The curriculum in general science includes the fundamental training in English, mathematics, science, history, economics, military science, and physical training required in the several specialized vocational courses now offered by the College. Its required subjects constitute the central educational basis of the institution. By means of a number of groups of electives, it gives an opportunity to students to advance themselves still further in these fundamental lines and to give special attention to some, instead of taking the technical subjects characterizing other courses. This opportunity meets the needs of several types of young people, among whom are: (1) Those who have not yet fully decided as to their vocation, but who wish an education that is strong and well balanced in respect to modern science and cultural subjects, as a foundation for further education or as a preparation for sound citizenship and intellectual satisfaction in life. (2) Those who are looking forward to teaching in the high schools of the state. The electives offered allow one to give special attention to mathematics, physical science, biological science, agriculture, home economics, history, economics, English, journalism, music, professional educational subjects, and several other lines. (3) Those who are fitting themselves for research work in the sciences, especially as applied to agriculture, engineering, and other industries.

The elective groups offered in this curriculum are to a considerable extent made up of studies required in one or more of the specialized curricula. They provide also, however, advanced work not included in the other curricula. The scientific work in connection with the Agricultural and Engineering Experiment Stations, and several fields of state investigation and service, calls for the operation of unusually well-equipped departments in the sciences, and excellent facilities for practical training in this work are thus afforded.

While the curriculum in general science offers a wide choice of electives, these may not be selected aimlessly, or with the idea of choosing the easiest, or of obtaining credit for miscellaneous subjects taken elsewhere or in other

curricula. The studies of the freshman and sophomore years are basic and are required of all, without exception. They insure a broad and adequate foundation for subsequent work in the several lines of electives. The electives are to be chosen in groups, approved by the Faculty or by the dean of the Division of General Science, and in such a manner as to give logical coherence to the curriculum as a whole. The elective portion of the curriculum, as thus made up, consists for the most part of several groups of two or more full studies or their equivalent. It is possible to include some single subjects that may be advantageously taken without others. Special combinations in home economics and mechanic arts have been planned to meet the needs of prospective teachers of manual training. Students changing from other curricula to that in general science receive credit for work done in the other curricula in so far as it can be fitted into the general plan of this one.

The curriculum in general science is thus many in one. Such various combinations of groups are possible that it is not practicable to print all of them in extended form. There are, therefore, formally presented here the required subjects of the curriculum in their specified order by years and semesters, together with a considerable number of groups of electives.

CURRICULUM IN INDUSTRIAL JOURNALISM

Knowledge is power only as it comes into the possession of those who can use it; it gives pleasure in direct proportion to the extent of its diffusion. A discovery is of little value as long as the discoverer is the only one who knows of its existence, and the printed page is by far the most effective means of extending knowledge concerning it. Magazines and newspapers never sleep, nor do they take vacations, and their power to elevate mankind is incalculable. But printed knowledge becomes effective only as it is read, and to be widely read in this day it must stand out from the great mass of other matter and gain the attention and hold the interest of the reader. To do this its points must be sharp and easily seen, and the style must be attractive. On the other hand, if the presentation is not essentially true, the more attractive it is the worse it is, and the greater the harm that follows wide reading of it.

The curriculum in industrial journalism endeavors to give young men and women training which will enable them to write both truthfully and effectively, particularly upon industrial subjects. To such subjects the modern newspaper and the general magazine are giving constantly more attention while there are also 500 agricultural publications and a greater number of class and trade publications which are largely or exclusively concerned with matters relating to industrial life. The training given by the College has enabled a goodly number of alumni to do successful work upon these publications.

The aim of the curriculum is to present such subjects as will enable the writer to see his work in proper perspective, to obtain authoritative knowledge of some field of industrial activity, and to write acceptably. The curriculum consequently offers, in the first place, fundamental studies of literary, social, and scientific character. Because of the materials with which journalism deals, it is highly desirable that the student obtain a clear knowledge of the social sciences and be able to read at least one current foreign language. In the second place, the student is required to elect subjects in agriculture, mechanic arts, applied science, or home economics, depending on the portion of the field of industrial journalism which he desires to enter, it being expected that every student graduated from the curriculum shall have special knowledge of some prominent line of industry. In the third place, the theory and practice of journalism are presented in a series of courses extending throughout the sophomore, junior, and senior years, and opportunity is offered for taking additional electives in journalism simultaneously with the required courses.

The College thus affords preparation for work in a wide and inviting field. Our unprecedented industrial achievements have been made by the application of discoveries in physical and biological science. Much of discovery and much of application are yet to come, and one who can write truthfully and attractively of that which is, and of that which comes, will find ample reward.

CURRICULA IN APPLIED CHEMISTRY

The facilities for instruction in chemistry are ample, and the demand of students for curricula planned especially to give chemical training is such that formulations have been made to meet the needs of those desiring to specialize in agricultural chemistry, biochemistry, or industrial chemistry. By suitable modifications of the curriculum in industrial chemistry the needs of students interested in chemical engineering are met. The instructional facilities of the Department of Chemistry reinforced by opportunities for practical work in connection with the researches of the experiment stations are such as to provide amply for this specialized training.

CURRICULUM IN RURAL COMMERCE

The commercial prosperity of Kansas depends primarily upon the business success of its farming population. The success of the farmer is determined to a large extent by his relations with those who handle his products or furnish him with goods and services. The towns of the state and the strictly rural districts about them constitute an economic unit, the members of which are mutually dependent. A knowledge of the economic, financial, social, and business principles affecting the country and the towns in themselves and in their interrelations is of the greatest importance. The curriculum in rural commerce is designed primarily to train men and women for citizenship and business service in these communities.

The completion of this curriculum should not only enable one to conduct his own business more successfully, but give him an insight into the problems of others in their occupations. A general diffusion of such knowledge promotes tolerance, consideration for the general public with which each deals, and social unity.

Choice of electives is rather free in this curriculum, and any agricultural, industrial, commercial or social subjects of study will be approved if they are chosen in such relationships as to give promise of usefulness.

CURRICULA IN MUSIC

A knowledge of music contributes to the satisfaction in life of practically all cultivated people. This College throughout its history has maintained a department of music for the purpose of affording culture in this art to any of its students. In recent years the excellence of the instruction offered has created a demand for curricula in music.

Students who complete one of the four-year curricula in voice or an instrument, or in public-school music, are awarded the degree of Bachelor of Music. They are also eligible to receive a three-year state teachers' certificate, renewable for life.

A student completing the first two years of the curriculum in public-school music is awarded a certificate, and becomes eligible to receive from the State Board of Education a three-year state certificate as teacher or supervisor of public-school music. This certificate is renewable for three-year periods.

Curriculum in General Science

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
College Rhetoric I		College Rhetoric II	
Engl. 101	3(3-0)	Engl. 104	3(3-0)
Chemistry I		Chemistry II	
Chem. 101	5(3-6)	Chem. 102	5(3-6)
Plane Trigonometry*		College Algebra*	
Math. 101	3(3-0)	Math. 104	3(3-0)
General Botany I		General Botany II	
Bot. 101	3(1-4, 2)	Bot. 105	3(1-4, 2)
Current History		Current History	
Hist. 126	1(1-0)	Hist. 126	1(1-0)
Library Methods		Elective†	2(-)
Lib. Ec. 101	1(1-0)		
Infantry I (Men)		Infantry II (Men)	
Mil. Tr. 101	1½(0-4)	Mil. Tr. 102	1½(0-4)
Physical Education M-I (Men)		Physical Education M-II (Men)	
Phys. Ed. 103	R(0-2) or	Phys. Ed. 104	R(0-2) or
Physical Education W-I (Women)		Physical Education W-II (Women)	
Phys. Ed. 151A	1(0-3)	Phys. Ed. 152A	1(0-3)

SOPHOMORE

FIRST SEMESTER		SECOND SEMESTER	
English Literature		American Literature	
Engl. 172	3(3-0)	Engl. 175	3(3-0)
English History		Modern Europe	
Hist. 121	3(3-0)	Hist. 223	3(3-0)
General Physics I		General Physics II	
Physics 135	4(3-3)	Physics 140	4(3-3)
General Zoölogy		Elective†	6(-)
Zoöl. 105	5(3-6)		
Elective	2(-)	Infantry IV (Men)	
Infantry III (Men)		Mil. Tr. 104	1½(0-4)
Mil. Tr. 103	1½(0-4)	Physical Education M-IV (Men)	
Physical Education M-III (Men)		Phys. Ed. 106	R(0-2) or
Phys. Ed. 105	R(0-2) or	Physical Education W-IV (Women)	
Physical Education W-III (Women)		Phys. Ed. 154	1(0-3)
Phys. Ed. 153	1(0-3)		

JUNIOR

FIRST SEMESTER		SECOND SEMESTER	
History of English Literature		American History I	
Engl. 181	3(3-0)	Hist. 101	3(3-0)
American Government		Economics	
Hist. 151, 152 or 153	3(3-0)	Econ. 101	3(3-0)
Psychology C		General Microbiology	
Educ. 103	3(3-0)	Bact. 101	3(1-6)
Extempore Speech I		Elective†	7(-)
Pub. Spk. 106	2(2-0)		
Elective†	5(-)		

SENIOR

FIRST SEMESTER		SECOND SEMESTER	
Elective†	16(-)	Elective†	16(-)

* Students who offer but one unit of Algebra for admission take a five-credit course in College Algebra, Math. 107, the first semester, postponing trigonometry, current history, and library methods until the second semester. The additional credits are applied against electives.

† Electives are to be chosen, with the advice and approval of the dean, in groups of not less than eight semester credits, or in courses which extend fields already entered in the required work.

Curriculum in Industrial Journalism

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
College Rhetoric I Engl. 101 3(3-0)	College Rhetoric II Engl. 104 3(3-0)
Chemistry I Chem. 101 5(3-6)	Chemistry II Chem. 102 5(3-6)
Principles of Typography I Ind. Jour. 101 3(2-3)	Principles of Typography II Ind. Jour. 104 3(2-3)
Library Methods Lib. Ec. 101 1(1-0)	
Current History Hist. 126 1(1-0)	Current History Hist. 126 1(1-0)
Options* 3(-)	Options* 5(-)
Industrial Journalism Lecture .. R	Industrial Journalism Lecture .. R
Infantry I (Men) Mil. Tr. 101 1½(0-4)	Infantry II (Men) Mil. Tr. 102 1½(0-4)
Physical Education M-I (Men) Phys. Ed. 103 R(0-2) or	Physical Education M-II (Men) Phys. Ed. 104 R(0-2) or
Physical Education W-I (Women) Phys. Ed. 151A 1(0-3)	Physical Education W-II (Women) Phys. Ed. 152A 1(0-3)

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
English Literature Engl. 172 3(3-0)	American Literature Engl. 175 3(3-0)
General Zoölogy Zool. 105 5(3-6) or	General Botany II Bot. 105 3(1-4, 2) or
General Botany I Bot. 101 3(1-4, 2)	General Microbiology Bact. 101 3-1-6) if <i>General Botany I is chosen the first semester.</i>
Elementary Journalism Ind. Jour. 151 2(2-0)	Industrial Writing Ind. Jour. 161 2(2-0)
Journalism Practice I Ind. Jour. 154 2(0-6)	Journalism Practice II Ind. Jour. 155 2(0-6)
French I Mod. Lang. 151 3(3-0) or	French II Mod. Lang. 152 3(3-0) or
Spanish I Mod. Lang. 176 3(3-0)	Spanish II Mod. Lang. 177 3(3-0)
Options* 2 or 4(-)	Options* 7 or 4(-)
Industrial Journalism Lectures.. R	Industrial Journalism Lectures.. R
Infantry III (Men) Mil. Tr. 103 1½(0-4)	Infantry IV (Men) Mil. Tr. 104 1½(0-4)
Physical Education M-III (Men) Phys. Ed. 105 R(0-2) or	Physical Education M-IV (Men) Phys. Ed. 106 R(0-2) or
Physical Training W-III (Women) Phys. Ed. 153 1(0-3)	Physical Training W-IV (Women) Phys. Ed. 154 1(0-3)

* The options and electives are chosen with the advice and approval of the dean. The options are in two general groups, of eighteen semester credits each: (1) social science, and (2) courses related to an industry or applied science. In the tabulated presentation of electives for students in the Division of General Science, groups may be found that will be accepted as the required option and electives. Group 31 (applied science), group 32 (home economics), group 35 (agriculture), group 36 (architecture), or group 37 (manual training), may be chosen in satisfaction of the eighteen hours required related to an industry or applied science. From group 30, eighteen hours are to be chosen in satisfaction of the social science option. The options taken in the freshman year, and a large part of those in the sophomore year, must be those related to an industry or applied science.

The electives are to be chosen in groups of usually not fewer than eight semester credits, unless they are courses which extend fields already entered through the required subjects or the options.

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
Industrial Feature Writing I Ind. Jour. 167..... 2(2-0)	Industrial Feature Writing II Ind. Jour. 171..... 2(2-0)
Journalism Practice III Ind. Jour. 158..... 2(0-6)	Journalism Practice IV Ind. Jour. 159..... 2(0-6)
Extempore Speech I Pub. Spk. 106..... 2(2-0)	Principles of Advertising Ind. Jour. 179..... 3(3-0)
Options and Electives*..... 10(-)	American Literature Engl. 175 3(3-0)
Industrial Journalism Lectures..... R	Options and Electives*..... 6(-)
	Industrial Journalism Lectures..... R

SENIOR

FIRST SEMESTER	SECOND SEMESTER
Circulation and Advertising Promotion Ind. Jour. 251..... 3(3-0)	Editorial Practice Ind. Jour. 257..... 2(2-0)
Copy Reading Ind. Jour. 254..... 2(0-6)	Ethics of Journalism Ind. Jour. 260..... 2(2-0)
Electives and Options*..... 11(-)	Electives and Options*..... 11(-)
Industrial Journalism Lectures..... R	Industrial Journalism Lectures..... R

Curriculum in Industrial Chemistry

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
College Rhetoric I Engl. 101 3(3-0)	College Rhetoric II Engl. 104 3(3-0)
Chemistry I Chem. 101 5(3-6)	Chemistry II Chem. 102 5(3-6)
Plane Trigonometry† Math. 101 3(3-0)	College Algebra† Math. 104 3(3-0)
Engineering Drawing Mach. Design 155..... 2(0-6)	Descriptive Geometry Mach. Design 158..... 2(0-6)
Library Methods Lib. Ec. 101..... 1(1-0)	Machine Drawing I Mach. Design 161..... 2(0-6)
Engineering Woodwork I Shop 101 1(0-3)	Commercial Law Hist. 160 1(1-0)
Forging I Shop 150 1(0-3)	
Infantry I (Men) Mil. Tr. 101..... 1½(0-4)	Infantry II (Men) Mil. Tr. 102..... 1½(0-4)
Physical Education M-I (Men) Phys. Ed. 103..... R(0-2) or	Physical Education M-II (Men) Phys. Ed. 104..... R(0-2) or
Physical Education W-I (Women) Phys. Ed. 151A..... 1(0-3)	Physical Education W-II (Women) Phys. Ed. 152A..... 1(0-3)

* See footnote on previous page.

† See footnote under Curriculum in General Science.

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
Organic Chemistry I Chem. 218 4(2-6)	Organic Chemistry II Chem. 219 4(2-6)
Plane Analytical Geometry Math. 110 4(4-0)	Calculus Math. 119 3(3-0)
Engineering Physics I Physics 145 5(4-3)	Engineering Physics II Physics 150 5(4-3)
Adv. Inorg. Chemistry Chem. 207 3(3-0)	Quantitative Analysis Chem. 241 5(1-12)
Infantry III (Men) Mil. Tr. 103 1½(0-4)	Infantry IV (Men) Mil. Tr. 104 1½(0-4)
Physical Education M-III (Men) Phys. Ed. 105 R(0-2) or	Physical Education M-IV (Men) Phys. Ed. 106 R(0-2) or
Physical Education W-III (Women) Phys. Ed. 153 1(0-3)	Physical Education W-IV (Women) Phys. Ed. 154 1(0-3)

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
German I Mod. Lang. 101 3(3-0)	German II Mod. Lang. 102 3(3-0)
Inorganic Preparations Chem. 202 2(0-6)	History of Chemistry Chem. 208 1(1-0)
Physical Chemistry Chem. 206 5(3-6)	Industrial Electrochemistry Chem. 205 2(2-0)
Fire Assaying Chem. 242 2(0-6)	Electrical Engineering C Elect. Engr. 160, 165 3(2-2, 1)
Gas Analysis Chem. 243 1(0-3)	Elective † 7(-)
Elective † 3(-)	

SENIOR

FIRST SEMESTER	SECOND SEMESTER
American Government Hist. 151, 152 or 153 3(3-0)	Economics Econ. 101 3(3-0)
Industrial Chemistry I Chem. 203 5(3-6)	Industrial Chemistry II Chem. 204 5(3-6)
Scientific German I Mod. Lang. 237 4(4-0)	Electives † 8(-)
Electives † 4(-)	Thesis R
Thesis R	

* Students who offer but one unit of algebra for admission take a five-credit course in College Algebra, Math. 107, the first semester, postponing trigonometry, current history, and library methods until the second semester. The additional credits are applied against electives.

† Electives are to be chosen, with the advice and approval of the dean, in groups of not less than eight semester credits, or in courses which extend fields already entered in the required work.

Curriculum in Public-school Music

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
Voice A-I Mus. 161A 2(1-6)	Voice A-II Mus. 161B 2(1-6)
Piano B-I Mus. 174A 1(½-6)	Piano B-II Mus. 174B 1(½-6)
Public School Music I Mus. 120 2(2-0)	Public School Music II Mus. 121 2(2-0)
Harmony I Mus. 101 2(2-0)	Harmony II Mus. 102 2(2-0)
Ear Training and Sight Singing I Mus. 105 2(2-0)	Ear Training and Sight Singing II Mus. 106 2(2-0)
Psychology B Educa. 102 3(3-0)	Methods of Teaching A Educ. 111 3(3-0)
Choral Society I Mus. 190A 1(1-0)	Choral Society II Mus. 190B 1(1-0)
Musical Appreciation I Mus. 115 R(0-1)	Musical Appreciation II Mus. 116 R(0-1)
College Rhetoric I Engl. 101 3(3-0)	College Rhetoric II Engl. 104 3(3-0)
Infantry I (Men) Mil. Tr. 101 1½(0-4)	Infantry II (Men) Mil. Tr. 102 1½(0-4)
Physical Education M-I (Men) Phys. Ed. 103 R(0-2)or	Physical Education M-II (Men) Phys. Ed. 104 R(0-2)or
Physical Education W-I (Women) Phys. Ed. 151A 1(0-3)	Physical Education W-II (Women) Phys. Ed. 152A 1(0-3)

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
Voice A-III Mus. 161C 2(1-6)	Voice A-IV Mus. 161D 2(1-6)
Piano B-III Mus. 174C 1(½-6)	Piano B-IV Mus. 174D 1(½-6)
Public School Music III Mus. 122 2(2-0)	Public School Music IV Mus. 123 2(2-0)
Harmony III Mus. 103 2(2-0)	Harmony IV Mus. 104 2(2-0)
Ear Training and Sight Singing III Mus. 107 2(2-0)	Ear Training and Sight Singing IV Mus. 108 2(2-0)
Choral Society III Mus. 190C 1(1-0)	Choral Society IV Mus. 190D 1(1-0)
History of Music I Mus. 110 2(2-0)	History of Music II Mus. 111 2(2-0)
Educational Administration A Educ. 105 3(3-0)	English Literature Engl. 172 3(3-0)
Infantry III (Men) Mil. Tr. 103 1½(0-4)	Conducting Mus. 117 1(1-0)
Physical Education M-III (Men) Phys. Ed. 105 R(0-2)or	Infantry IV (Men) Mil. Tr. 104 1½(0-4)
Physical Education W-III (Women) Phys. Ed. 153 1(0-3)	Physical Education M-IV (Men) Phys. Ed. 106 R(0-2)or
	Physical Education W-IV (Women) Phys. Ed. 154 1(0-3)

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
Public School Music V Mus. 124 2(2-0)	Public School Music VI Mus. 125 2(2-0)
Counterpoint Mus. 108A 2(2-0)	Harmonics Physics 222 2(2-0)
Instrumentation Mus. 130 2(2-0)	Orchestration Mus. 133 2(2-0)
Chorus, Orchestra or Band... 1(1-0)	Chorus, Orchestra, or Band... 1(1-0)
Educational Psychology Educ. 109 3(3-0)	Practice Teaching of Music Mus. 188 2(2-0)
Methods of Teaching Music Mus. 145 1(1-0)	Elective in Education 3(3-0)
Elective in Voice or Instrument Mus. 2(1-6)	Elective in Voice or Instrument Mus. 2(1-6)
Electives 3(-)	Electives 3(-)

SENIOR

FIRST SEMESTER	SECOND SEMESTER
Public School Music VII Mus. 126 2(2-0)	Public School Music VIII Mus. 127 2(2-0)
Musical Form and Analysis Mus. 109 2(2-0)	Extempore Speech I Pub. Spk. 106 2(2-0)
Production of Community Drama and Pageantry Pub. Spk. 145 3(3-0)	Oral English Eng. 128 3(3-0)
Chorus, Orchestra, or Band... 1(1-0)	Chorus, Orchestra, or Band... 1(1-0)
Elective in Voice or Instrument.. 2(2-0)	Elective in Voice or Instrument, 2(2-0)
Elective in Education 3(3-0)	Electives 3(-)
Electives 4(-)	

Curriculum in Voice

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours of recitation each week; the second shows the number of hours to be spent in laboratory work each week; and the third, where there is one, indicates the number of hours of outside work in connection with the laboratory required each week.

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
Voice I Mus. 160A 4(1-12)	Voice II Mus. 160B 4(1-12)
History of Music I Mus. 110 2(2-0)	History of Music II Mus. 111 2(2-0)
Current History Hist. 126 1(1-0)	Current History Hist. 126 1(1-0)
Library Methods Lib. Ec. 101 1(1-0)	
Harmony I Mus. 101 2(2-0)	Harmony II Mus. 102 2(2-0)
Ear Training and Sight Singing I Mus. 105 2(2-0)	Ear Training and Sight Singing II Mus. 106 2(2-0)
Musical Appreciation I Mus. 115 R(0-1)	Musical Appreciation II Mus. 116 R(0-1)
Ensemble I Mus. 190A, 193A, or 196A.. 1(1-0)	Ensemble II Mus. 190B, 193B, or 196 B, 1(1-0)
College Rhetoric I Engl. 101 3(3-0)	College Rhetoric II Engl. 104 3(3-0)
Infantry I (Men) Mil. Tr. 101 1½(0-4)	Infantry II (Men) Mil. Tr. 102 1½(0-4)
Physical Education M-I (Men) Phys. Ed. 103 R(0-2)or	Physical Education M-II (Men) Phys. Ed. 104 R(0-2)or
Physical Education W-I (Women) Phys. Ed. 151A 1(0-3)	Physical Education W-II (Women) Phys. Ed. 152A 1(0-3)

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
Voice III Mus. 160C 4(1-12)	Voice IV Mus. 160D 4(1-12)
Piano A-I Mus. 172A 2(1-6)	Piano A-II Mus. 172B 2(1-6)
Harmony III Mus. 103 2(2-0)	Harmony IV Mus. 104 2(2-0)
Ensemble III Mus. 190C, 193C, or 196C.. 1(1-0)	Ensemble IV Mus. 190D, 193D, or 196D.. 1(1-0)
Recital I Mus. 184A R(-)	Recital II Mus. 184B R(-)
English Literature Engl. 172 3(3-0)	Harmonics Physics 222 2(2-0)
Psychology B Educ. 102 3(3-0)	Educational Psychology Educ. 109 3(3-0)
Infantry III (Men) Mil. Tr. 103 1½(0-4)	Infantry IV (Men) Mil. Tr. 104 1½(0-4)
Physical Education M-III (Men) Phys. Ed. 105 R(0-2)or	Physical Education M-IV (Men) Phys. Ed. 106 R(0-2)or
Physical Education W-III (Women) Phys. Ed. 153 1(0-3)	Physical Education W-IV (Women) Phys. Ed. 154 1(0-3)
	Elective 2(-)

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
Voice V Mus. 160E 4(1-12)	Voice VI Mus. 160F 4(1-12)
Methods of Teaching Music Mus. 145 1(1-0)	Practice Teaching of Music Mus. 188 2(2-0)
Counterpoint Mus. 108A 2(2-0)	Musical Form and Analysis Mus. 109 2(2-0)
Ensemble V Mus. 190E, 193E, or 196E.. 1(1-0)	Ensemble VI Mus. 190F, 193F, or 196F.. 1(1-0)
Recital III Mus. 184C R(-)	Recital IV Mus. 184D 2(2-0)
Piano A-III Mus. 172C 2(1-6)	Piano A-IV Mus. 172D 2(1-6)
German I Mod. Lang. 101 3(3-0)	German II Mod. Lang. 102 3(3-0)
Conducting Mus. 117 1(1-0)	
Elective 3(3-0)	

SENIOR

FIRST SEMESTER	SECOND SEMESTER
Voice VII Mus. 160G 4(1-12)	Voice VIII Mus. 160H 4(1-12)
Instrumentation Mus. 130 2(2-0)	Orchestration Mus. 133 2(2-0)
Ensemble VII Mus. 190G, 193G, or 196G, 1(1-0)	Ensemble VIII Mus. 190H, 193H, or 196H, 1(1-0)
Recital V Mus. 184E R(-)	Recital VI Mus. 184F 2(2-0)
American Literature Engl. 175 3(3-0)	
French I Mod. Lang. 151 3(3-0)	French II Mod. Lang. 152 3(3-0)
Repertoire I Mus. 186A 2(2-0)	Repertoire II Mus. 186B 2(2-0)
Elective 2(-)	Elective 2(-)

Curriculum in Piano

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
Piano I Mus. 170A 4(1-18)	Piano II Mus. 170B 4(1-18)
Harmony I Mus. 101 2(2-0)	Harmony II Mus. 102 2(2-0)
Ear Training and Sight Singing I Mus. 105 2(2-0)	Ear Training and Sight Singing II Mus. 106 2(2-0)
Musical Appreciation I Mus. 115 R(0-1)	Musical Appreciation II Mus. 116 R(0-1)
Ensemble I Mus. 190A, 193A, or 196A.. 1(1-0)	Ensemble II Mus. 190B, 193B, or 196B.. 1(1-0)
College Rhetoric I Eng. 101 3(3-0)	College Rhetoric II Eng. 104 3(3-0)
History of Music I Mus. 110 2(2-0)	History of Music II Mus. 111 2(2-0)
Current History Hist. 126 1(1-0)	Current History Hist. 126 1(1-0)
Library Methods Lib. Ec. 101 1(1-0)	
Piano Ensemble I Mus. 176A R(1-0)	Piano Ensemble II Mus. 176B R(1-0)
Infantry I (Men) Mil. Tr. 101 1½(0-4)	Infantry II (Men) Mil. Tr. 102 1½(0-4)
Physical Education M-I (Men) Phys. Ed. 103 R(0-2)or	Physical Education M-II (Men) Phys. Ed. 104 R(0-2)or
Physical Education W-I (Women) Phys. Ed. 151A 1(0-3)	Physical Education W-II Phys. Ed. 152A 1(0-3)

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
Piano III Mus. 170C 4(1-18)	Piano IV Mus. 170D 4(1-18)
Voice A-I Mus. 161A 2(1-6)	Voice A-II Mus. 161B 2(1-6)
Harmony III Mus. 103 2(2-0)	Harmony IV Mus. 104 2(2-0)
Ensemble III Mus. 190C, 193C, or 196C.. 1(1-0)	Ensemble IV Mus. 190D, 193D, or 196D.. 1(1-0)
Recital I Mus. 184A R(-)	Recital II Mus. 184B R(-)
English Literature Engl. 172 3(3-0)	Harmonics Physics 222 2(2-0)
Psychology B Educ. 102 3(3-0)	Educational Psychology Educ. 109 3(3-0)
Piano Ensemble III Mus. 176C R(1-0)	Piano Ensemble IV Mus. 176D R(1-0)
Infantry III (Men) Mil. Tr. 103 1½(0-4)	Infantry IV (Men) Mil. Tr. 104 1½(0-4)
Physical Education M-III (Men) Phys. Ed. 105 R(0-2)or	Physical Education M-IV (Men) Phys. Ed. 106 R(0-2)or
Physical Education W-III (Women) Phys. Ed. 153 1(0-3)	Physical Education W-IV (Women) Phys. Ed. 154 1(0-3)
	Elective 2(-)

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
Piano V Mus. 170E 6(1-24)	Piano VI Mus. 170E 6(1-24)
Counterpoint Mus. 108A 2(2-0)	Musical Form and Analysis Mus. 109 2(2-0)
Ensemble V Mus. 190E, 193E, or 196E.. 1(1-0)	Ensemble VI Mus. 190F, 193F, or 196F.. 1(1-0)
Recital III Mus. 184C R(-)	Recital IV Mus. 184D 2(2-0)
German I Mod. Lang. 101 3(3-0)	German II Mod. Lang. 102 3(3-0)
Normal Piano Methods Mus. 140 2(2-0)	Practice Teaching of Music Mus. 188 2(2-0)
Piano Ensemble V Mus. 176E R(1-0)	Piano Ensemble VI Mus. 176F R(1-0)
Conducting Mus. 117 1(1-0)	
Electives 2(-)	

SENIOR

FIRST SEMESTER	SECOND SEMESTER
Piano VII Mus. 170G 6(1-24)	Piano VIII Mus. 170H 6(1-24)
Instrumentation Mus. 130 2(2-0)	Orchestration Mus. 133 2(2-0)
Ensemble VII Mus. 190G, 193G, or 196C, 1(1-0)	Ensemble VIII Mus. 190H, 193H, or 196H, 1(1-0)
Recital V Mus. 184E R(-)	Recital VI Mus. 184F 2(2-0)
American Literature Engl. 175 3(3-0)	
French I Mod. Lang. 151 3(3-0)	French II Mod. Lang. 152 3(3-0)
Piano Ensemble VII Mus. 176G R(1-0)	Piano Ensemble VIII Mus. 176H R(1-0)
Elective 2(-)	Elective 2(-)

Curriculum in Violin

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER	SECOND SEMESTER
Violin I Mus. 165A 4(1-12)	Violin II Mus. 165B 4(1-12)
Harmony I Mus. 101 2(2-0)	Harmony II Mus. 102 2(2-0)
History of Music I Mus. 110 2(2-0)	History of Music II Mus. 111 2(2-0)
Current History Hist. 126 1(1-0)	Current History Hist. 126 1(1-0)
Library Methods Lib. Ec. 101 1(1-0)	
Ear Training and Sight Singing I Mus. 105 2(2-0)	Ear Training and Sight Singing II Mus. 106 2(2-0)
Music Appreciation I Mus. 115 R(0-1)	Music Appreciation II Mus. 116 R(0-1)
Ensemble I Mus. 190A, 193A, or 196A, 1(1-0)	Ensemble II Mus. 190B, 193B, or 196B, 1(1-0)
College Rhetoric I Engl. 101 3(3-0)	College Rhetoric II Engl. 104 3(3-0)
Infantry I (Men) Mil. Tr. 101 1½(0-4)	Infantry II (Men) Mil. Tr. 102 1½(0-4)
Physical Education M-I (Men) Phys. Ed. 103 R(0-2) or	Physical Education M-II (Men) Phys. Ed. 104 R(0-2) or
Physical Education W-I (Women) Phys. Ed. 151A 1(0-3)	Physical Education W-II (Women) Phys. Ed. 152A 1(0-3)

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
Violin III Mus. 165C 4(1-12)	Violin IV Mus. 165D 4(1-12)
Piano A-I Mus. 172A 2(1-6)	Piano A-II Mus. 172B 2(1-6)
Harmony III Mus. 103 2(2-0)	Harmony IV Mus. 104 2(2-0)
Ensemble III Mus. 190C, 193C, or 196C, 1(1-0)	Ensemble IV Mus. 190D, 193D, or 196D, 1(1-0)
Recital I Mus. 184A R(-)	Recital II Mus. 184B R(-)
English Literature Engl. 172 3(3-0)	Harmonics Physics 222 2(2-0)
Psychology B Educ. 102 3(3-0)	Educational Psychology Educ. 109 3(3-0)
Infantry III (Men) Mil. Tr. 103 1½(0-4)	Infantry IV (Men) Mil. Tr. 104 1½(0-4)
Physical Education M-III (Men) Phys. Ed. 105 R(0-2) or	Physical Education M-IV (Men) Phys. Ed. 106 R(0-2) or
Physical Education W-III (Women) Phys. Ed. 153 1(0-3)	Physical Education W-IV (Women) Phys. Ed. 154 1(0-3)
	Elective 2(-)

JUNIOR

FIRST SEMESTER		SECOND SEMESTER	
Violin V		Violin VI	
Mus. 165E	6(1-24)	Mus. 165F	6(1-24)
Counterpoint		Musical Form and Analysis	
Mus. 108A	2(2-0)	Mus. 109	2(2-0)
Ensemble V		Ensemble VI	
Mus. 190E, 193E, or 196E,	1(1-0)	Mus. 190F, 193F, or 196F,	1(1-0)
Recital III		Recital IV	
Mus. 184C	R(-)	Mus. 184D	2(2-0)
Piano A-III		Piano A-IV	
Mus. 172C	2(1-6)	Mus. 172D	2(1-6)
German I		German II	
Mod. Lang. 101.....	3(3-0)	Mod. Lang. 102.....	3(3-0)
Methods of Teaching Music		Practice Teaching of Music	
Mus. 145	1(1-0)	Mus. 188	2(2-0)
Conducting			
Mus. 117	1(1-0)		

SENIOR

FIRST SEMESTER		SECOND SEMESTER	
Violin VII		Violin VIII	
Mus. 165G	6(1-24)	Mus. 165H	6(1-24)
Instrumentation		Orchestration	
Mus. 130	2(2-0)	Mus. 133	2(2-0)
Ensemble VII		Ensemble VIII	
Mus. 190G, 193G, or 196G,	1(1-0)	Mus. 190H, 193H, or 196H,	1(1-0)
Recital V		Recital VI	
Mus. 184E	R(-)	Mus. 184F	2(2-0)
French I		French II	
Mod. Lang. 151.....	3(3-0)	Mod. Lang. 152.....	3(3-0)
American Literature			
Engl. 175	3(3-0)		
Elective	2(-)	Elective	2(-)

Curriculum in Rural Commerce

The Arabic numeral immediately following the name of a subject indicates the number of semester credits; the first numeral within the parentheses indicates the number of hours a week of recitation; the second shows the number of hours a week to be spent at the laboratory exercise; and the third, where there is such, indicates the number of hours a week required for outside work in connection with the laboratory.

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
College Rhetoric I		College Rhetoric II	
Engl. 101	3(3-0)	Engl. 104	3(3-0)
Physical or Biological Science*		Physical or Biological Science*	
5(-) or 3(-)		3(-) or 5(-)	
Modern Language*	3(3-0)	Modern Language*	3(3-0)
Plane Trigonometry*		College Algebra*	
Math. 101	3(3-0)	Math. 104	3(3-0)
Extempore Speech I		Extempore Speech II	
Pub. Spkg. 106	2(2-0)	Pub. Spkg. 108	2(2-0)
Current History		Current History	
Hist. 126	1(1-0)	Hist. 126	1(1-0)
Library Methods			
Lib. Ec. 101	1(1-0)		
Infantry I (Men)		Infantry II (Men)	
Mil. Tr. 101	1½(0-4)	Mil. Tr. 102	1½(0-4)
Physical Education M-I (Men)		Physical Education M-II (Men)	
Phys. Ed. 103	R(0-2) or	Phys. Ed. 104	R(0-2) or
Physical Education W-I (Women)		Physical Education W-II (Women)	
Phys. Ed. 151A	1(0-3)	Phys. Ed. 152A	1(0-3)

SOPHOMORE

FIRST SEMESTER	SECOND SEMESTER
Commercial Correspondence	Written and Oral Salesmanship
Engl. 122 3(3-0)	Engl. 123 3(3-0)
Modern Language 3(3-0)	Economics
Am. Industrial History	Econ. 101 3(3-0) <i>or</i>
Hist. 105 3(3-0) <i>or</i>	Agricultural Economics
Am. Agricultural History	Ag. Econ. 101 3(3-0)
Hist. 204 3(3-0)	Business Management
	Econ. 126 2(2-0)
	Business Law A
	Hist. 161 2(2-0)
Accounting Practice I*	Accounting Practice II
Math. 140A 3(2-3)	Math. 143A 3(2-3)
Psychology D	Applied Psychology
Educ. 104 3(3-0)	Educ. 215 2(2-0)
Electives 3(-)	Elective 3(-)
Infantry III (Men)	Infantry IV (Men)
Mil. Tr. 103 1½(0-4)	Mil. Tr. 104 1½(0-4)
Physical Education M-III (Men)	Physical Education M-IV (Men)
Phys. Ed. 105 R(0-2) <i>or</i>	Phys. Ed. 106 R(0-2) <i>or</i>
Physical Education W-III (Women)	Physical Education W-IV (Women)
Phys. Ed. 153 1(0-3)	Phys. Ed. 154 1(0-3)

JUNIOR

FIRST SEMESTER	SECOND SEMESTER
Principles of Advertising	Mathematics of Investment
Ind. Jour. 179 3(3-0)	Math. 150 3(3-0)
English Literature	Money and Banking
Encl. 172 3(3-0)	Econ. 116 2(2-0)
Cost Accounting	Public Finance
Econ. 131 2(2-0) <i>or</i>	Econ. 213 2(2-0)
Farm Cost Accounting	Labor Problems
Ag. Econ. 112 3(2-3)	Econ. 233 2(2-0)
Sociology	American Government
Econ. 151 3(3-0)	Hist. 151, 152 <i>or</i> 153 3(3-0)
Electives 4 <i>or</i> 3(-)	Electives 4(-)

SENIOR

FIRST SEMESTER	SECOND SEMESTER
Economic Geography	Transportation Problems
Econ. 121 3(3-0)	Econ. 229 2(2-0)
	Latin America
	Hist. 207 2(2-0)
Elective 13(-)	Elective 12(-)

* Eight hours of physical or biological science are to be elected in this curriculum, if possible in the freshman year. Subject to any prerequisites, chemistry, physics, botany, zoölogy and geology are available. If Chemistry I is taken, Chemistry II is required also. In one modern language a student must attain the proficiency given by nine semester hours of College work. If the language has been studied in high school, elementary work may be avoided in College, and the time saved used for elective studies. Students who have had only one year of high-school algebra are not assigned to trigonometry, but are assigned to a five-credit course in College Algebra, Math. 107, the first semester, postponing trigonometry and library methods to the second semester. Accounting practice requires the previous study of elementary bookkeeping. Students who have not had a course in bookkeeping will be assigned to Accounting, Math. 137, for which they will be allowed credits on electives. Because of the various contingencies and elective possibilities in the sciences and modern languages, the proper planning of the work of the freshman year requires great care and foresight.

Groups of Electives and Options for Students in the Division of General Science†

In addition to the courses included in the following groups, others will be found described in the exposition of the work of the respective departments. From any group elected a sufficient number of courses to constitute an effective block of knowledge must be taken. At least eight semester credits in any new field are usually required, but a smaller number will be honored if in a field already entered upon. In a modern language a student must reach a point equivalent to that obtained by college courses aggregating eight or nine semester hours.

1. English Language

FIRST SEMESTER	SECOND SEMESTER
Advanced Composition I Engl. 113	Advanced Composition II Engl. 116
Commercial Correspondence Engl. 122	Written and Oral Salesmanship Engl. 123
Oral English Engl. 128	Methods of Teaching English Engl. 134
The Short Story I Engl. 251	The Short Story II Engl. 252

2. English Literature

FIRST SEMESTER	SECOND SEMESTER
The English Bible Engl. 271	The Shakespearean Drama II Engl. 274
The Shakespearean Drama I Engl. 273	American Literature Engl. 175
Nineteenth Century Literature Engl. 277	The Novel I Engl. 286
Contemporary Fiction Engl. 283	English Survey II Engl. 290
English Survey I Engl. 288	The Arts and Crafts Movement Engl. 295
Browning Engl. 292	

3. German

FIRST SEMESTER	SECOND SEMESTER
German I Mod. Lang. 101	German II Mod. Lang. 102
German Readings Mod. Lang. 111	German Short Stories Mod. Lang. 201
Scientific German I Mod. Lang. 237	German Classics Mod. Lang. 226

French and Spanish

FIRST SEMESTER	SECOND SEMESTER
French I Mod. Lang. 151	French II Mod. Lang. 152
French Readings Mod. Lang. 161	French Short Stories Mod. Lang. 251
French Composition and Conversation Mod. Lang. 261	French Drama Mod. Lang. 256
Spanish I Mod. Lang. 176	Spanish II Mod. Lang. 177
Spanish Readings Mod. Lang. 180	Commercial Spanish Mod. Lang. 183
Spanish Composition and Conversation Mod. Lang. 196	Spanish Short Stories Mod. Lang. 186

† Electives are to be chosen, with the advice and approval of the dean, in groups of not less than eight semester credits, or in courses which extend fields already entered in the required work.

5. Mathematics

FIRST SEMESTER		SECOND SEMESTER	
Plane Analytical Geometry		Calculus	
Math. 110	4(4-0)	Math. 119	3(3-0)
Calculus I		Calculus II	
Math. 205	5(5-0)	Math. 206	3(3-0)
Analysis of Statistics		Institutional Accounting	
Math. 125	3(3-0)	Math. 131	3(3-0)
Differential Equations		Special Methods in the Teaching of Mathematics	
Math. 201	3(3-0)	Math. 122	3(3-0)

6. Inorganic Chemistry

FIRST SEMESTER		SECOND SEMESTER	
Advanced Inorganic Chemistry		Industrial Electrochemistry	
Chem. 207	3(3-0)	Chem. 205	2(2-0)
Inorganic Preparations		Physical Chemistry	
Chem. 202	2(0-6) to 4(0-12)	Chem. 206	5(3-6)
Industrial Chemistry I		Industrial Chemistry II	
Chem. 203	5(3-6)	Chem. 204	5(3-6)

7. Organic Chemistry

FIRST SEMESTER		SECOND SEMESTER	
Organic Chemistry (Agr.)		Organic Chemistry II	
Chem. 120	3(2-3)	Chem. 219	4(2-6)
Organic Chemistry I		Stereoisomeric and Tautomeric Compounds	
Chem. 218	4(2-6)	Chem. 225	2(2-0)
Organic Preparations		Carbocyclic and Heterocyclic Compounds	
Chem. 223	5(0-15)	Chem. 226	2(2-0)
Qualitative Org. Analysis		Physiological Chemistry II	
Chem. 224	2(0-6)	Chem. 233	5(3-6)
Physiological Chemistry I		Physiological Chemistry	
Chem. 232	5(3-6)	Chem. 231	5(3-6)
Pathological Chemistry			
Chem. 235	2(2-0)		
Organic Chemistry HE			
Chem. 121	5(3-6)		

8. Analytical Chemistry

FIRST SEMESTER		SECOND SEMESTER	
Quantitative Analysis A		Quantitative Analysis B	
Chem. 250	3(1-6)	Chem. 251	3(1-6)
Advanced Qualitative Analysis		Household Chemistry	
Chem. 240	3(1-6)	Chem. 265	3(1-6)

9. Physics

FIRST SEMESTER		SECOND SEMESTER	
Household Physics		Harmonics	
Physics 101	4(3-3)	Physics 222	2(2-0)
Photography		Special Methods in the Teaching of Physics	
Physics 120	2(1-3)	Physics 224	3(2-3)
Molecular Physics and Heat		Meteorology	
Physics 220	3(2-3)	Physics 133	2(2-0)
Wireless Telephony		Descriptive Astronomy	
Physics 130	2(1-3)	Physics 155	3(3-0)
Spectroscopy		Storage Batteries	
Physics 230	3(1-6)	Physics 235	2(1-3)
Radio Measurements		Radioactivity and Electron Theory	
Physics 245	2(1-3)	Physics 238	3(3-0)

10. Microbiology

FIRST SEMESTER		SECOND SEMESTER	
Agricultural Microbiology		Soil Microbiology	
Bact. 106	3(1-6)	Bact. 201	3(1-6)
Hygienic Bacteriology		Pathogenic Bacteriology I	
Bact. 206	4(2-6)	Bact. 111	4(2-6)
Pathogenic Bacteriology II		Dairy Bacteriology	
Bact. 116	4(2-6)	Bact. 211	3(1-6)
Poultry Bacteriology			
Bact. 216	3(1-6)		

11. Botany

FIRST SEMESTER	SECOND SEMESTER
General Botany I Bot. 101 3(1-4, 2)	Morphology of Plants Bot. 236 2(0-6)
Plant Pathology I Bot. 205 3(1-4, 2)	Plant Histology Bot. 215 2(0-6)
Mycology I Bot. 204 4(2-4, 2)	Mycology II Bot. 206 3 to 5(-)
Plant Physiology I Bot. 208 3(3-0)	Plant Physiology II Bot. 209 2(0-6)
Fruit Crop Diseases Bot. 202 2(1-2, 1)	Plant Ecology Bot. 228 2(2-0)
Botanical Problems Bot. 232 1 to 5(-)	Taxonomic Botany of the Flowering Plants Bot. 225 3(1-4, 2)
	Field Crop Diseases Bot. 240 2(1-2, 1)
	Vegetable Diseases Bot. 245 2(1-2, 1)

12. Zoology

FIRST SEMESTER	SECOND SEMESTER
Cytology Zoöl. 214 4(2-6)	Animal Ecology Zoöl. 211 3(1-6)
Parasitology Zoöl. 208 3(2-3)	Ornithology Zoöl. 230 2(1-3)
Field Zoölogy Zoöl. 205 3(1-6)	Embryology Zoöl. 219 3(2-3)
Heredity and Eugenics Zoöl. 216 2(2-0)	Advanced Embryology Zoöl. 220 4(2-6)
Zoölogical Problems Zoöl. 203 1 or 2(-)	Parasites and Public Health Zoöl. 218 3(3-0)
Zoölogical Technic Zoöl. 206 1 or 2(-)	Zoölogical Problems Zoöl. 203 1 or 2(-)
	Zoölogical Technic Zoöl. 206 1 or 2(-)

13. Geology

FIRST SEMESTER	SECOND SEMESTER
Engineering Geology Geol. 102 4(2-6)	Historical Geology Geol. 201 2(2-0)
Economic Geology Geol. 206 3(2-3)	General Geology Geol. 103 3(3-0)

14. Entomology

FIRST SEMESTER	SECOND SEMESTER
General Entomology Ent. 101 3(2-3)	General Economic Entomology Ent. 206 3(2-3)
Insect Morphology I Ent. 211 3(1-6)	Apiculture Ent. 111 3(2-3)
Advanced General Entomology Ent. 221 3(3-0)	Principles of Taxonomy Ent. 216 1(1-0)
Advanced Apiculture B Ent. 228 3(2-3)	Taxonomy of Insects I Ent. 217 2(0-6)

15. History and Civics

FIRST SEMESTER	SECOND SEMESTER
American History II Hist. 202 3(3-0)	American History III Hist. 203 3(3-0)
American Industrial History Hist. 105 3(3-0)	Immigration and International Relations Hist. 228 2(2-0)
Latin America Hist. 207 2(2-0)	Comparative Government Hist. 252 2(2-0)
The British Empire Hist. 226 2(2-0)	History of the Home Hist. 225 3(3-0)
American Political History Hist. 206 2(2-0)	American State Government Hist. 153 3(3-0)
American National Government Hist. 152 3(3-0)	

16. Law

FIRST SEMESTER		SECOND SEMESTER	
Business Law A		Business Law B	
Hist. 161	2(2-0)	Hist 162	2(2-0)
Commercial Law		Farm Law	
Hist. 160	1(1-0)	Hist. 175	2(2-0)

17. Economics and Sociology

FIRST SEMESTER		SECOND SEMESTER	
Economics		Agricultural Economics	
Econ. 101	3(3-0)	Ag. Ec. 101	3(3-0)
Sociology		Marketing of Farm Products	
Econ. 151	3(3-0)	Ag. Ec. 202	3(3-0)
Business Organization		Money and Banking	
Econ. 106	1(1-0)	Econ. 116	2(2-0)
Labor Problems		Public Finance	
Econ. 233	2(2-0)	Econ. 213	2(2-0)

18. Education

FIRST SEMESTER		SECOND SEMESTER	
Educational Administration A or B		Methods of Teaching A	
Educ. 105 or 106	3(3-0)	Educ. 111	3(3-0)
History of Education A		Educational Sociology A or B	
Educ. 113	3(3-0)	Educ. 118 or 119	3(3-0)
Supervised Teaching and Observation in Science		Statistical Methods Applied to Education	
Educ. 163	3(1-6)	Educ. 223	3(3-0)
Rural Education		The Psychology of Childhood and Adolescence	
Educ. 201	3(3-0)	Educ. 208	3(3-0)
Psychology A, B, C or D		Educational Psychology	
Educ. 101-104	3(3-0)	Educ. 109	3(3-0)
Mental Measurements		Abnormal Psychology	
Educ. 211	3(3-0)	Educ. 213	3(3-0)
Educational Tests and Measurements		Advanced Psychology	
Educ. 212	3(3-0)	Educ. 216	3(3-0)
Applied Psychology			
Educ. 215	2(2-0)		

19. Vocational Education

FIRST SEMESTER		SECOND SEMESTER	
Vocational Education B		Special Methods in the Teaching of Agriculture	
Educ. 226	3(3-0)	Educ. 136	3(3-0)
		Supervised Observation and Teaching in Agriculture	
		Educ. 161	3(0-9)
		Special Methods in the Teaching of Home Economics	
		Educ. 132	3(3-0)
		Supervised Observation and Teaching in Home Economics	
		Educ. 160	3(0-9)
Agricultural Education B		Special Methods in the Teaching of Industrial Arts Subjects	
Educ. 330	3(3-0)	Educ. 140	3(3-0)
		Supervised Observation and Teaching in Industrial Arts	
		Educ. 162	3(0-9)

20. Industrial Journalism

FIRST SEMESTER	SECOND SEMESTER
Elementary Journalism	Industrial Writing
Ind. Jour. 151 2(2-0)	Ind. Jour. 161 2(2-0)
Journalism Practice I	Journalism Practice II
Ind. Jour. 154 2(0-6)	Ind. Jour. 155 2(0-6)
Industrial Feature Writing I	Industrial Feature Writing II
Ind. Jour. 167 2(2-0)	Ind. Jour. 171 2(2-0)
Journalism Practice III	Journalism Practice IV
Ind. Jour. 158 2(0-6)	Ind. Jour. 159 2(0-6)
Materials of Journalism	Magazine Features
Ind. Jour. 265 2(2-0)	Ind. Jour. 270 2(2-0)
History of Journalism	* Journalism Surveys
Ind. Jour. 274 2(2-0)	Ind. Jour. 278 2(0-6)

23. Music

Voice A (Music 161A to 161H)
Two private lessons a week. Two semester credits per semester.

Piano A (Music 172A to 172H)
Two private lessons a week. Two semester credits per semester.

Violin A (Music 166)
Two private lessons a week. Two semester credits per semester.

Wind Instruments (Music 182)
Two private lessons a week. Two semester credits per semester.

FIRST SEMESTER	SECOND SEMESTER
Harmony I	Harmony II
Music 101 2(2-0)	Music 102 2(2-0)
Harmony III	Harmony IV
Music 103 2(2-0)	Music 104 2(2-0)
Counterpoint	Musical Form and Analysis
Music 108A 2(2-0)	Music 109 2(2-0)
History of Music I	History of Music II
Music 110 2(2-0)	Music 111 2(2-0)
Public School Music I	Public School Music II
Music 120 2(2-0)	Music 121 2(2-0)
Public School Music III	Public School Music IV
Music 122 2(2-0)	Music 123 2(2-0)
Choral Society	Choral Society
Music 190A to 190H..... 1(1-0)	Music 190A to 190H..... 1(1-0)
Orchestra	Orchestra
Music 193A to 193H..... 1(1-0)	Music 193A to 193H..... 1(1-0)
Band	Band
Music 196A to 196H..... 1(1-0)	Music 196A to 196H..... 1(1-0)

24. Rural Leadership

(a) For all; (b) for those preparing for work in agricultural extension; (c) for adult special students; (d) for those preparing for home economics extension.

FIRST SEMESTER	SECOND SEMESTER
(a) Rural Sociology	(a) Community Organization
Econ. 156 3(3-0)	Econ. 267 3(3-0)
(a) Agricultural Economics	(b, c) Marketing of Farm Products
Ag. Ec. 101 3(3-0)	Ag. Ec. 202 3(3-0)
(a) Rural Education	(b, c) Agricultural Industries
Educ. 201 3(3-0)	Ag. Ec. 211 2(2-0)
(c) Farm Advertising	(c) Farm Bulletins
Engl. 201 3(3-0)	Engl. 204 2(2-0)
(c) Agricultural Journalism	(c) Parliamentary Procedure
Ind. Jour. 164 1(1-0)	Pub. Spk. 125 2(2-0)
(c, d) Social Problems	(c, d) Sanitation and Public Health
Econ. 257 2(2-0)	Hshld. Ec. 211 3(3-0)
(d) Child Welfare	(d) Home Nursing
Hshld. Ec. 203 3(3-0)	Hshld. Ec. 109 1(0-3)

25. Military Science and Tactics

FIRST SEMESTER		SECOND SEMESTER	
Infantry V		Infantry VI	
Mil. Tr. 109	3(-)	Mil. Tr. 110	3(-)
Infantry VII		Infantry VIII	
Mil. Tr. 111	3(-)	Mil. Tr. 112	3(-)

26 Physical Education and Athletics

FIRST SEMESTER		SECOND SEMESTER	
Advanced Apparatus I		Advanced Apparatus II	
Phys. Ed. 110	1(0-3)	Phys. Ed. 111	1(0-3)
Basket Ball		* Football	
Phys. Ed. 130	1(1-0)	Phys. Ed. 126	2(2-0)
Track and Field Sports		Baseball	
Phys. Ed. 140	1(1-0)	Phys. Ed. 135	1(1-0)

Additional subjects are available during the summer session.

27. Public Speaking

FIRST SEMESTER		SECOND SEMESTER	
Oral Interpretation		Dramatic Reading	
Pub. Spkg. 101.....	2(2-0)	Pub. Spkg. 102.....	2(2-0)
Argumentation and Debate		Lecture Recital	
Pub. Spkg. 120.....	3(3-0)	Pub. Spkg. 115.....	2(2-0)
Parliamentary Procedure			
Pub. Spkg. 125.....	2(2-0)		
Dramatic Production I		Dramatic Production II	
Pub. Spkg. 130.....	2(2-0)	Pub. Spkg. 135.....	2(2-0)

30. Social Science

FIRST SEMESTER		SECOND SEMESTER	
American History I		American History II or III	
Hist. 101	3(3-0)	Hist. 202 or 203.....	3(3-0)
American Government		American State Government	
Hist. 151	3(3-0) or	Hist. 153	3(3-0)
American National Government			
Hist. 152	3(3-0)		
Latin America			
Hist. 207	2(2-0)		
English History		Modern Europe	
Hist. 121	3(3-0)	Hist. 223	3(3-0)
Economics		Agricultural Economics	
Econ. 101	3(3-0)	Ag. Ec. 101.....	3(3-0)
Business Organization		Money and Banking	
Econ. 106	1(1-0)	Econ. 116	2(2-0)
Labor Problems		Public Finance	
Econ. 233	2(2-0)	Econ. 213	2(2-0)
Sociology		Marketing of Farm Products	
Econ. 151	3(3-0)	Ag. Ec. 202.....	3(3-0)
History of Journalism		Agricultural Land Problems	
Ind. Jour. 274.....	2(2-0)	Ag. Ec. 218.....	3(3-0)

31. Applied Science

FIRST SEMESTER	SECOND SEMESTER
General Botany I Bot. 101 3(1-4, 2)	General Botany II Bot. 105 3(1-4, 2)
Plant Pathology I Bot. 205 3(1-4, 2)	Field Crop Diseases Bot. 240 2(1-2, 1)
Fruit Crop Diseases Bot. 202 2(1-2, 1)	Vegetable Diseases Bot. 245 2(1-2, 1)
Farm Forestry Hort. 113 4(3-3)	Seed Identification and Weed Control Agron. 105 2(1-3)
	Elements of Horticulture Hort. 108 4(3-3)
	Small Fruits Hort. 110 2(2-0)
	Gardening Hort. 122 3(3-0)
	Landscape Gardening I Hort. 126 2(1-3)
General Zoölogy Zoöl. 105 5(3-6)	General Microbiology Bact. 101 3(1-6)
Parasitology Zoöl. 208 3(2-3)	General Economic Entomology Ent. 206 3(2-3)
Zoölogy and Embryology (Vet.) Zoöl. 109 5(3-6)	Apiculture Ent. 111 3(2-3)
Hygienic Bacteriology Bact. 206 4(2-6)	Chemistry of Crops Chem. 253A 2(0-6)
General Entomology Ent. 101 3(2-3)	Dairy Chemistry Chem. 254 3(1-6)
Horticultural Entomology Ent. 201 2(2-0)	Household Chemistry Chem. 265 3(1-6)
Organic Chemistry (Agr.) Chem. 120 3(2-3)	Meteorology Physics 133 2(2-0)
Chemistry of Soils and Fertilizers Chem. 252A 2(0-6)	
Human Nutrition Food and Nut. 112 3(3-0)	
Household Physics Physics 101 4(3-3)	
Photography Physics 120 2(1-3)	

32. Home Economics

FIRST SEMESTER	SECOND SEMESTER
Household Physics Physics 101 4(3-3)	Foods I Food and Nut. 101 3(1-6)
Organic Chemistry (HE) Chem. 121 5(3-6)	Household Microbiology Bact. 121 5(3-6)
Foods II Food and Nut. 106 5(3-6)	Dietetics Food and Nut. 201 5(3-6)
Human Nutrition Food and Nut. 112 3(3-0)	Clothing I Clo. and Text. 101 2(1-3)
Clothing II Clo. and Text. 111 3(1-6)	Costume Design I Clo. and Text. 106 2(0-6)
Design Ap. Art. 101 3(1-6)	Textiles Clo. and Text. 116 3(2-3)
Design A Ap. Art 106 3(1-6)	House Furnishings Ap. Art 108 2(1-3)
Interior Decoration and Furnishing Ap. Art 114 3(1-6)	Handcraft Ap. Art 112 2(0-6)
	Principles of Art and Their Application Ap. Art 124 3(3-0)

35. Agriculture

FIRST SEMESTER	SECOND SEMESTER
General Botany I Bot. 101	General Botany II Bot. 105
Judging Market Live Stock An. Husb. 132	Judging Breeding Live Stock An. Husb. 138
Elements of Dairying Dairy Husb. 101	Dairy Judging Dairy Husb. 104
Organic Chemistry (Agr.) Chem. 120	Principles of Feeding An. Husb. 152
Plant Pathology I Bot. 205	Farm Crops Agron. 109
Soils Agron. 133	Elements of Horticulture Hort. 108
Farm Poultry Production Poult. Husb. 101	

36. Architecture

FIRST SEMESTER	SECOND SEMESTER
Engineering Drawing Mach. Design 155	Descriptive Geometry Mach. Design 158
Elements of Architecture I Arch. 106A	Elements of Architecture II Arch. 107A
Perspective Arch. 126	Shades and Shadows Arch. 130
Free-hand Drawing I Arch. 111	Free-hand Drawing II Arch. 114
Design I Arch. 142	Design II Arch. 144

37. Manual Training

FIRST SEMESTER	SECOND SEMESTER
Engineering Drawing Mach. Design 155	Engineering Woodwork I Shop 101
Descriptive Geometry Mach. Design 158	Woodworking I for High Schools Shop 125
Woodworking for Grammar Grades Shop 120	Wood Turning Shop 135
Woodworking II for High Schools Shop 130	Pattern Making Shop 145
Forging I Shop 150	Machine Tool Work II Shop 192
Foundry Practice Shop 160	Metallurgy Shop 165
Machine Tool Work I Shop 170	Farm Buildings Ag. Engr. 103
Machine Tool Work III Shop 193	Surveying I Civ. Engr. 102
Farm Motors Ag. Engr. 125, 126	
Machine Drawing I Mach. Design 161	

45. Milling Industry

FIRST SEMESTER	SECOND SEMESTER
Farm Crops Agron. 109	Grain Products Mill. Ind. 103
Organic Chemistry (Agr.) Chem. 120	Quantitative Analysis B Chem. 251
Quantitative Analysis A Chem. 250	Principles of Milling Mill. Ind. 101
Grain Marketing Mill. Ind. 102	Experimental Baking A Mill. Ind. 204
Wheat and Flour Testing Mill. Ind. 203	Milling Practice I Mill. Ind. 109
	Milling Practice II Mill. Ind. 110

Bacteriology

Professor BUSHNELL
Professor GAINNEY
Assistant Professor FAX

Instructor DAVENPORT
Instructor HINSEAW
Graduate Assistant BANGS

The Department of Bacteriology occupies parts of the first and second floors of Veterinary Hall. The space is divided into offices and private laboratories, an experiment station and research laboratory, a large general laboratory, incubator or temperature room, preparation room, and stock room. The laboratories are well lighted and equipped with gas, lockers, ice chests, sterilizers, wall cases, microscopes, and other modern facilities necessary for bacteriological work.

The instruction consists of lectures, recitations, demonstrations, and laboratory practice. Printed synopses of lectures and printed laboratory directions are furnished the students in some of the courses; in others textbooks are required. The department library contains textbooks on bacteriology and allied subjects, also the current files of the important technical periodicals relating to bacteriology. These are at the constant disposal of the students for reference. To those who desire graduate work the department offers excellent facilities.

Bacteriology is presented to the students as a biological science and as a practical factor in everyday life. In this subject only the simplest forms of life, consisting almost invariably of one-celled organisms, are studied. It is now possible to study these microscopical forms with ease and accuracy, thus paving the way for a more complete study and better understanding of cells in the aggregate. The second point of view from which this subject is approached is that of its practical application in agriculture, medicine, domestic science, and sanitation.

COURSES IN BACTERIOLOGY

FOR UNDERGRADUATES

101. GENERAL MICROBIOLOGY. Sophomore or junior year, both semesters. Lectures, one hour; laboratory, six hours. Three semester credits. Prerequisite: Chemistry II (Chem. 102). Professor Bushnell and Mr. Davenport.

This general introductory course consists of lectures, recitations and demonstrations covering the morphological and biological characters, the classification and the distribution of bacteria, factors necessary for the development of bacteria, culture media, cultural features, staining values, and fundamental principles of applied bacteriology.

Laboratory.—The student prepares culture media and becomes familiar with principles of sterilization and incubation, and with general laboratory technic. During the last half of the semester, organisms representing the different families and genera are studied microscopically, culturally, and biochemically. Also quantitative and qualitative examinations are made of milk, water, soil, etc. Laboratory deposit, \$7.50.

106. AGRICULTURAL MICROBIOLOGY. Junior year, both semesters. Lectures, one hour; laboratory, six hours. Three semester credits. Prerequisite: Organic Chemistry (Chem. 120). Professor Gainey and Mr. Davenport.

This is a general course consisting of lectures, recitations and demonstrations. The relation of microorganisms to agriculture is particularly emphasized. First, information is given concerning the nature of microorganisms; their biological characteristics, classification and distribution in nature; their influence upon the plant food in the soil; their relation to certain fermentations, etc. Later some emphasis is placed upon the relation of microorganisms to disease; sources and modes of infection; use of germicidal agents and general hygienic measures.

Laboratory.—In the laboratory, the student becomes familiar with methods of cultivating and studying bacteria, yeasts and molds. Various known forms are studied; methods for the quantitative and qualitative analysis of water,

milk, etc., are given some attention. Some time is given to methods of sterilization and the use of germicidal agents. The aim of this course is to give the student a general working knowledge of the subject and to point out its relation to agriculture and the problems of everyday life. Laboratory deposit, \$7.50.

111. PATHOGENIC BACTERIOLOGY I. Sophomore year, second semester. Lectures, two hours; laboratory, six hours. Four semester credits. Prerequisite: Chemistry II (Chem. 102). Professor Bushnell and Doctor Hinshaw.

This is primarily a general introductory course, consisting of lectures, demonstrations and recitations covering the distribution, the morphological and biochemical features of microorganisms; factors necessary for the development and cultivation of bacteria and the fundamental principles of the science as applied to veterinary medicine.

Laboratory.—The student first becomes acquainted with the general laboratory technic, comprising the preparation of media, methods of sterilization, incubation, inoculation, plating, isolating, and staining of bacteria. Different cultures of microorganisms are studied morphologically, culturally and biochemically. Quantitative and qualitative examinations of milk and of water are made in the latter part of the semester. Laboratory deposit, \$7.50.

116. PATHOGENIC BACTERIOLOGY II. Junior year, first semester. Lectures two hours; laboratory, six hours. Four semester credits. Prerequisite: Pathogenic Bacteriology I. Professor Bushnell and Doctor Hinshaw.

A study is made of the morphology, powers of resistance, pathogenesis, distribution, channels of infection, and means of dissemination of pathogenic bacteria, especially those related to the specific infectious diseases of animals; epizootic and epidemic diseases of unknown etiology are further treated. A detailed study is made of the manufacture, standardization, preparation for the market and use of vaccines, antitoxins, and other biological products related to the diagnosis, prevention, and treatment of specific infectious diseases; of susceptibility, immunity, and infection; of theories of immunity; of anaphylaxis, opsonins, precipitins, bacteriolysins and agglutinins.

Laboratory.—A study is made of the microscopical and cultural character of pathogenic microorganisms; of laboratory animal inoculations, autopsy, and diagnosis; prevention and treatment of specific infectious diseases. Experimental production of opsonins, antitoxins, agglutinins, precipitins, and cytolysins; experiments showing the constitution and mode of action of these antibodies; production of active and passive anaphylaxis; methods for the production and standardization of biological products, such as diphtheria and tetanus antitoxin, bacterins, etc.; the application of the various phenomena of immunity in the diagnosis of infectious diseases; the identification of animal and vegetable proteins; complement fixation tests for glanders, opsonic technic, etc., comprise the laboratory work. Laboratory deposit, \$7.50.

121. HOUSEHOLD MICROBIOLOGY. Junior year, both semesters. Lectures, three hours; laboratory, six hours. Five semester credits. Prerequisite: Organic Chemistry HE (Chem 121). Assistant Professor Fay and Mr. Davenport.

This course consists of lectures, recitations and demonstrations relating to the classification, distribution, and the relative importance of bacteria. The morphological and biochemical characters of microorganisms are considered, together with a study of those factors necessary for the proper development of bacteria, and the fundamental principles of the science as applied to household economics. It is designed to give the student a more thorough knowledge of those microorganisms which are of importance in the household. The significance of microbial findings in the analysis of water, milk, and foods, also consideration of the conditions which tend to increase or decrease the bacterial content of food substances, are studied in detail. Some time is given to the principles of sanitation as applied to public-health problems. The class work is a more theoretical consideration of the problems undertaken in the laboratory.

Laboratory.—General laboratory technic, consisting of preparation of media, methods and principles of sterilization, incubation, plating, isolating and staining of microorganisms is first taken up. Studies consisting of the morphological, cultural, and biochemical characteristics of different organisms are made. A study of microorganisms and their activities, both beneficial and harmful, in their relation to household economy; bacteriological study of water, milk, and foods; the determination of the potability of water; milk contamination, the effect of cooling upon the bacterial content of milk, pasteurization of milk, etc.; microscopical study of yeasts and molds; the spoilage of canned vegetables and fruits; methods of food preservation; the manufacture of vinegar; study of activities of various species of microorganisms, thermal death point, the germicidal action of various disinfectants, etc., are topics taken up in the laboratory work. Laboratory deposit. \$7.50.

FOR GRADUATES AND UNDERGRADUATES

201. SOIL MICROBIOLOGY. Elective, second semester. Lectures, one hour; laboratory, six hours. Three semester credits. Prerequisite: Course 101 or 106. Professor Gainey.

This is an introductory course covering the principles of soil microbiology as defined at the present time, and fitting the student for independent research on microbial investigations of soil. The course includes a study of the influence of microbial flora, of depth and character of soil, temperature, moisture, chemical reaction, aeration, and other factors; activities of soil microorganisms, ammonification, nitrification, denitrification, symbiotic and nonsymbiotic nitrogen fixation upon crop production. Various texts are recommended as reference books.

Laboratory.—The laboratory work comprises the preparation of various special culture media and reagents necessary to conduct bacteriological analyses of the soil; qualitative and quantitative analysis and the laboratory study of ammonification, nitrification, denitrification, symbiotic and nonsymbiotic nitrogen fixation; plot experiments and field work illustrating the influence of various factors upon the bacterial flora and the inoculation of soil with symbiotic and nonsymbiotic nitrogen-fixing bacteria. Laboratory deposit, \$7.50.

206. HYGIENE BACTERIOLOGY. Elective, first semester. Lectures, two hours; laboratory, six hours. Four semester credits. Prerequisite: General Agricultural, or Household Microbiology. Professor Bushnell.

Pathogenic bacteria, especially those related to disease of man; channels of infection, and means of dissemination of pathogenic bacteria; epidemics, their cause and control; isolation, disinfection, and quarantine; prophylaxis against specific infectious diseases and important precautions necessary in the control of communicable diseases are studied. Various books are recommended as textbooks.

Laboratory.—The laboratory work comprises microscopical and cultural study of pathogenic bacteria; technic involved in the diagnosis of *Bacterium tuberculosis* in sputum; the culture of pathogenic anaerobic bacteria; the isolation and identification of pathogenic bacteria from animal tissues, from pus and exudates; bacteriological examination of air, water, milk, sewage; interpretation of results, etc. A detailed study of the manufacture, standardization, preparation and use of various biological products related to the diagnosis, prevention and treatment of specific infectious diseases; of the theories of immunity, etc. The technic of clinical laboratory diagnosis is also carefully studied. Laboratory deposit, \$7.50.

211. DAIRY BACTERIOLOGY. Elective, second semester. Lectures, one hour; laboratory, six hours. Three semester credits. Prerequisite: General, Agricultural, or Household Microbiology. Assistant Professor Fay.

Consideration is given to the bacterial flora of milk, butter, and cheese; to infectious diseases conveyed through dairy products; to bacterial contamination of milk by air, water, utensils, etc.; to normal and abnormal fermentations in milk, their significance and control.

Laboratory.—The preparation of culture media necessary for dairy bacteriological work; milk contamination; quantitative and qualitative bacteriological analyses of milk; the microscopical and cultural characters of the types of microorganisms representing the flora of milk, butter, and cheese; types of milk-fermenting organisms; the examination of cream, wash water, and separator slime; the effect of temperature on the growth of milk bacteria; pasteurization of milk; examination of milk for the presence of *Bacterium tuberculosis*, leucocytes and streptococci are taken up in the laboratory work. Various texts are recommended as reference books. Laboratory deposit, \$7.50.

216. POULTRY BACTERIOLOGY. Elective, first semester. Lectures, one hour; laboratory, six hours. Three semester credits. Prerequisite: General or Agricultural Microbiology. Doctor Hinshaw.

Consideration is given to the various microbial diseases of poultry; etiology, sources, and modes of infection; prevention and cure; to the microbial content of freshly-laid eggs, cold-storage eggs, and egg products, with conditions tending toward increase or decrease of this microbial content.

Laboratory.—Microorganisms pathogenic for poultry; artificial production, diagnosis, and control of poultry diseases; microbial content of eggs and egg preparations produced and handled under various conditions, form the subject matter of the laboratory work. Laboratory deposit, \$7.50.

217. POULTRY DISEASES. Senior year, first semester. Lectures, two hours. Two semester credits. Prerequisites: Pathogenic Bacteriology I and II, and Therapeutics. (Surg. and Med. 162). Doctor Hinshaw.

This course is designed particularly to meet the needs of the veterinarian. A brief study is first made of the anatomy of the fowl. This is followed by a study of poultry sanitation and hygiene, and a complete systematic study of the infectious diseases of all classes of domestic fowls. In this the following points are emphasized: etiology, pathogenicity, prognosis, symptoms, morbid anatomy, treatment, immunity, and prevention. Some time is given to general diseases of a noninfectious nature. A review is also made of the external and internal parasites of domestic fowls. Minor surgical operations are also considered. From time to time the student is given the opportunity to make a complete study of the various specimens that are sent into the laboratory for diagnosis.

226. BACTERIOLOGICAL PROBLEMS. Elective, both semesters and summer school. One to four semester credits. Prerequisite: Course 101, 106, 111, or 121. Professor Bushnell and Professor Gainey.

Students are assigned to special problems in the various phases of the subject. The credit obtained will depend upon the amount and quality of work done.

230. BACTERIOLOGY SEMINAR. Elective, both semesters. One semester credit. One hour session each week. For prerequisites consult professor in charge.

At these meetings the members of the department and the more advanced students meet for papers and discussion on all phases of current research work in bacteriology, serology, and related subjects. Graduate students in this department may be assigned to this subject for credit; all others interested may visit the meetings at any time.

FOR GRADUATES

301. RESEARCH BACTERIOLOGY. Elective, both semesters. Credit to be arranged. Prerequisite: At least two of the outlined courses offered by the department. Professor Bushnell and Assistant Professor Fay.

Advanced students showing sufficient training, ability and interest in original research are admitted to this course, upon approval of the head of the department. The student is under the direct supervision of a faculty member of the department, and in consultation with him the subject for investigation is chosen and outlined.

Students showing the proper interest and ability are given an opportunity to do experiment-station and advanced research work, during vacation periods, under the direct supervision of a faculty member of the department.

Students desiring to take work leading to an advanced degree are given individual research problems. After the proper completion of such an investigation, the results are presented by the graduate faculty in the form of a thesis. Such a thesis, when accepted by the faculty, fulfills part of the requirements for a Master of Science degree.

Botany and Plant Pathology

Professor MELCHERS
 Professor MILLER
 Associate Professor DAVIS
 Associate Professor GATES
 Associate Professor HAYMAKER

Assistant Professor DALBEY
 Instructor CASHEN
 Instructor WHITE
 Coöperative Assistant JOHNSTON
 Graduate Assistant SCHRECK

The instruction given in the Department of Botany and Plant Pathology has a threefold purpose:

First, to give a training in botany for the general broadening of the student's knowledge.

Second, to give the student a training in the knowledge of plants that will serve as a foundation for his further College courses in agricultural subjects.

Third, to instruct and direct those students who desire to investigate such problems in plant life as affect agriculture. Investigations may be undertaken in plant pathology, plant physiology, taxonomy, and ecology of plants.

In the general courses each student is supplied with a compound microscope and with all the other accessories of a modern well-equipped botanical laboratory.

The laboratory for advanced study is provided with the general equipment for investigational work, and additional facilities are readily available for those who desire to pursue special lines of research.

The department has an excellent herbarium especially complete for Kansas, and a botanical library containing the usual standard texts and the principal botanical journals.

COURSES IN BOTANY

FOR UNDERGRADUATES

101. GENERAL BOTANY I. Freshman year, first semester and summer school. Class work, one hour; laboratory, six hours.* Three semester credits. Professors Melchers and Miller, Associate Professors Davis, Gates and Haymaker, Assistant Professor Dalbey, Miss Cashen, and Mr. White.

This is a course of lectures, combined with assignments in a required text and additional reference reading. The principal life functions of plants, response of plants, such as photosynthesis, digestion, respiration, transpiration, and growth, and the responses of plants to environmental conditions and physical stimuli, are studied. The anatomy of the plant, in so far as it relates to the functions concerned, is studied in some detail. In this course the student gains a general introductory knowledge of the functions and reactions of plants, and learns to regard them from the dynamic standpoint as working organisms. Text: *A Textbook of Botany for Colleges*, by Ganong.

Laboratory.—A series of typical experiments is followed out in the laboratory and in the greenhouse. Each student is furnished with a set of the necessary apparatus, and learns to apply quantitative methods to the study of functions. Laboratory outlines are furnished by the department. Laboratory charge, \$2.75.

* Two of the required laboratory hours are employed in lecture and laboratory quizzes and reviews.

105. GENERAL BOTANY II. Freshman year, second semester and summer school. Class work, one hour; laboratory, six hours.* Three semester credits. Professor Melchers, Associate Professors Davis, Gates, and Haymaker, Assistant Professor Dalbey, Miss Cashen, and Mr. White.

The lectures are designed to give the students a general knowledge of some of the more important botanical facts and discoveries, with their application to closely related sciences and to human welfare. The significance of bacteria, fungi, and other microorganisms in our daily life; the more important laws governing plants in relation to their environment; fundamental laws and facts of genetics and plant breeding; the theories of evolution; and general phenomena of plant life, are discussed. Text: *A Textbook of Botany for Colleges*, by Ganong.

Laboratory.—The aim of the laboratory work is to give students a general knowledge of plants as to form, structure, habits, adaptations and relationships to other organisms. Wherever possible, the plants are studied as they actually occur in nature. The work covers a study of the morphology of the typical representatives of the great groups of the plant kingdom, the ecological factors affecting plants, and their identification under both winter and summer conditions by the use of an identification key. Laboratory outlines are furnished by the department. Laboratory charge, \$2.75.

126. MEDICAL BOTANY. Sophomore year, first semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: High-school botany or its equivalent. Associate Professor Gates.

This is a lecture, laboratory and reading course dealing with poisonous plants. The lecture includes a study of the principal stock-poisoning plants of the range; losses due to native poisonous plants, methods of identification, habitat, poisonous properties, and methods of control and eliminations.

Laboratory.—The laboratory work follows the work presented in the lectures, and consists chiefly of a study of the native poisonous plants of the West, and the identification of these plants by means of a descriptive key. Laboratory charge, \$1.50.

155. FIELD BOTANY. Summer School. By appointment. Class, field, laboratory and library work, ten hours.** Three semester credits. Associate Professor Haymaker.

The purpose of the course is to offer teachers an opportunity to become acquainted with plants in the field, their natural history, habits, distribution and relation to their environment. Excursions are made to different localities near Manhattan to study plants of the prairies, woods, swamps, streams, etc. Special attention is given to methods of collecting and preserving plants for use in high-school teaching. Part of the laboratory work consists in the determination of the names of plants by means of manuals. Text: *Gray's New Manual of Botany*.

FOR GRADUATES AND UNDERGRADUATES

202. FRUIT-CROP DISEASES. Elective, first semester. Class work, one hour; laboratory, three hours.† Two semester credits. Prerequisite: Plant Pathology I. Not offered in the year 1923-'24. Associate Professor Haymaker.

The class work consists of a series of lectures dealing with diseases affecting fruit crops of all kinds. Special emphasis is laid on measures and methods for controlling these diseases by means of spraying, sanitation, and varietal resistance. The preparation and practical application of the standard sprays are considered. Text: *Manual of Fruit Diseases*, by Hesler and Whetzel.

Laboratory.—This consists of a detailed study of each disease affecting the major fruit crops, together with a detailed microscopic study of the organisms

* Two of the required laboratory hours are employed in lecture and laboratory quizzes and reviews.

** Four of the required laboratory hours are employed in lecture and laboratory quizzes and reviews.

† One of the required laboratory hours is employed in lecture and laboratory quizzes and reviews.*

causing the disease. The course is especially valuable for those studying horticulture or those expecting to specialize in plant pathology. Laboratory charge, \$2.

204. MYCOLOGY I. Elective, first semester. Class work, two hours; laboratory, six hours.* Four semester credits. Prerequisite: Plant Pathology I. Mr. White.

The class work consists of a series of lectures on the classification of fungi, their relationship to one another, and their morphology. Special emphasis is laid on those fungi which cause plant diseases. Some attention is given also to the physiology of fungi, infection, isolation, pure culture methods, etc. This course is designed to train those who wish to become more familiar with the classification of fungi and their morphology and physiology. It is essential for those who wish to follow plant pathological work professionally.

Laboratory.—The laboratory work runs parallel with the class work and consists of a detailed study of the genera of fungi. Considerable outside reading is expected. A reading knowledge of French and German is of help in this connection, but is not required. Laboratory charge, \$5.

205. PLANT PATHOLOGY I (OF ECONOMIC PLANT DISEASES). Junior year, first semester and summer school. Class work, one hour; laboratory, six hours.* Three semester credits. Prerequisite: General Botany II. Professor Melchers, Associate Professor Haymaker, and Mr. White.

The diseases affecting the chief economic crops of field, orchard, and garden are studied in considerable detail. The etiology of the various diseases and their most evident symptoms are considered. The student learns to recognize at sight the principal plant diseases he is likely to encounter on the farm, in the nursery, and in market-garden work. Nonparasitic and bacterial diseases are considered to some extent, but the time is devoted chiefly to the more important diseases caused by the fungi, the life histories of which are studied in some detail. Preventive measures are considered in each case. An extensive collection of preserved pathological material is available.

Laboratory.—Practical work in the recognition of all the more common plant diseases of the farm, orchard, and garden is accompanied by detailed microscopic studies of diseased tissues and identification of the fungous pathogens which cause them. Complete laboratory outlines, which likewise serve as a text in this course, are furnished by the department. Laboratory charge, \$2.50.

206. MYCOLOGY II. Elective, second semester. Class work, one hour; laboratory six to twelve hours.* Three to five semester credits. Prerequisite: Mycology I. Mr. White.

This course is a continuation of Mycology I, designed especially for students who wish to specialize in plant pathology. The class work consists of a series of lectures on the phylogeny of the fungi, cryptogamic herbaria, exsiccatae, etc. The laboratory work consists chiefly in the collection and determination of fungi, in conjunction with a minor mycological problem. Laboratory charge, \$5.

208. PLANT PHYSIOLOGY I. Sophomore year and elective, first semester. Class work, three hours. Three semester credits. Prerequisite: General Botany II. Professor Miller.

This course consists of a series of lectures on the more important phases of plant physiology. Such subjects as the root systems of plants, absorption, wilting coefficient, resistance to drought, transpiration, water requirement, photosynthesis, respiration, digestion, and growth are discussed in detail. The subject matter of plant physiology that pertains to agriculture is especially emphasized. The course is designed to give students a broad knowledge of the functions of plants and the more important factors which influence them. The work is supplemented by discussions, reference readings, and special reports.

* Two of the required laboratory hours are employed in lecture and laboratory quizzes and reviews.

209. PLANT PHYSIOLOGY II. Elective, second semester. Laboratory work, six hours.* Two semester credits. Prerequisite: Plant Physiology I. Not offered in 1924-'25. Professor Miller and Associate Professor Davis.

This course is supplementary to Plant Physiology I, and is planned to give a knowledge of the methods used in obtaining experimental data in regard to the more common functions of plants. The course is of interest to students who intend to teach botanical subjects or who expect to carry on experimental work with plants. Laboratory charge, \$5.

215. PLANT HISTOLOGY. Elective, second semester. Laboratory, six hours. Two semester credits. Prerequisite: General Botany I or II. Assistant Professor Dalbey.

This course is planned to provide a thorough training in the principles and practice of microtechnical methods in botany, including the killing, fixing, and embedding of plant material, microtome work, and the staining and mounting, by various methods, of a tolerably complete and characteristic series of permanent slides, representing the vegetative and reproductive tissues of typical plants, taken from all the principal groups. Time will be devoted to a careful microscopic study of the slides prepared during the course. Text: Chamberlain's Plant Histology. Laboratory charge, \$3.50.

220. BOTANICAL SEMINAR. Elective, both semesters. One hour session each week. One semester credit. For prerequisites consult professor in charge.

The subject matter is outlined at the beginning of each semester, and consists of the presentation of investigational work in botany, including the important branches of plant pathology, plant physiology, plant ecology, taxonomy, morphology, and genetics. Fundamental papers along botanical lines are reviewed and a digest is presented. It is expected that graduate students who are taking major or minor work in the Department of Botany will attend these sessions and take part in its programs.

225. TAXONOMIC BOTANY OF THE FLOWERING PLANTS. Elective, first semester. Class work, one hour; laboratory, six hours.* Three semester credits. Prerequisite: General Botany II. Associate Professor Gates.

The class work consists of a series of lectures dealing with the terms employed, the development of the more important systems of classification, and a consideration of families of plants.

Laboratory.—Selected flower types representing the principal orders and families of plants are studied and plants are identified in the field and in the laboratory. Laboratory charge, \$2.

228. PLANT ECOLOGY. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: General Botany II. (Omitted in 1924.) Associate Professor Gates.

The class work consists of a series of lectures dealing with the structure and dynamics of vegetation.

Laboratory.—With the opening of vegetation in the spring, field trips are taken to selected places. Laboratory charge, \$1.50.

230. PHYSIOLOGICAL PHENOMENA IN THE GERMINATION OF SEEDS. Elective, first semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: General Botany II. Associate Professor Davis.

This is a course in plant physiology in which the seed is used as the basis of the work in the laboratory. A study is made of the different factors in germination, as to water requirement, temperature, oxygen supply, light, permeability of seed coats by water, solutes, and gases; dormancy, agencies in so-called after-ripening, enzymes, etc. This course is of special interest to students in agronomy, or those who expect to take up work in connection with grain mills, seed houses, etc. Laboratory charge, \$2.50.

232. BOTANICAL PROBLEMS. Elective, both semesters and summer school. From one to five semester credits. Prerequisites: General Botany II, and

* Two of the required laboratory hours are employed in lecture and laboratory quizzes and reviews.

approval by the head of the department. Professors Melchers and Miller, Associate Professors Davis, Gates, and Haymaker, Assistant Professor Dalbey, Miss Cashen, Mr. White.

In some instances a student may wish to pursue a special field of work which is not definitely represented by one of the undergraduate elective courses listed. Such a course may be arranged for upon consultation with the instructor. Laboratory charge, \$2.50.

234. PHYTOGEOGRAPHY. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: General Botany II. Not offered in 1924-'25. Associate Professor Gates.

The class work consists of a series of lectures dealing with the distribution and characteristics of vegetation. Laboratory charge, \$2.

236. MORPHOLOGY OF PLANTS. Elective, second semester. Laboratory and lecture, six hours.* Two semester credits. Prerequisite: Botany I or Botany II. Not offered in 1924-'25. Assistant Professor Dalbey.

This is a general course in the morphology of plants. It is designed to give biological students a broad view of the morphology and the relationship of the important groups of plants.

Laboratory.—A careful study is made of living material, in conjunction with prepared slides of the morphology of the representative types of the chief groups of the plant kingdom. Plant types are studied in the order of their relative complexity and specialization, emphasis being given to the relationship in an evolutionary series. Special attention is given to the morphology of the fungi. Laboratory charge, \$3.

240. FIELD-CROP DISEASES. Elective, second semester. Class work, one hour; laboratory, three hours.† Two semester credits. Prerequisite: Plant Pathology I. Professor Melchers.

The class work consists of a series of lectures dealing with the historical development of phytopathology and a series of lectures considering the various factors entering into the problem of disease resistance in plants. Breeding for resistance is given consideration and the most important literature on the subject is discussed.

Laboratory.—This consists of a detailed microscopic and symptom study of the fungous, bacterial, and nonparasitic plant diseases attacking cereal and forage crops, other than those considered in Plant Pathology I. All the literature pertaining to these diseases is reviewed and detailed notes are required as part of the laboratory work. A major paper is required on some subject pertaining to breeding for disease resistance in cereals or forage crops. The course is of value to those who wish to pursue agronomic work, or for those expecting to specialize in plant pathology. Laboratory charge, \$2.

245. VEGETABLE DISEASES. Elective, second semester. Class work, one hour laboratory, three hours.† Two semester credits. Prerequisite: Plant Pathology I. Not offered in 1924-'25. Professor Melchers.

The class work consists of a series of lectures dealing with the problem of disease resistance in plants. Breeding for disease resistance is considered and the progress that has been made in vegetables is discussed. The most important literature bearing on the subject is reviewed.

Laboratory.—This consists of a detailed microscopic and symptom study of the fungous, bacterial, nonparasitic and degenerative diseases attacking vegetables. All literature pertaining to these diseases is reviewed and notes are required as part of the laboratory work. A major paper is required on some subject pertaining to breeding for disease resistance in vegetables. This course is of special value to students in horticulture, or for those expecting to specialize in plant pathology. Laboratory charge, \$2.

* Two of the required laboratory hours are employed in lecture and laboratory quizzes and reviews.

† One of the required laboratory hours is employed in lecture and laboratory quizzes and reviews.

260. ECONOMIC BOTANY. Summer school. By appointment. Class, field, laboratory and library work, twelve hours.** Three semester credits. Prerequisite: General Botany II. Associate Professor Haymaker.

This course is primarily a combination of Plant Pathology I and Taxonomic Botany of the Flowering Plants and may be substituted for Plant Pathology I if the student has had previous experience in high school teaching or in county agricultural work. The course is designed especially for teachers interested in agricultural work, for those engaged in Smith-Hughes teaching, and for those who desire a course which will be helpful in preparing them for work as agricultural agents. Field trips will be taken for the purpose of collecting and identifying plants of economic importance. In this connection, the student learns how to identify flowers, etc., by the use of a key. Plant diseases are collected in the field, and are studied critically in the laboratory. Methods of plant disease control are studied, seed treatments demonstrated, etc. The lecture work supplements the laboratory work. Laboratory charge, \$1.50.

FOR GRADUATES

301A. PLANT PATHOLOGY III. Elective, second semester. Class work, one hour; laboratory, six hours.* Three semester credits. Prerequisite: Mycology I. Not offered in 1924-'25. Mr. White.

This course is one in phytopathological technic. Its purpose is to give the advanced student an opportunity for making a closer and more extended study of the pathogenic organisms which cause plant disease. Considerable attention is devoted to the preparation of various kinds of culture media, isolation and culture of pathogenic organisms, nutrition of fungi, studies in enzyme secretion and action, micrometry, incubation and infection phenomena, etc. The course is especially designed for those who intend to pursue plant pathology as a profession, either as teachers or investigators in experiment stations. Laboratory outlines are furnished by the department. No special text will be required. Laboratory charge, \$4.

302. PLANT PATHOLOGY IV. Elective, first and second semesters and summer school. Laboratory, nine hours.* Three semester credits. Prerequisite: Plant Pathology III. Professor Melchers and Mr. White.

This course involves original research. Problems are chosen by the student along some lines in which he is interested. A careful worked-out report which summarizes the investigation undertaken is required at the end of the semester. Laboratory charge, \$2.

308. INVESTIGATIONS IN PLANT TAXONOMY AND PLANT ECOLOGY. Elective, first and second semesters. Laboratory work, including conferences and field work, from six to twenty-four hours. From two to eight semester credits. Associate Professor Gates.

Graduate students and especially qualified undergraduates are admitted to this course upon approval of application. This course involves original research in a problem, chosen by or assigned to the student. The results are embodied in a written report presented at the end of the course. Laboratory charge, \$2.

310. RESEARCH IN BOTANY. Elective, both semesters and summer school. From one to twelve semester credits. Professors Melchers and Miller, Associate Professors Davis, Gates and Haymaker, Assistant Professor Dalbey, Miss Cashen and Mr. White.

Research problems in the various fields of botany may be outlined. A member of the department staff, acting as major instructor, is in charge. Upon completion of the work it may be submitted in part or as a whole toward a thesis. Laboratory charge, \$3.

* Two of the required laboratory hours are employed in lecture and laboratory quizzes and reviews.

** Four of the required laboratory hours are employed in lecture and laboratory quizzes and reviews.

Chemistry

Professor KING	Instructor BRUNER
Dean WILLARD	Instructor SELLERS
Professor HUGHES	Instructor WATKINS
Professor BRUBAKER	Instructor JORDAN
Associate Professor COLVER	Instructor LASH
Associate Professor TAGUE	Instructor WAMPLER
Assistant Professor LATSHAW	Instructor JOSEPH
Assistant Professor VAN WINKLE	Instructor HENDRICKS
Assistant Professor HALL	Instructor KUERNER
Assistant Professor MORAN	Instructor MATHIAS
Instructor HARRISS	Associate Food Analyst DE ROSE
Instructor KEITH*	

All of the industries are becoming more and more dependent for their highest success upon intelligent application of the sciences, and the social sciences are making their greatest progress by tracing their phenomena back to the physical and chemical changes that accompany them. A study of chemistry and physics is therefore essential to any understanding of the processes of nature or of human industry. In the instruction in chemistry the aim is to insist upon a mastery of the chief concepts of the pure science through the agency of textbook drill, accompanied by demonstrations in the lecture room, and experimental observation by the student himself in the laboratory. As the course proceeds, illustrations of chemical principles are drawn from the industrial processes of the chemical, agricultural, domestic, and other arts, thus impressing upon the mind the practical nature of the study. The ultimate object of instruction in this science is to develop in the student the power to form independent judgments upon the manifold problems of daily life in which chemistry plays a part.

The lecture rooms are amply equipped for experiments and demonstrations, and the laboratories are designed to accommodate 936 students each semester in freshman work and qualitative analysis. The laboratories for more advanced work provide space for 324 students, and are well supplied with general and special facilities. The state work in foods, feeding stuffs, and fertilizers, and the chemical investigations of the Experiment Station in soils, crops, animal nutrition, etc., afford unusually good opportunities for students to obtain experience in practical chemistry. In all of the laboratory work the student is required to give the designated amount of time, and at least a certain amount of work must be satisfactorily performed in order to obtain credit.

COURSES IN CHEMISTRY

FOR UNDERGRADUATES

101. CHEMISTRY I. Freshman year, both semesters and summer school. Lectures and recitations, three hours; laboratory, six hours. Five semester credits. Prerequisite: High-school Physics. Professor King, Miss Harriss, Mr. Keith, Miss Bruner, Mr. Sellers, Mr. Watkins, Mr. Lash, Mr. Wampler, Mr. Hendricks, and Mr. Kuerner.

This work begins the study of general chemistry, and is designed, with that of the succeeding semesters, to give the student a knowledge of the fundamental principles of chemistry. As all subsequent progress in this science requires a working knowledge of its principal theoretical conceptions, the principles of nomenclature, the significance of formulas, chemical equations, etc., much attention is given to these, while at the same time the practical uses of the substances, and the processes used in metallurgy, engineering, agriculture, and other arts are emphasized. McPherson and Henderson's *A Course in General Chemistry* is used as a textbook, this semester's work covering the first 331 pages. The text is supplemented by lectures and is amply illustrated by experimental demonstrations.

* Absent on leave, 1923-'24.

Laboratory.—As far as time permits, the student performs independently experiments touching the preparation and properties of the more important substances. Preference is given to those operations which illustrate important principles, and the student is required, as far as possible, to study experiments in that light. In this, as in all other laboratory work in chemistry, the objects are to illustrate chemical phenomena, and to teach care in manipulation, attentive observation, logical deduction, and discrimination and accuracy in recording results and conclusions. The student is required to give the designated amount of time, and a minimum amount of work must be satisfactorily performed in order to obtain credit. *Laboratory Exercises in Elementary Chemistry*, by William McPherson, is used as the laboratory guide. Laboratory deposit, \$10.

102. CHEMISTRY II. Freshman year, both semesters and summer school. Lectures and recitations, three hours; laboratory, six hours. Five semester credits. Prerequisite: Chemistry I. Teachers same as for Chemistry I.

The work in this course for the first half of the semester is a completion of the study of general chemistry begun the preceding semester. The second half of the semester is devoted to the study of the general principles of qualitative analysis as outlined in a *Qualitative Analysis*, by Baskerville and Curtman.

Laboratory.—In the laboratory the student studies the ordinary methods of separation and detection of the more common metals, nonmetals, acids, bases, and salts. The teaching of analysis as such is a secondary object, although the student is held to the exact observation and careful reasoning required in ascertaining the composition of single substances and mixtures. The effect of the course is to broaden, strengthen, and unify the student's ideas of general chemistry. Laboratory deposit, \$10.

105. CHEMISTRY (VET.). Freshman year, both semesters. Lectures and recitations, three hours; laboratory, six hours. Five semester credits. Mr. Wampler.

This course deals with the fundamental laws and theories of chemistry, the elements and their inorganic compounds, and lays emphasis on the application of chemistry to the arts and industries. Both the metals and nonmetals are studied, but the treatment is less detailed than in Chemistry I and II.

Laboratory.—The laboratory work is intended to give the student training in manipulation and first-hand knowledge of the important laws of chemistry and the properties of substances studied, by use of appropriate experiments which the student himself performs. Laboratory deposit, \$10.

106. ORGANIC CHEMISTRY (VET.). Freshman year, second semester. Lectures and recitations, three hours; laboratory, six hours. Five semester credits. Prerequisite: Chemistry (Vet.). Mr. Jordan.

This course is open only to students in the Division of Veterinary Medicine. It includes a brief study of some of the important classes of organic compounds and a more detailed study of one or more representative members of several classes. Some attention is given to the physiological and toxicological effects of certain organic compounds.

Laboratory.—In the laboratory the student prepares a few typical organic compounds and studies their physical and chemical properties. The laboratory directions which are used have been prepared and are supplied by the department. Laboratory deposit, \$10.

107A and 108A. CHEMISTRY E-I AND E-II. Freshman year, first and second semesters, respectively. Lectures and recitations, two hours; laboratory, six hours. Four semester credits each. Prerequisite: High-school physics. Professor King, Assistant Professor Van Winkle, Mr. Jordan, Mr. Joseph, and Mr. Kuerner.

These courses cover the work of general chemistry and qualitative analyses. During the first semester the entire time is devoted to general chemistry, while during the second semester the time is divided between general chemistry and

qualitative analyses; the majority of the lectures and all of the recitations being given over to general chemistry, while a few of the lectures and all of the laboratory time are devoted to qualitative analyses. In all courses emphasis is placed upon those fundamental principles of chemistry which have a special bearing upon engineering and engineering materials. Text: Deming's *General Chemistry*.

Laboratory.—One hour per week throughout both semesters is taken out of the laboratory time for an oral or written quiz over the previous week's experiments and for a brief introductory discussion of the new work. Texts: First semester, *Combination Laboratory Manual and Notebook*, by W. A. Van Winkle; second semester, *Outline of the Methods of Qualitative Chemical Analysis*, by R. J. Carney, supplemented by mimeographed notes. Laboratory deposit, \$10.

120. ORGANIC CHEMISTRY (AGR.). Sophomore year, both semesters. Lectures and recitations, two hours; laboratory, three hours. Three semester credits. Prerequisite: Chemistry II. Associate Professor Colver and Mr. Jordan.

This course is given for the students in the Division of Agriculture, and includes a careful study of the aliphatic series of hydrocarbons, alcohols, ethers, aldehydes, ketones, organic acids, esters, fats, waxes, carbohydrates, and proteins. Attention is directed to the characteristic properties and relationships of these various classes of compounds and typical members of each group are studied particularly from the standpoint of structure, laboratory preparation and chemical properties as shown by their reactions. Emphasis is placed upon the work bearing upon agricultural pursuits. Text: Norris, *Organic Chemistry*, in part, accompanied by lectures.

Laboratory.—The laboratory work is arranged to parallel the study in the classroom, and includes the preparation of a limited number of organic compounds and a study of their properties and reactions. The experiments include work with fats, carbohydrates, and proteins. The laboratory directions which are used have been prepared and are supplied by the department. Laboratory deposit, \$7.50.

121. ORGANIC CHEMISTRY (HE). Sophomore year, both semesters. Lectures and recitations, three hours; laboratory, six hours. Five semester credits. Prerequisite: Chemistry II. Associate Professor Colver and Mr. Jordan.

This course is for students in the Division of Home Economics and is outlined to give a firm foundation for advanced work in foods and nutrition. A systematic study is made of the more important classes of organic compounds, particularly the aliphatic hydrocarbons, alcohols, ethers, aldehydes, ketones, organic acids, fats, soaps, sugars, starch and proteins. In addition to a study of aliphatic compounds a brief consideration is also given to several series of aromatic compounds. Especial attention is given to those organic compounds which are used for clothing, fuel, light, antiseptics, disinfectants, anæsthetics, medicine, solvents, in the commercial manufacture of other important products, as well as to many other compounds which contribute to a fuller understanding of the systematic relations existing among all organic compounds. Text: Norris, *Organic Chemistry*, in part, accompanied by lectures.

Laboratory.—In the laboratory the student prepares one or more representative examples of most of the classes of compounds taken up in the classroom. A study is made of their physical properties and their chemical properties as shown by typical reactions. The experiments include work with fats, carbohydrates, and proteins. The laboratory directions which are used have been prepared and are supplied by the department. Laboratory deposit, \$10.

FOR GRADUATES AND UNDERGRADUATES

202. INORGANIC PREPARATIONS. Junior year and elective, both semesters. One semester credit for each three hours of laboratory work. Prerequisite: Chemistry II or Chemistry HE-II. Assistant Professor Moran.

Students of Advanced Inorganic Chemistry are advised to take this course. It consists in the preparation and purification of some typical inorganic compound, together with those of more complex composition and compounds of the rarer elements. Laboratory deposit, \$10.

203 and 204. INDUSTRIAL CHEMISTRY I AND II. Senior year and elective, first and second semesters, respectively. Offered in 1923-'24 and alternate years thereafter. Class work, three hours; laboratory, six hours. Five semester credits each semester. Prerequisite: Organic Chemistry. Professor Brubaker.

This course treats the more important technical processes. Considerable attention is given to general operations and the machinery employed. The more important commercial manufacturing industries are then taken up, including, with others, the production of alkalies, acids, glass, clay products, cement, paint, pigments, oils, varnish, soap, gas, paper, leather, petroleum, sugars, starch and the products of fermentation and the destructive distillation of wood and coal. Textbook: *Manual of Industrial Chemistry*, by Rogers and Aubert.

Laboratory.—The laboratory work consists of the quantitative analysis of raw materials and industrial products. Laboratory manual: *Quantitative Analysis*, by Edw. G. Mahin. Laboratory deposit, \$10.

205. INDUSTRIAL ELECTROCHEMISTRY. Junior year and elective, second semester. Offered when there is a sufficiently large demand. Class work, two hours. Two semester credits. Prerequisite: College courses in general chemistry and physics. Professor Brubaker.

In this course are treated briefly the principles of voltameters, electrochemical methods of analysis, electroplating, electrotyping, and the production of metallic objects by electroplating methods. This is followed by fuller treatment of electrolytic refining of metals, the manufacture of various industrial products by electrolytic and electrothermic methods, primary cells, the lead storage battery, the Edison storage battery, the electrometallurgy of iron and steel, and the fixation of atmospheric nitrogen. Textbook: Thompson's *Applied Electrochemistry*.

206. PHYSICAL CHEMISTRY. Junior year, first semester. Lectures and recitations, three hours; laboratory, six hours. Five semester credits. Prerequisites: Organic Chemistry, and Quantitative Analysis; and although not a prerequisite, calculus is recommended. Professor King.

This course is especially adapted to those students desiring a broader knowledge of the more fundamental laws of chemistry. A brief study is made of the modern conception of the atom and radioactive phenomena. A more extensive study is made of the relations found to exist with matter in the gaseous, liquid and solid states. Emphasis is placed upon the following phenomena: Osmosis; solution, including colloids; surface tension; adsorption; equilibria; thermochemistry; ionization; hydrolysis; electromotive force and hydrogen ion concentration.

Laboratory.—The laboratory follows very closely the subject matter of the lectures. Laboratory deposit, \$10.

207. ADVANCED INORGANIC CHEMISTRY. Sophomore year and elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Chemistry II or Chemistry HE-II. Assistant Professor Moran.

The course consists of a thorough study of the facts of chemistry and their theoretical interpretations according to the views of the present day. Special stress is placed upon the properties of the elements as a basis for methods of classification, and upon the rarer elements and compounds. Students electing this course are advised to take Inorganic Preparations (Chem. 202). Text: *Modern Inorganic Chemistry*, by J. W. Mellor.

208. HISTORY OF CHEMISTRY. Junior year, second semester. Lecture work, one hour. One semester credit. Prerequisite: Physical Chemistry (Chem. 206). Dean Willard.

These lectures deal with the history concerning the development of the principal laws and theories of chemistry, special emphasis being placed upon the failures and triumphs of the founders of chemical science.

209. SURFACE TENSION AND RELATED PHENOMENA. Elective and graduate, first or second semester, when requested by a sufficient number. Lectures, two hours. Two semester credits. Prerequisite: Physical Chemistry (Chem. 206). Professor King.

This course of lectures deals with surface tension phenomena. Attention is devoted to methods of measuring surface tension, to surface energetics, and particularly to the relation of surface tension to adsorption, and colloidal formation.

210. CHEMICAL STATICS AND DYNAMICS. Elective and graduate, second semester, when requested by a sufficient number. Lectures and assigned reading, two hours. Two semester credits. Prerequisite: Approved courses in Physical Chemistry and Calculus. Professor King.

This course of lectures deals with the general topics of chemical equilibria, velocity of chemical reactions, hydrolysis, catalysis, etc.

211. PAINT OILS AND PIGMENTS. Elective and graduate, first semester, by appointment. Lectures and assigned readings, two hours. Two semester credits. Prerequisite: Satisfactory courses in Organic Chemistry and Quantitative Analysis. Professor King.

This course consists of a series of lectures and assigned readings on the extraction, purification, and properties of the oils commonly used in paints, on the manufacture and properties of paint pigments, and on a general survey of the products employed as protective coverings for both wood and metal.

212. CHEMICAL THERMODYNAMICS. Elective, second semester, when requested by a sufficient number. Lectures and assigned readings, two hours. Two semester credits. Prerequisites: Approved courses in Physical Chemistry and Calculus. Professor King.

The object of this course is to present those fundamental principles of thermodynamics which are particularly applicable to chemistry. Among the subjects discussed are, the first and second laws of thermodynamics and their applications to fusion, evaporation, phase rule, chemical equilibrium, chemical affinity, electromotive force, surface tension and adsorption.

213. COLLOIDAL CHEMISTRY. Elective and graduate, second semester; given when requested by a sufficient number. Lectures, two hours. Two semester credits. Prerequisite: Physical Chemistry (Chem. 206). Assistant Professor Moran.

This course is designed to briefly cover the field of colloidal phenomena. It includes suspensoids and emulsoids, optical and electrical properties of colloids, Brownian movement, action of electrolytes on colloids, adsorption and surface phenomena, and a short review of the method for the preparation of colloids.

218. ORGANIC CHEMISTRY I. Sophomore year, first semester. Lectures, two hours; laboratory, six hours. Four semester credits. Prerequisite: Chemistry II. Associate Professor Colver.

This course is for those students who expect to take a second semester of organic chemistry. The aliphatic hydrocarbons, alcohols, ethers, aldehydes, ketones, acids, esters, amides, acylhalides, acid anhydrides, amines, halogen substituted acids, amino acids, hydroxy acids, aldehyde acids, ketone acids, hydroxy aldehydes, hydroxy ketones, and related compounds are considered particularly from the standpoint of structure, methods of laboratory and commercial preparation, reactions, and uses. Special attention is given to such topics as structural, geometrical, and optical isomerism, and the use of acetoacetic ester and malonic ester in organic synthesis. Reference: Perkin and Kipping, *Organic Chemistry*.

Laboratory.—The laboratory work parallels the lectures and includes the preparation, purification, and reactions of one or more typical examples of most of the groups of compounds, studied in the classroom. The laboratory directions which are used have been prepared and are supplied by the department. Laboratory deposit, \$10.

219. ORGANIC CHEMISTRY II. Sophomore year, second semester. Lectures, two hours; laboratory, six hours. Four semester credits. Prerequisite: Organic Chemistry I. Associate Professor Colver.

This course is a continuation of Organic Chemistry I and takes up in analogous manner the structure, methods of laboratory and commercial preparation, reactions and uses of the aromatic compounds. Particular attention is also given to the orientating influence of various groups, the structure and reactions of the diazonium compounds, and a brief study is made of the different classes of dyes, the alkaloids, the terpenes, and a few heterocyclic compounds.

Laboratory.—In the laboratory the student carries out various preparations that illustrate the reactions which are characteristic of aromatic compounds, such as bromination, sulfonation, nitration, acetylation, diazotization, and replacement and coupling of the diazonium group. A portion of the laboratory work includes the determination of carbon, hydrogen, and nitrogen in pure unknown organic compounds by the combustion method. Laboratory guide: Noyes, *Organic Chemistry for the Laboratory*. Laboratory deposit, \$10.

223. ORGANIC PREPARATIONS. Senior year, first semester. Laboratory, three to fifteen hours. One to five semester credits. Prerequisite: Organic Chemistry II. Associate Professor Colver.

The compounds prepared in this course are so chosen as to give the student a thorough knowledge of the fundamental principles of synthetic organic chemistry. Laboratory deposit, \$10.

224. QUALITATIVE ORGANIC ANALYSIS. Elective, first semester; given when requested by a sufficient number. Laboratory, six hours. Two semester credits. Prerequisite: Organic Chemistry II. Associate Professor Colver.

This is primarily a laboratory course designed to impress upon the student's mind the characteristic reactions of the various classes of organic compounds. The first few weeks are spent in carrying out class reactions, using known compounds; the remainder of the semester is devoted to the classification and identification of pure, unknown substances and mixtures. Laboratory guide: Kamm, *Qualitative Organic Analysis*. Laboratory deposit, \$10.

225. STEREOISOMERIC AND TAUTOMERIC COMPOUNDS. For graduate and advanced students in chemistry, second semester; given when requested by a sufficient number. Lectures, two hours. Two semester credits. Prerequisite: Organic Chemistry II. Associate Professor Colver.

The course consists of lectures and assigned readings upon such special topics of organic chemistry as optical isomerism, particularly the older and more recent methods of determining the configuration of the asymmetric carbon atoms of sugars; geometrical isomerism; and ketoenol tautomerism.

226. CARBOCYCLIC AND HETEROCYCLIC COMPOUNDS. For graduate and advanced students in chemistry, second semester; given when requested by a sufficient number. Lectures, two hours. Two semester credits. Prerequisite: Organic Chemistry II. Associate Professor Colver.

The course consists of lectures and assigned readings upon carbocyclic and heterocyclic compounds. In the study of the carbocyclic compounds the structure, orientation, methods of synthesis, and reactions of benzene, naphthalene, anthracene, and derivatives are considered in much greater detail than is possible in an elementary course. The heterocyclic compounds studied include furane, pyrrol, thiophene, pyridine, quinoline, isoquinoline, purine, pyrimidine, hydantoin, and some structurally related substances, such as certain classes of dyes, the alkaloids, and uric acid.

228. SPECIAL REACTIONS OF ORGANIC COMPOUNDS. For graduate and advanced students in chemistry, first semester. Given when requested by a sufficient number. Lectures, two hours. Two semester credits. Prerequisite: Organic Chemistry II. Associate Professor Colver.

This course consists of lectures and assigned readings dealing with some of the less common reactions which take place with certain aliphatic and aromatic compounds.

230. PRINCIPLES OF ANIMAL NUTRITION. Elective and graduate, second semester. Class work, three hours. Three semester credits. Prerequisite: Organic Chemistry. Professor Hughes.

This course gives a thorough study of the relations of animals to matter and energy, and the physiological principles involved. Study of the researches which have established the principles of nutrition constitutes the ground work of the course.

231. PHYSIOLOGICAL CHEMISTRY. Senior year, elective and graduate, first semester. Lectures and recitations, three hours; laboratory, six hours. Five semester credits. Prerequisite: An acceptable course in organic chemistry. Professor Hughes.

This course is designed to meet the needs of students who expect to specialize in nutrition or in one of the biological sciences. It is a systematic study of the synthetic and analytical chemical changes that accompany the physiological processes of animals and plants. The chemical properties of food and body substances, and their general specific functions; the changes that take place in digestion, assimilation and elimination, and the means by which these are brought about; enzymes and their functions; the blood and lymph; general metabolism, and the interrelations of organs, are among the important topics studied. Text: Mathews' *Physiological Chemistry*.

Laboratory.—The laboratory work is designed to familiarize the student with the compounds and processes discussed in the lectures and recitations. Laboratory guide: Mathews' *Physiological Chemistry*. Laboratory deposit, \$10.

232. PHYSIOLOGICAL CHEMISTRY I. Senior year, first semester. Class work, three hours; laboratory, six hours. Five semester credits. Prerequisite: Organic Chemistry. Professor Hughes.

This course is designed to meet the needs of students who expect to specialize in nutrition or one of the biological sciences. It treats of the chemistry of carbohydrates, lipins and proteins, and the chemical changes which these undergo during the processes of digestion and metabolism.

Laboratory.—The laboratory work is designed to familiarize the student with the compounds and processes discussed in the class work. Laboratory deposit, \$10.

233. PHYSIOLOGICAL CHEMISTRY II. Senior year, second semester. Class work, three hours; laboratory, six hours. Five semester credits. Prerequisite: Physiological Chemistry I. Professor Hughes.

This is a continuation of Physiological Chemistry I. It includes the chemistry of the body tissues and excretions.

Laboratory.—The laboratory work includes a qualitative and quantitative study of the tissues and excretions discussed in the class work. Laboratory deposit, \$10.

234. BIOCHEMICAL PREPARATIONS. Senior year, second semester. Laboratory work, fifteen hours. Five semester credits. Prerequisites: Organic Chemistry II, and Physiological Chemistry I. Professor Hughes.

This course includes the isolation, purification, and analysis of a number of compounds which are of importance in biochemistry and nutrition. Laboratory deposit, \$10.

235. PATHOLOGICAL CHEMISTRY. Elective and graduate; given when requested by a sufficient number. Class work, two hours. Two semester credits.

Prerequisite: An approved course in physiological chemistry. Professor Hughes.

This course presents the chemical facts pertaining to abnormal nutritional processes. The chemical factors involved in the causation, progress and results of disease are discussed under the following heads: Inflammation, degeneration, infection, anæmia, tuberculosis, dyspepsia, typhoid fever, jaundice, nephritis, diabetes, gout, rheumatism, intoxication.

245. MICROCHEMICAL METHODS OF ANALYSIS. Elective and graduate, given when requested by a sufficient number. Laboratory, three hours. One semester credit. Prerequisites: Elementary Organic Chemistry, and Quantitative Analysis I. Professor Brubaker.

The microscope is a very useful instrument in chemical analysis. The technical chemist finds it indispensable, and its applications are steadily increasing. The object of this course is to teach the student the various methods of using the microscope in chemical analysis, both qualitative and quantitative, applied to both inorganic substances and to vegetable or animal products. Laboratory deposit, \$7.50.

250. QUANTITATIVE ANALYSIS A. Elective and graduate, first semester. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: Chemistry II. Professor Brubaker.

This course is the first half of a year's work and covers the general procedure of gravimetric analysis, together with a discussion of chemical theory as applied to quantitative reactions. The work consists of a selected series of gravimetric determinations designed to develop accuracy in a number of operations and to introduce the procedures and principles applicable to the quantitative determination of many other substances. Reports are also made on assigned work for the study of methods of analysis not taken up in class. Textbook: *Quantitative Analysis*, by Edward G. Mahin. Laboratory deposit, \$10.

251. QUANTITATIVE ANALYSIS B. Elective and graduate, second semester. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: Quantitative Analysis A. Professor Brubaker.

This course covers the general procedures used in volumetric analysis, including the preparation of standard solutions and their use in neutralization reactions, oxidation and reduction reactions and precipitation reactions. Volumetric calculations and the theory and applications of indicators are studied in detail. Textbook: *Quantitative Analysis*, by Edward G. Mahin. Laboratory deposit, \$10.

252A. CHEMISTRY OF SOILS AND FERTILIZERS. Senior year, first semester. Laboratory, six hours. Two semester credits. Prerequisite: Quantitative Analysis I or equivalent. Assistant Professor Latshaw.

This course is planned to give the student a knowledge of the most important chemical methods used in the analysis and investigations of soils and fertilizers. Laboratory deposit, \$10.

253A. CHEMISTRY OF CROPS. Senior year, second semester. Laboratory, six hours. Two semester credits. Prerequisites: Organic Chemistry and Quantitative Analysis I, or equivalent. Assistant Professor Latshaw.

This course takes up the most important chemical methods used in the analysis and investigations of substances present in plants and plant products. Laboratory deposit, \$10.

254. DAIRY CHEMISTRY. Elective and graduate, first semester. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisites: Organic Chemistry, and Quantitative Analysis A (Chem. 250). Associate Professor Tague.

The class work is centered chiefly upon the following: A detailed study of the chemical compounds present in milk, butter, cheese, and other dairy products; chemical changes effected by conditions of handling dairy products; a review of literature relating to recent investigational work in dairy chemistry.

Laboratory.—The laboratory exercises are designed to give the student a working knowledge of the most important chemical methods used in the analysis and investigation of dairy products. Laboratory deposit, \$10.

236A. THE CHEMISTRY OF THE PROTEINS. Elective and graduate, first semester; given when requested by a sufficient number. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: An approved course in organic chemistry. Associate Professor Tague.

This course consists of a study of the chemistry of the proteins, particularly as regards their sources, isolation, purification and uses, together with their derivatives and degradation products. Laboratory deposit, \$7.50.

238. CHEMISTRY OF ENZYME ACTION. Elective and graduate, first semester. Lectures, two hours. Two semester credits. Prerequisite: Physical Chemistry. Professor Hughes.

A brief review of catalysis is made, and this is followed by a study of the physical and chemical properties of enzyme preparations and the reactions catalyzed by them. The work of this course is adapted particularly to students in biology.

240. ADVANCED QUALITATIVE ANALYSIS. Elective and graduate, first semester; given when requested by a sufficient number. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: Chemistry II. Professor Brubaker.

This course is designed to broaden the student's knowledge of chemistry by a systematic study of the properties of the acid and basic elements and their compounds as shown in a detailed study of systematic analysis. Many of the rarer elements are included. A study of the application of chemical theory to analytical reactions is taken up in considerable detail with the aim of familiarizing the student with the important theories as applied to analytical procedure. Reports are made on assigned reference work. Laboratory deposit, \$10.

241. QUANTITATIVE ANALYSIS. Sophomore year, second semester. Class work, one hour; laboratory, twelve hours. Five semester credits. Prerequisite: Chemistry II or its equivalent. Professor Brubaker.

The subject matter considered in this course is practically the same as that given in courses 250 and 251, and is arranged for students taking one of the chemistry curricula. Laboratory deposit, \$10.

242. FIRE ASSAYING. Junior year, first semester. Laboratory work, six hours. Two semester credits. Prerequisite: Quantitative Analysis. Professor Brubaker.

In this course the student becomes familiar with the ordinary methods of fire assaying. Some attention is also paid to wet assaying. Fire assays of ores containing metals such as copper, zinc, lead, bismuth, tin, silver, and gold are made. Laboratory deposit, \$10.

243. GAS ANALYSIS. Junior year, first semester. Laboratory work, three hours. One semester credit. Prerequisite: Quantitative Analysis. Professor Brubaker.

The work in this course acquaints the student with the use of standard apparatus in the analysis of gases. Analyses of air, flue and furnace, and illuminating gases are made. Laboratory deposit, \$7.50.

256. INSECTICIDES AND FUNGICIDES. Elective and graduate; given when requested by a sufficient number. Lectures and assigned reading, two hours. Two semester credits. Prerequisite: Satisfactory courses in organic chemistry and quantitative analysis. Assistant Professor Latshaw.

This course consists of a series of lectures and assigned readings on the manufacture of spray materials, the chemistry involved in mixing and the theory of their toxic actions.

257. FOOD ANALYSIS. Junior year, second semester; given when requested by a sufficient number. Laboratory work, nine hours. Three semester credits.

Prerequisites: Organic Chemistry, and Quantitative Analysis A. Associate Food Analyst De Rose.

This course includes the quantitative methods employed in the analysis of the various kinds of foodstuffs. It also includes practice in testing for the presence of adulterants, preservatives, and coloring materials. Laboratory deposit, \$10.

260. **ADVANCED QUANTITATIVE ANALYSIS.** Junior year and elective, first semester. One credit for each three hours of laboratory work. Prerequisites: Quantitative Analysis A and B. Professor Brubaker.

Under this heading provision is made for the election of any kind of quantitative chemical work not otherwise designated. The various research and state laboratories afford a large opportunity for advanced work. Laboratory deposit, \$10.

265. **HOUSEHOLD CHEMISTRY.** Elective, second semester; given when requested by a sufficient number. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: Organic Chemistry. Professor Brubaker.

The lectures cover the chemistry of numerous problems of air, water, soap, laundering, dry cleaning, food and cookery, and textiles. A portion of the lecture time is given to reciting on the subject matter of previous lectures and of the laboratory work. References are given for study.

Laboratory.—The laboratory work consists largely of quantitative exercises dealing with air, water, soap, foods, food accessories, and textiles. Laboratory deposit, \$10.

270. **CHEMISTRY PROBLEMS.** Elective, both semesters and summer school. Individual problems to fulfill the thesis requirements of students in agricultural chemistry, biochemistry, and industrial chemistry curricula are taken up in this course.

275. **CHEMISTRY SEMINAR.** Once a week, throughout the year, the officers of the department, with the more advanced students and such others as wish to, meet for papers and discussions upon topics representing the progress of chemical science, chiefly as found in the current journals. The preparation of subjects for presentation at these meetings may be made a part of the credit work of advanced students.

FOR GRADUATES

301. **CHEMICAL RESEARCH.** Excellent opportunities are offered students to undertake research work in chemistry. Such work is being constantly conducted in the laboratories of the department in connection with the Agricultural and Engineering Experiment Stations. The State Food Laboratory and the laboratories for analysis of feeds and fertilizers are also accessible to students desiring research along such lines. Much emphasis is placed upon research in the department, and all graduate students whose training is adequate are encouraged to participate. Students working out their master's theses in the Department of Chemistry are assigned to this course. Work is offered in the following lines:

Agricultural Chemistry. Professor King, Assistant Professors Latshaw and Moran.

Analytical Chemistry. Professor Brubaker and Assistant Professor Latshaw.

Organic Chemistry. Associate Professor Colver.

Biochemistry. Professor Hughes and Associate Professor Tague.

General and Physical Chemistry. Professor King and Assistant Professor Hall.

Economics and Sociology

Professor KAMMEYER
Professor BURR
Assistant Professor ANDERSON

Vocational training alone does not fully prepare a student for his life work, nor for the acceptable discharge of his duties as a citizen. It is necessary that he should have at least a general knowledge of the economic and social conditions under which he will live and work, in order that he may become a useful member of society. The state needs men and women trained for citizenship. It is the purpose of the Department of Economics and Sociology to plan and direct its work with this need in view.

A department library of well-selected books and pamphlets bearing on economics, sociology, and statistics is at the disposal of the students, and is used for collateral readings, book reviews, and reports.

COURSES IN ECONOMICS

FOR UNDERGRADUATES

101. **ECONOMICS.** Junior and senior years, both semesters and summer school. Class work, three hours. Three semester credits. Professor Kammeyer, and Assistant Professor Anderson.

This is a course in the fundamentals of economic science, including a study of man's wealth-getting and wealth-using activities as they manifest themselves in the consumption, production, exchange, and distribution of commodities and services. Budgets, factors and expenses of production, money, banking, wage systems, labor organizations, rent, interest and profits are some of the leading topics for study and class discussion. These phenomena are here studied in conjunction with the laws or social conventions which control or influence them, such as the federal-reserve systems, the farm-loan act, legal restrictions concerning commerce, strikes, child labor, trusts, monopolies, and the like. The application of economic principles to such subjects as taxation, socialism, insurance, etc., is also considered. Supplementary reading of current literature, reference books, the keeping of notes, and periodical written reports are required. A combination of textbook and lecture methods is followed. Text: *Ely's Outlines of Economics*.

106. **BUSINESS ORGANIZATION.** Senior year and elective, both semesters. Class work, one hour. One semester credit. Prerequisite: Economics. Professor Kammeyer.

Individual proprietorship, partnership and corporation as forms of business organization and management; the advantages and disadvantages of each, and legislative restrictions are studied in this course. The selling plans, advertising methods and systems of credits and collections used by typical manufacturing and distributive industries are made the basis of study and reports. Attention is given also to the origin and operation of markets and exchanges, to cost accounting, and special systems of wage payment. Instruction is by lectures and reports.

116. **MONEY AND BANKING.** Elective, both semesters and summer school. Class work, two hours. Two semester credits. Prerequisite: Economics. Professor Kammeyer.

The first half of this course is devoted to a study of the nature, history and functions of money; its place as a factor in man's economic progress, and its importance as such in his business activities as organized to-day; money standards and systems, monometallism, bimetallism, limping standard, paper standard, gold-exchange standard; coinage and coinage laws; instruments of credit, bills of exchange, drafts; clearing houses. The second half of the course takes up the subject of banking. Banking in its historic forms is briefly con-

sidered as a preparation for a more detailed study of the federal-reserve system, the federal farm-loan system, and state banks, particularly Kansas state banks. To this is added a study of savings banks, trust companies, building and loan associations and other institutional forms of credit. Instruction is by lectures and reports. Text: Holdworth's *Money and Banking*.

121. ECONOMIC GEOGRAPHY. Elective, first semester and summer school. Class work, three hours. Three semester credits. Prerequisite: Economics. Assistant Professor Anderson.

This is a discussion of the important facts of the economic world and a study of production and trade as they are influenced by geographical conditions. The geography of the more important commercial products of farm, range, forest, mine, factory, and sea; transportation and manufactures; great commercial and manufacturing centers, and types of commercial nations are considered. Stress is given to the natural resources of the United States as factors in the national development. This includes the current movement to conserve natural resources; the improvement and extension of waterways; the control of water power and water supply. Instruction is imparted by lectures, library work, and study of a text. Text: Smith's *Industrial and Commercial Geography*.

126. BUSINESS MANAGEMENT. Elective, both semesters and summer school. Class work, two hours. Two semester credits. Prerequisite: Economics. Not open for credit to students who have taken course 106. Professor Kammeyer.

Plant location and structure; the organization and management of industrial forces; distribution of manufactured goods, with especial attention given to the problems involved in relations of manufacturers, middlemen and consumers; the organization of the sales department; sales management and the art of selling; typical advertising campaigns of different classes of producers; costing and its spread to the different elements of production, are subjects studied in this course. Instruction is given by lectures, library work, and reports. Text: Jones's *Administration of Industrial Enterprises*.

131. COST ACCOUNTING. Junior year and elective, first semester and summer school. Class work, two hours. Two semester credits. Assistant Professor Anderson.

Following a review of the principles of accounting, a general survey of the more important principles of cost accounting is made. This course is concerned particularly with the subject of production costs. The student is expected to keep the principles of costing in mind throughout the whole course, to the end that he may be able to adapt these working principles to concrete problems. Attention is given to the calculation and the distribution of overhead costs, and to the organization of cost systems. Practical problems are given for solution and as means of illustrating and applying the principles. Lectures, laboratory work, and study of the text are methods of instruction. Text: Castenholz's *Cost Accounting Procedure*.

FOR GRADUATES AND UNDERGRADUATES

213. PUBLIC FINANCE. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Economics. Assistant Professor Anderson.

This course embraces a study of public revenues and expenditures; financial administration of government; financing emergencies; the historical development of revenue systems; public indebtedness; budgets; proposed reforms in local, state, and national taxation, and recent tendencies in the direction of reform, with special reference to the United States. The shifting and incidence of taxes is also made a subject of study. The aim is to give the student a knowledge of past and existing revenue systems, especially in the United States, and to acquaint him with the fundamental principles of the science of public finance. Recitations, class discussion, assigned readings, and reports are the means of instruction. Text: Hunter's *Outlines of Public Finance*.

229. TRANSPORTATION PROBLEMS. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Economics. Assistant Professor Anderson.

After a brief review of the development of transportation and a survey of railroad organization, this course constitutes especially a study of railroad transportation from the standpoint of rates and their regulations in the United States. Conditions of competition in the railroad industry; discriminations in rate making, both justifiable and unjustifiable, and pooling agreements, are subjects of special study. The need for governmental supervision of the industry, and the establishment and work of the Interstate Commerce Commission are studied. Actual cases of discriminations in rates which have been tried by the Interstate Commerce Commission are considered in order to bring out the development of the policy of the Interstate Commerce Commission, as well as to trace the increasing importance and power of the commission in the railroad industry. Instruction is by class discussion, lectures, and study of text. Text: Johnson and Van Metre's *Principles of Railroad Transportation*.

233. LABOR PROBLEMS. Elective, both semesters. Class work, two hours. Two semester credits. Prerequisite: Economics, or Sociology. Professor Burr.

The history, organization, functions, and legal status of labor unions in the United States and in the principal countries in Europe are discussed. Statistics and judicial decisions relating to strikes, boycotts, picketing, arbitration, etc., are subjects of study and investigation. The course also includes a study of the various plans that have been proposed and tried for the more equitable distribution of wealth, such as cooperation, profit-sharing, industrial partnership, etc. Instruction is by lectures, assigned readings, and reports. Text: Watkins' *Labor Problems*.

FOR GRADUATES

301. RESEARCH IN ECONOMICS. Elective, both semesters and summer school. Credit and hours arranged in conference with head of the department. Prerequisites: Such courses as the problem undertaken may require. Professor Kammeyer and Assistant Professor Anderson.

Graduate students who enroll in this course may elect for original investigation any acceptable problem in the general field of economics.

COURSES IN SOCIOLOGY

FOR UNDERGRADUATES

151. SOCIOLOGY. Elective, both semesters and summer school. Class work, three hours. Three semester credits. Professor Burr.

A careful study is made of the fundamental principles of social life as related to other scientific principles. Special consideration is given to their practical application to social action and organization. While proper attention is given to social pathology; poverty, its causes and remedies; crime, its causes and prevention; and to remedial legislation and correctional agencies—special emphasis is placed upon normal constructive social evolution. The processes of socialization, social forces, and social control, particularly in their relation to commercial, industrial and professional leadership, receive special stress. The purpose is to give the student sufficient knowledge of the origins, processes, and meanings of social action to lead him to more specialized study if he so elects, or otherwise to enable him to become an intelligent and leading factor in either urban or rural community life. Problems and opportunities are given for original investigation. Assigned library readings and written reports are required. Instruction is by recitation, class discussion, and lectures. Text: Hayes's *Introduction to Sociology*.

156. RURAL SOCIOLOGY. Elective, both semesters. Class work, three hours. Three semester credits. Professor Burr.

The student should, preferably, precede this course by one in sociology. The principles of sociology are applied to rural conditions. A careful review is made of the history of the country-life movement. A special study is made of the social values and problems of the rural community, including the home, the school, the church, societies and organizations, and the relation of the state to general rural welfare. Special emphasis is placed upon the study of

the community as such, its normal area, the relationship between city and country, with theories and methods for unifying and socializing the enlarging community. The social effect of new rural economic movements is briefly dealt with. The purpose of the course is to enable the student to qualify for a more specialized study of rural organization, or to become an intelligent and leading factor as a citizen in a rural community. Text: Gillette's *Rural Sociology*.

FOR GRADUATES AND UNDERGRADUATES

257. SOCIAL PROBLEMS. Elective, both semesters and summer school. Class work, two hours. Two semester credits. Prerequisite: Sociology. Professor Burr.

Social activities and social legislation and constructive methods of dealing with present social conditions are studied. In the early part of the course a general study is made of social conditions growing out of immigration, modern industry, city developments, and population movements. Next is taken up a study of charity and reform organization, including special attention to "case-taking." Such organized activities are studied with reference to both urban and rural problems. Further attention is given to the condition and care of the wards of society: deaf, blind, epileptic, insane, criminal; delinquent, dependent, and defective children; and the laws and institutions seeking to solve the problems involved. The purpose is to give the student a working knowledge of these social problems, and qualify him, if he so wishes, for a position of professional service in social and industrial welfare organization. Instruction is by lectures, text and library work. Opportunity is given for original investigation and practical experience.

267. COMMUNITY ORGANIZATION. Elective, both semesters and summer school. Class work, three hours. Three semester credits. Prerequisite: Sociology. Professor Burr.

A study in detail is made of organizations now working in the community field on a rural, civic, county, state, and national basis. The work is considered from the standpoint of local economic and social development. The functions of the local community are classified, each function carefully analyzed, and a study made of the organizations and projects by means of which the community performs its various functions. The student is guided in a study of his own community on a functional basis. About one-third of the course will consist of a series of lectures on rural leadership. The course is especially adapted to the needs of county agents, home demonstration agents, welfare officers, county health nurses, and the like. Instruction is given by means of class discussions, library work, and lectures. Text: Burr's *Rural Organization*.

270. ADVANCED RURAL SOCIOLOGY. Elective. By appointment. Three semester credits. Prerequisite: Rural Sociology. Professor Burr.

This course is a continuation of Rural Sociology and includes a wide field of reading in the literature of rural life. Original research work is carried out and a thesis is prepared.

275. ECONOMIC AND SOCIAL SURVEYS. Elective. By appointment. Credit and hours of work arranged in consultation with the head of the department. Prerequisite: Economics or Sociology. Professor Burr.

Communities are surveyed for the assembling of facts concerning trade, communication and transportation, church activities, school conditions, etc. The course includes reading, field research work, and the preparation of a thesis.

FOR GRADUATES

351. RESEARCH IN SOCIOLOGY. Elective, both semesters and summer school. Credit and hours of work arranged in consultation with head of the department. Prerequisites: Such courses as the problem undertaken may require. Professor Burr.

Graduate students who enroll in this course may elect for original investigation any acceptable problem in the field of sociology.

Education

Professor HOLTON
 Professor WILLIAMS
 Professor ANDERSON
 Professor PETERSON
 Professor STRICKLAND

Associate Professor WILLIAMSON
 Assistant Professor BRAINARD
 Assistant Professor DAVIDSON
 Doctor HOLTZ

The courses in this department have for their controlling purpose the professional training of teachers. Two types of courses are offered: (1) courses that give the broad, fundamental principles upon which public education is based, and (2) courses that develop technic and skill in school management and the organization of the subject matter of the curricula. All courses are based upon the proposition that education supported by public taxation should function in social and vocational efficiency.

The State Board of Education has set up the following standards for the certification of teachers:

1. Three-year Certificates Renewable for Life.
 - a. Complete four years of College work.
 - b. At least eighteen hours of the four years' work must be taken in the Department of Education, as follows: (1) Three semester hours in Psychology, three in Educational Administration, and three in Educational Psychology or Educational Sociology. (2) Nine semester hours elected from the Department of Education.
 - c. Credit obtained in college courses in the teaching of special subjects will be accepted to the extent of three semester hours to apply on the required credits in Education, provided that these courses are conducted with the approval of the College Department of Education and are offered in the junior or senior year, with preliminary preparation as follows:

English.—Not less than fifteen semester hours of college credit, following at least three high-school units.

Foreign Language.—Not less than fifteen semester hours of college credit in the language in which the teachers' course is taken, following at least three high-school units or equivalent in some foreign language or languages.

Mathematics.—Not less than fifteen semester hours of college credit, following at least two high-school units.

Physical Science.—Not less than ten semester hours of college credit in the science in which the teachers' course is taken, following at least two high-school units or equivalent in physical science.

Biological Science.—Not less than ten semester hours of college credit in the science in which the teachers' course is taken, following at least two high-school units or its equivalent in biological science.

History.—Not less than ten semester hours of college credit, following at least two high-school units or equivalent.

In any of the above, six hours of college credit will be regarded as the equivalent of one high-school unit.
 - d. Valid in any elementary or high school in Kansas.
2. Three-year Certificates Renewable for Three-year Periods.
 - a. Complete at least two years of College work, including three semester hours in Psychology, three in Educational Administration, and three in Methods of Teaching or equivalent courses in the Department of Education which may be acceptable to the State Board of Education.
 - b. Valid in any elementary school, junior high school or high school offering not more than a two-year course of study.

3. Certificates for Teachers and Supervisors of Public-school Music.
 - a. Complete at least two years of College work, including the following:
 - (1) Not less than twenty-eight semester hours in technical courses in Music.
 - (2) Three semester hours in Psychology, three in Educational Administration, and three in Methods of Teaching.
 - (3) Not less than eight semester hours in methods of Teaching Public-school Music.
 - b. Valid for three years and may be renewed for three-year periods.
4. Certificates for Teachers and Supervisors of Physical Education.
 - a. Complete at least two years of College work, including the following:
 - (1) Not less than twenty-eight semester hours in the Department of Physical Education.
 - (2) Three semester hours in Psychology, three in Educational Administration and three in Methods of Teaching.
 - b. Valid for three years and may be renewed for three-year periods.
5. Certificates for Teachers and Supervisors of Manual Training.
 - a. Complete at least two years of College work, including the following:
 - (1) Not less than twenty-eight semester hours in the Department of Shop Practice.
 - (2) Three semester hours in Psychology, three in Educational Administration and three in Methods of Teaching.
 - b. Valid for three years and may be renewed for three-year periods.
6. Certificates for Teachers of Vocational Agriculture.
 - a. Complete four years of College work, including the following:
 - (1) Not less than forty-two semester hours in technical agriculture.
 - (2) Eighteen semester hours in the Department of Education: viz., three in Psychology, three in Educational Administration, three in Educational Sociology, three in Agricultural Education, three in Special Methods in Agriculture, and three in Supervised Observation and Teaching.
 - b. Valid for three years and may be renewed for life.
7. Certificates for Teachers of Vocational Home-making.
 - a. Complete four years of College work, including the following:
 - (1) Thirty-four semester hours in technical home economics, as required in the curriculum in Home Economics, and six semester hours of electives; viz., three semester hours in Child Welfare, and three semester hours in Practice Work in Household Management.
 - (2) Eighteen hours in the Department of Education; viz., three in Psychology, three in Educational Administration, three in Educational Sociology, three in Home Economics Education, three in Special Methods in Home Economics, and three in Supervised Observation and Teaching.
 - b. Valid for three years and may be renewed for life.
8. Requirements for One-year State Certificate.
 - a. A one-year elementary state certificate may be granted to applicants of good moral character who are not less than 18 years of age on the date of issuance of the certificate (September 1), and who have completed a four-year course of study in a Kansas accredited high school.
 - b. Applicants must present transcripts for eight semester hours of residence credit earned in a Kansas college or university accredited by the State Board of Education and offering four years of college work, which credit must have been earned in the school year immediately preceding the year for which the

certificate is issued. A minimum of four semester hours with not to exceed a maximum of five semester hours shall be in professional courses and the remainder in standard academic college courses.

- c. This one-year teacher's certificate is renewable for a second year only upon presentation of an additional eight hours of college credit earned in residence during the year immediately preceding the year for which the certificate issued. The division of this additional credit to be the same as in the original, provided further, the applicant comes recommended by the county or city superintendent.
- d. All certificates issued under this law shall bear date of September 1, and shall terminate July 1 of the year following.

COURSES IN EDUCATION

FOR UNDERGRADUATES

Psychology A, B, C, and D are parallel courses in introductory psychology. The content in these courses is fundamentally the same, but the emphasis differs according to the preparation and needs of the various groups of students as indicated below.

101. PSYCHOLOGY A. Freshman and sophomore years, second semester. Class work, three hours. Three semester credits. Required for three-year state certificate. Professor Peterson.

This is an introductory course in psychology for teachers. It consists primarily in a study of the nature of the learning process and of the conditions and methods of study which favor the most rapid and effective progress in learning. The distribution and significance of individual differences and other related topics also receive attention.

102. PSYCHOLOGY B. Freshman year, first semester. Class work, three hours. Three semester credits. Required for state teachers' certificate in music. Professor Peterson.

This is an adaptation of course 101 to the special needs of music teachers. Less time is devoted to the study of learning and some attention is given to the analysis of musical ability into its elemental capacities. A study is made of the methods of measurement of some of these capacities.

103. PSYCHOLOGY C. Junior year and elective, first and second semesters. Class work, three hours. Three semester credits. Required for state life certificate. Professor Peterson.

The aim of this course is to give a fair acquaintance with the more fundamental facts and problems of the entire field of psychology and with the methods by which new facts are ascertained and evaluated. Special attention is given to the psychological factors which directly influence personal efficiency.

104. PSYCHOLOGY D. Junior or senior elective, both semesters. Class work, three hours. Three semester credits. Professor Peterson.

This course is similar to course 103, but more attention is given to those phases of individual and applied psychology which bear directly on the practical problems of daily life. Students in agriculture, engineering, and industrial journalism who desire some work in psychology should enroll in this section.

105. EDUCATIONAL ADMINISTRATION A. Elective, first or second semester. Class work, three hours. Three semester credits. Limited to juniors, seniors and postgraduate students. Required for state life certificate. Professor Andrews or Professor Williams.

This course is a study of the organization of state, city, and county school systems. The rural schools of Kansas are given special consideration. The responsibilities and duties of boards of education, superintendents, principals and teachers, the community and civic organizations are carefully considered.

The school law of Kansas, as defined by statute and judicial interpretation, is an important part of the course.

106. EDUCATIONAL ADMINISTRATION B. Elective, first or second semester. Class work, three hours. Three semester credits. Limited to juniors, seniors and postgraduate students. Professor Williams.

This course is similar to course 105 in that it discusses the general principles of educational administration in a democracy, but differs from it in that it gives special emphasis to the administration and supervision of vocational agriculture, home-making, and trades and industry. Students preparing to teach these subjects should take this course rather than course 105.

107. SCHOOL MANAGEMENT. Elective, first or second semester. Class work, three hours. Three semester credits. Required for state elementary certificate, and for the certificate in music. Limited to freshmen and sophomores. Professor Andrews or Professor Williams.

This course comprises a survey of classroom and school administration and the management of pupils in groups. Problems of discipline, school sanitation and hygiene and school health, and general classroom efficiency are considered. The student is shown how to develop an efficient classroom routine and class program.

109. EDUCATIONAL PSYCHOLOGY. Elective, first or second semester, junior or senior years. Class work, three hours. Three semester credits. Prerequisite: General Psychology. Professor Strickland.

This course deals with the native equipment of human beings which serves as a basis of education, the interpretation of data concerning such human characteristics, and the psychology of learning.

110. ELEMENTARY METHODS. Class work, four hours. Two semester credits. Required for one-year state certificate.

This course is designed particularly for high-school graduates who are working for the one-year certificate. The course deals with the problems of instruction and management in the rural school, primarily the one-room school.

111. METHODS OF TEACHING A. Elective, second semester, sophomore year. Class work, three hours. Three semester credits. Professor Strickland.

This course is designed particularly for those who wish to teach in grades and junior high schools on the two-year certificate. It deals with the problems of subject matter, its presentation, classroom organization, and procedure. Some attention is given to the practical application of psychology to the teaching process.

112. METHODS OF TEACHING B. Elective, first and second semesters, junior and senior years. Class work, three hours. Three semester credits. Prerequisite: General Psychology. Professor Strickland.

This course is for those who expect to teach upon completion of a four-year college course. It deals from the standpoint of administration and high-school teaching with the problems of subject matter, its presentation, and classroom organization and procedure. Particular attention is given to the practical application of psychology to the teaching process.

113. HISTORY OF EDUCATION A. Elective, first or second semester. Class work, three hours. Three semester credits. Professor Andrews.

This course attempts an outline survey of the development of educational institutions and practices in Europe and America. Institutional history rather than educational theory is emphasized. An effort is made to present the history of education as a conscious evolution of society.

118. EDUCATIONAL SOCIOLOGY A. Elective, first or second semester. Class work, three hours. Three semester credits. Professor Holton.

This course deals with the concrete objectives of education considered as a process of social adjustment; the meaning of education in a democracy; the educative functions of the home, the community, the church and the school;

the school as a special environment; the meaning of labor and leisure; cultural and vocational education; intellectual and practical studies; and physical and social studies.

119. EDUCATIONAL SOCIOLOGY B. Elective, first or second semester. Class work, three hours. Three semester credits. Professor Holton.

This course is similar to course 118 in general principles of education in a democracy, but differs from it in that it deals with the concrete objectives in vocational agriculture, homemaking, and trades and industry. Students preparing to teach these subjects should take this course rather than course 118.

125. VOCATIONAL EDUCATION A. Elective, first or second semester. Class work, three hours. Three semester credits. Required of all candidates for state teachers' certificates who are preparing to teach agriculture, home economics, manual training or industrial subjects. Prerequisite: Educational Administration. Professor Williams.

A comparative study is made of the provisions for the different phases of vocational education in Kansas and other states and countries, and of the principles underlying such education. The relation of vocational education to the community, county, state, and nation, and the part to be played by each in its development is emphasized. Types of schools, courses of study, adjustment of school work to community needs, and the equipment and administration of the differing vocational schools and classes are studied. The aim of the course is to fit the student to plan, teach and administer or supervise vocational work, especially in high schools. The plans and requirements of the state and federal boards for vocational schools and classes are carefully studied.

132. SPECIAL METHODS IN THE TEACHING OF HOME ECONOMICS. Elective, first or second semester. Class work, three hours. Three semester credits. Required of all candidates for the state vocational home-making certificate, and expected of all candidates for the state teachers' certificate who are preparing to teach either vocational home-making or general home economics. Prerequisites: Foods I and II, Clothing I and II, and Psychology. Prerequisite or parallel: Home Economics Education. Associate Professor Williamson.

This course applies the principles of teaching to the selection and development of home-economics subject matter in lessons for all types of pupils and to the conduct of laboratory and classroom exercises. The handling of the school and home projects is particularly stressed.

136. SPECIAL METHODS IN THE TEACHING OF AGRICULTURE. Elective, second semester. Class work, three hours. Three semester credits. Required of all candidates for state teachers' certificates who are preparing to teach agriculture. Prerequisite: Psychology. Professor Williams or Assistant Professor Davidson.

Training in planning lessons, organizing materials, and conducting class and laboratory work in agriculture is the purpose of this course. The work includes observation, criticism, and reports of class exercises, a study of work done in high schools, and the making and criticism of lesson plans and outlines. Special attention is given to the selection of laboratory materials, the supervision of laboratory exercises, and the adaptation of class and laboratory work to each other.

140. SPECIAL METHODS IN THE TEACHING OF INDUSTRIAL ARTS SUBJECTS. Elective, second semester. Class work, three hours. Three semester credits. Expected of all candidates for the state teachers' certificate who are preparing to teach industrial subjects. Prerequisite: Mechanical Drawing II, Woodworking II, and Educational Psychology. Professor Williams.

The various lines of work included under the head of industrial arts are studied and a series of progressive lessons worked out in each of these lines emphasizing important elements. A study is made of the various materials employed and the methods of utilizing them for the needs of pupils. The

arrangement of courses, the outlines and presentation of assignments, the preparation of assignments, the preparation of laboratory material and the conduct of laboratory exercises are taken up. The work includes recitations, class discussions, assigned readings, and written reports.

141. SPECIAL METHODS IN THE TEACHING OF PHYSICS. Elective. Class work, two hours; laboratory, three hours. Three semester credits. Professor Raburn.

(See Department of Physics, course 224.)

142. SPECIAL METHODS IN THE TEACHING OF MATHEMATICS. Elective. Class work three hours. Three semester credits. Associate Professor Stratton.

(See Department of Mathematics, course 122.)

143. SPECIAL METHODS IN THE TEACHING OF HISTORY. Elective, first or second semester. Class work, two hours. Two semester credits. Professor Iles.

(See Department of History, course 127.)

144. SPECIAL METHODS IN THE TEACHING OF ENGLISH. Elective, second semester and summer school. Class work, three hours. Three semester credits. Professor Davis and Associate Professor Rice.

(See Department of English, course 134.)

160. SUPERVISED OBSERVATION AND TEACHING IN HOME ECONOMICS. Elective, first or second semester. Three semester credits. Limited enrollment. Prerequisites: Foods I and II, Clothing I and II, and Home Economics Education. Prerequisite or parallel: Special Methods in the Teaching of Home Economics. Associate Professor Williamson.

This course is required of all those qualifying to teach vocational home-making and is urged upon those who are qualifying for the state teachers' certificate for teaching general home economics. Supervised teaching is carried on in the sewing and cooking classes of the junior high school of Manhattan.

161. SUPERVISED OBSERVATION AND TEACHING IN AGRICULTURE. Elective, first or second semester. Three semester credits. Expected of all candidates for state teacher's certificate who are preparing to teach agriculture. Prerequisites: Educational Psychology, and Special Methods in the Teaching of Agriculture. Assistant Professor Davidson.

Students expecting to teach are required to do three weeks observation and practice teaching in vocational agricultural classes in the Manhattan high school, and other rural high schools by arrangement. In addition, one class period through the semester is required for group study of classroom problems. Double supervision by the College instructor and vocational teacher in the practice department is given. Both instructors criticize lesson plans and presentation.

162. SUPERVISED OBSERVATION AND TEACHING IN INDUSTRIAL ARTS. Elective, first or second semester. Three semester credits. Expected of all candidates for state teachers' certificates who are preparing to teach industrial arts. Prerequisite: Educational Psychology, and Special Methods in the Teaching of Industrial Arts Subjects. Professor Williams.

Industrial classes conducted by experienced teachers are visited and careful observations are made in regard to sequence of courses, methods of presentation, interest, class order, and other phases of class work. Reports are presented on this work for discussion. Students are assigned teaching work under careful supervision, results are noted and suggestions are made for individual improvement.

163. SUPERVISED TEACHING AND OBSERVATION IN SCIENCE. Elective, first semester, juniors or seniors. Three semester credits. Prerequisites: Methods of Teaching or Educational Psychology and at least ten hours of college credit in the science to be taught. Professor Strickland.

This course is designed for those preparing to teach science in high schools. Three weeks observation and practice teaching in a science are required. In addition, one class period through the semester is devoted to a group study of lesson plans, special methods and devices, organizations of courses, etc.

FOR GRADUATES AND UNDERGRADUATES

201. RURAL EDUCATION. Elective, first or second semester. Class work, three hours. Three semester credits. Prerequisite: Educational Administration. Professor Williams.

This course deals with extension education, boys' and girls' club work, the problems of the rural high school, one-room schools, consolidation, social centers, farmers' organization, and all forms of organized community life in the open country, in so far as they bear on the problems of public education. A certain amount of field work is required in connection with the course.

208. THE PSYCHOLOGY OF CHILDHOOD AND ADOLESCENCE. Elective, first or second semester. Three semester credits. Prerequisite: Psychology A, B, C, or D. Professor Peterson.

The purpose of this course is to give a clearer understanding of the interests and activities of childhood and adolescence, with an appreciation of their significance for learning and for the development of those habits, attitudes, purposes, and standards of conduct which constitute character. The course includes a study of the following topics: norms of physical development, inherited traits, habit formation, the learning process, play, the social instincts of childhood and adolescence, and the development of intelligence and morality.

211. MENTAL MEASUREMENTS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Psychology. Professor Peterson.

This course deals with the methods and devices employed and the more significant results so far obtained in the measure of mental alertness, special aptitudes, and character traits. It includes a study of the values and limitations of mental measurements in meeting some of the crucial problems of vocational and educational guidance, classification and promotion in the schools, segregation and treatment of mental defectives and delinquents, employment, immigration, racial antipathy, etc. Each student has an opportunity to obtain practical experience in giving tests and in the statistical evaluation and interpretation of results.

212. EDUCATIONAL TESTS AND MEASUREMENTS. First semester. Class work, three hours. Three semester credits. Prerequisites: General Psychology, and Educational Psychology. Professor Strickland.

This course is a study of the problems of measuring achievement as distinguished from intelligence testing. The values of tests as teaching tools, the errors to be avoided, the technique of constructing and using standardized and objective tests, and the interpretation of results are given consideration.

213. ABNORMAL PSYCHOLOGY. Elective, senior year, second semester. Class work, three hours. Three semester credits. Prerequisite: Psychology C or D. Professor Peterson.

This course is devoted mainly to a study of such manifestations of faulty integration of bodily activities and mental functions as are found in hysteria, dreams, hypnotism, trances, multiple personality, etc. Critical attention is also given to certain questionable concepts of abnormal psychology which are rampant in current literature and to prevalent practices in dealing with mental disorders.

215. APPLIED PSYCHOLOGY. Elective, first or second semester. Class work, two hours. Two semester credits. Prerequisite: Psychology. Professor Peterson.

A study is made of the psychological conditions of personal, industrial and business efficiency as determined by observation and experiment in such special fields as advertising, salesmanship, employment, scientific management, etc. Special attention is given to the use of psychological tests in employment, vocational guidance, etc.

216. ADVANCED PSYCHOLOGY. Elective, first or second semester. Class work, three hours. Three semester credits. Prerequisite: Psychology. Professor Peterson.

The fundamental problems, methods, and interpretations of general psychology are studied critically in this course.

217. EXPERIMENTAL PSYCHOLOGY OF THE HIGHER MENTAL PROCESSES. Elective, first or second semester. Class work, three hours. Three semester credits. Prerequisite: Advanced Psychology. Professor Peterson.

As an introduction to the types of problems encountered and to the basic methods of procedure essential to the analysis of the thought processes, a study is made of a few representative experiments in animal and sensorimotor learning. This is followed by a survey of the experimental literature on the higher mental processes with special attention to the more objective studies in the experimental analysis of the thought processes. Approximately half the time is devoted to laboratory work.

219. THE CURRICULUM. Elective, first or second semester. Class work, three hours. Three semester credits. Limited to juniors, seniors, and postgraduate students. Professor Andrews.

An attempt is made in this course to discover the fundamental requirements of our modern life upon the schools. A search is made for educational objectives in the light of the above requirements and a catalogue of these objectives is attempted. Each subject in the curriculum is examined for its minimum essentials both in the elementary school and the high school. The course proceeds through readings, research on community problems, and lectures.

221. EXTENSION METHODS AND PROBLEMS. Elective, second semester. Class work, two hours. Two semester credits. Professor Williams and members of the Extension Division.

The origin and development of extension work, its aim and purposes and relation to other general educational activities are briefly reviewed. The organization and administration of extension work under the Smith-Lever law and the part taken by colleges and the Department of Agriculture; types of extension work conducted by bankers, railroads, manufacturers, and other agencies; and future problems of extension work, are studied.

223. STATISTICAL METHODS APPLIED TO EDUCATION. Elective. Class work, three hours. Three semester credits. Professor Andrews.

The aims of the course are: (1) to organize material and data of educational experience and research for statistical interpretation; (2) to develop skill and confidence in the use of statistical methods; (3) to provide discussions and interpretations of statistical methods employed in scientific studies in education; (4) to give experience in the computation of statistical constants and to develop the ability of graphical representation and interpretation.

226. VOCATIONAL EDUCATION B. Elective, second semester and summer school. Class work, three hours. Three semester credits. Professor Williams.

An intensive study is made of the administration and supervision of the different fields of vocational education, including agriculture, home-making, trade and industrial and commercial education. A study of curricula and curriculum building in the different vocational fields in relation to community needs is emphasized.

The work consists of lectures, reports, and class discussions. Each student is required to choose a project and to carry on special investigation in his chosen field.

FOR GRADUATES

301 and 302. EDUCATIONAL SEMINAR I AND II. Open to candidates for the master's degree. First and second semester, respectively. Class work, two hours. Four semester credits on completion of both courses. Prerequisites: Psychology, and Educational Administration. Professor Holton and other members of the graduate faculty.

The work consists of lectures, reports, and class discussions. Each member of the seminar chooses a topic early in the term for special investigation. Preliminary reports are made to the class from time to time and the final results of the study are embodied in a carefully prepared report.

303. EDUCATIONAL SOCIOLOGY C. Open to candidates for the master's degree. Both semesters and summer session. Class work, three hours. Three semester credits. Professor Holton.

This course has for its purpose the discovery of the fundamental social objectives for the curricula in high schools and colleges.

306. EDUCATIONAL ADMINISTRATION C. Class work, three hours. Three semester credits. Professor Andrews.

Fundamental problems of public-school administration are assigned to each student for investigation and report. Among these are finance, legislative and supervisory functions of principals and superintendents, measurement of the educational product, school buildings, auxiliary educational agencies, the responsibility of the community and various ways of meeting it, health and physical training, and legislative and judicial acts as affecting education.

307. HISTORY OF EDUCATION B. Elective. Class work, three hours. Three semester credits. Professor Andrews.

The history of education in the classical civilizations, with some attention to the Orient, will be considered. The rise of the Christian church and its part in the preservation of learning and its educational institutions are studied. The Renaissance and the resulting modification of educational theory and practice receive careful attention. Finally we consider the modern scientific and social view, with its problems and purposes.

310. PSYCHOLOGY OF TEACHING AND LEARNING. First or second semester. Two semester credits. Professor Peterson.

This is a graduate course organized at the suggestion of members of the College Faculty who desire to improve scholastic standards in the College through a closer conformity of procedure to the laws and conditions of economical learning. An analysis is made of the various forms of learning and of the conditions favorable to the rapid development and effective functioning of knowledge, skills, attitudes and purposes. Emphasis is placed chiefly upon those conditions of learning which are directly under the individual or collective control of college and high-school instructors. Methods and devices for directing and motivating the work of students through the objectification of aims and achievements are given special consideration in the light of the results of mental tests and educational measurements made in our own College and elsewhere.

325. RESEARCH IN EDUCATION. Required of all candidates for the degree of Master of Science whose major work is in the Department of Education. First and second semesters. Hours of work and credit arranged in conference with the head of the department.

The problem selected for research and investigation must be approved by the Graduate Council.

330. AGRICULTURAL EDUCATION B. First or second semester. Class work, three hours. Three semester credits. Professor Williams.

This is a research survey course in the field of agricultural education, and is required of all candidates for the degree of Master of Science whose major work in the Department of Education is in the field of agricultural education. The problem selected for research and investigation must be approved by the Graduate Council.

COURSES IN RELIGIOUS EDUCATION

The purpose of courses in religious education is twofold: first, to train students in the method of establishing social control through the implanting of ideals in childhood, and nurturing them carefully through youth, in order to develop a generation of those who would live under the guidance and pro-

pulsion of religious and moral ideals, and thus achieve the highest social usefulness; and second, to serve as a basis for preministerial or prereligious vocational training.

The following courses, while acceptable for elective credit in College curricula, will not be accepted by the State Board of Education as professional subjects in education required for a state teacher's certificate:

180. RELIGIOUS EDUCATION A. Elective, first semester. Class work, two hours. Two semester credits. Doctor Holtz.

This course comprises a study of the origin of the Bible; the Bible as a social inheritance; the Old Testament history with special emphasis upon the social message of the prophets; the New Testament with attention given to the social teachings of Christ.

182. RELIGIOUS EDUCATION B. Elective, second semester. Class work, two hours. Two semester credits. Doctor Holtz.

The fundamental instincts, the physiological and psychological characteristics of the various stages of development, and the best methods of moral and religious instruction suited to these stages are studied in this course.

184. RELIGIOUS EDUCATION C. Junior or senior, elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Psychology. Doctor Holtz.

A study is made of the recognized principles underlying modern religious education; the organization of Sunday schools, the subject matter best adapted to each department of the organization; and the application of modern methods of teaching. Given 1923-'24 and alternate years thereafter.

English

Professor DAVIS	Assistant Professor ELCOCK
Professor CONOVER	Instructor BOWER
Professor ROCKEY	Instructor GARVEY
Associate Professor RICE	Instructor RUSHFELDT
Associate Professor MATTHEWS	Instructor ABERLE
Associate Professor FAULKNER	Instructor BOGUE
Associate Professor RUSSEL	Instructor DEAN
Assistant Professor STURMER	

Ability to think accurately and speak well, and capacity to appreciate the world's best literature are recognized essentials of a liberal education. The work of the Department of English is to acquaint the student with the best standards of English practice and appreciation and to encourage him to maintain these standards in all his work. To this end the department offers studies in cultural and technical English and special drills in expressing thought freely and effectively in matters touching the vital interests of the student. The study of the English language and literature is thus made the means of increasing his power and efficiency.

COURSES IN ENGLISH LANGUAGE

FOR UNDERGRADUATES

101. COLLEGE RHETORIC I. Freshmen and sophomore years, both semesters and summer school. Class work, three hours. Three semester credits. Prerequisite: Three units of high-school English. Professors Davis, Conover, and Rockey, Associate Professors Rice, Matthews, Russel, and Faulkner, Assistant Professors Sturmer and Elcock, Miss Bower, Miss Garvey, Miss Rushfeldt, Miss Aberle, Miss Bogue, and Miss Dean.

Beginning with a study of the selection of material, the planning, and the writing of compositions, this course reviews the essentials of correct and effective diction and sentence structure. The study of the sentence is accompanied by the writing of themes, largely narrative and expository, and business letters. Use of the library is suggested by prescribed and suggested reading lists. The

aim of the course is to relate English composition to the student's real language needs. Texts: Thomas, Manchester, and Scott, *Composition for College Students*; Smart, *Handbook of Effective Writing*; and Cunliffe and Lomer, *Writing of To-day*.

104. COLLEGE RHETORIC II. Freshman year, both semesters. Class work, three hours. Three semester credits. Prerequisite: College Rhetoric I. Professors Davis, Conover, and Rockey, Associate Professors Rice, Matthews, Russel, and Faulkner, Assistant Professors Sturmer and Elcock, Miss Bower, Miss Garvey, Miss Rushfeldt, Miss Aberle, Miss Bogue, and Miss Dean.

This course is a continuation of College Rhetoric I. It begins with a study of paragraph structure. It then presents the basic principles of argument, description, and narration. Frequent themes are written upon practical as well as literary subjects. The aim of the course is to raise student standards in English, both in appreciation and in practice. Texts: Thomas, Manchester, and Scott, *Composition for College Students*; and Cunliffe and Lomer, *Writing of To-day*.

105. COLLEGE RHETORIC II—SPECIAL PRACTICE. Freshman year, both semesters. Class work, three two-hour practice periods. Three semester credits. Prerequisite: College Rhetoric I. Professor Davis, Associate Professors Matthews and Faulkner.

This course parallels the regular College Rhetoric II course, and is arranged to accommodate those students that show a special aptitude for writing and that expect to make writing in some form their profession. Admission to the course is by special permission only.

107. SPECIAL ENGLISH. Freshman year, both semesters. Classes formed when need arises. Class work, three hours. No credit. Associate Professor Rice, Assistant Professor Elcock, and Miss Aberle.

This course is a review of the essentials of English composition, accompanied by drills in sentence structure and in idiomatic expression, by special exercises, and by consultations. It is required of any student assigned to College Rhetoric I or College Rhetoric II who within the first few weeks of the work of that course shows that he is unable to express his ideas clearly and accurately. Textbook: Smart, *Handbook of Effective Writing*.

110. ENGINEERING ENGLISH. Senior year, second semester; not open to freshmen and sophomores. Class work, two hours. Two semester credits. Prerequisite: College Rhetoric II. Professor Rockey, Associate Professors Matthews and Faulkner.

This is an advanced course in English particularly adapted to the needs of engineers. The general problems of engineering writing are discussed. Specific assignments are made in the writing of business letters relating to engineering and in the preparation of technical manuscripts and reports. Essays of especial value to the engineer are read and analyzed. Texts: Sypherd, *Handbook of English for Engineers*; Aydelotte, *English and Engineering*.

113. ADVANCED COMPOSITION I. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: College Rhetoric II. Professor Conover and Associate Professor Matthews.

In this course special emphasis is given to the subject of exposition. The subjects of the themes required are taken as far as possible from the student's particular field of work. Models of reports, explanations, and general expository work are carefully studied. Text: Curl, *Expository Writing*.

116. ADVANCED COMPOSITION II. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Advanced Composition I. Professor Conover and Associate Professor Matthews.

Narrative writing is studied in this course, both in its relation to the other forms of composition and as an independent form. The practical forms of narrative are studied in detail, and attention is given to the short story.

122. COMMERCIAL CORRESPONDENCE. Elective, first semester and summer school. Class work, three hours. Three semester credits. Prerequisite: Col-

lege Rhetoric II. Professor Davis and Associate Professors Matthews and Faulkner.

This course comprises a thorough review of the routine types of business correspondence and a study of the writing of adjustment, credit, collection, and sales letters. A close study is made of the principles of effective writing as they are found applied in the best writing in the commercial world. Text: Dolch, *Manual of Business Letter Writing*.

123. WRITTEN AND ORAL SALESMANSHIP. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: College Rhetoric II, Commercial Correspondence. Professor Davis, Associate Professors Matthews and Faulkner.

This course continues the work of Commercial Correspondence. Special attention is paid to the writing of follow-up systems of sales letters and to the composition and display of circular material and catalogues. The basic principles of advertising and the psychology of selling are emphasized. Special practice is given in the various forms of sales talks, and actual sales practice with commercial concerns is arranged for.

128. ORAL ENGLISH. Elective, first semester and summer school. Class work, three hours. Three semester credits. Prerequisite: College Rhetoric I. Professor Rockey and Associate Professor Matthews.

This course offers a study of the principles of oral composition as applied in conversation and informal discussion. Especial attention is paid to the correction of the grammatical faults of everyday speech and to the application of rhetorical principles to informal speech and discussion. For subject matter students are directed to current happenings with particular attention to such cultural subjects as painting, music, and literature.

134. METHODS OF TEACHING ENGLISH. Elective, second semester and summer school. Class work, three hours. Three semester credits. Prerequisite: College Rhetoric II. Professor Davis and Associate Professor Rice.

This course is planned to meet the needs of those who are called upon to teach English in connection with the applied sciences. The course of study, the application of English instruction to life needs, and definite methods of motivating English instruction are especially considered.

137. AGRICULTURAL ENGLISH. Senior year, first semester. Class work, three hours. Three semester credits. Prerequisite: College Rhetoric II. Professors Davis and Conover. Associate Professors Matthews and Faulkner.

This course consists of a rapid review of the essentials of English composition as applied to the business writing of the modern farmer. Business correspondence, bulletin writing, the organization of short business talks, and the basic principles of farm advertising are considered. The problems of writing that confront the county agent, the high-school teacher of agriculture, and the farm manager are made the subject of discussion and practice.

FOR GRADUATES AND UNDERGRADUATES

201. FARM ADVERTISING. Elective, first semester. Class work and practice, three hours. Three semester credits. Prerequisite: College Rhetoric II. Professor Davis and Associate Professor Faulkner.

How to advertise all kinds of farm produce in order to secure regular customers for parcel post or direct delivery is the object of this course. The student is shown how to write the most effective copy for display advertising and handbills, and how to feature the central point in each advertisement. The course includes the collection of the most important facts concerning farm produce and such study of markets and marketing as is necessary. Classes in this course are organized upon request of the Division of Agriculture.

204. FARM BULLETINS. Elective, second semester. Work arranged by appointment. Two semester credits. Prerequisite: College Rhetoric II. Professor Davis and Associate Professor Matthews.

In this course the student is required to make an extensive study of farm bulletins and the essentials of writing good bulletins. How to write in a simple, direct style that appeals to the readers for whom the bulletin is intended is the subject of careful study. Current farm bulletins are made the basis for the work. The course is designed especially for those who intend later to work in the United States Department of Agriculture or experiment stations.

207. TECHNICAL WRITING. Elective, first semester. Work arranged by appointment. Two semester credits. Prerequisite: One of the following courses: 113, 116, 122, 201, 204. Professors Davis and Conover, and Associate Professors Matthews and Faulkner.

This course is planned to help students properly to record and to report technical work. Fundamental principles of technical writing are studied in connection with such practice as will necessitate clearness, accuracy, and effectiveness. Text: Watt, *The Composition of Technical Papers*.

251. THE SHORT STORY I. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: English Literature. Associate Professor Rice.

This course comprises a study of the world's best short stories and gives practice in writing sketches and short stories. The elements of the story—plot, setting, action, and characterization—are especially emphasized. Texts: Esenwein, *Writing the Short Story*; Dawson, *Great English Short Stories* (2 vols.).

252. THE SHORT STORY II. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Short Story I. Associate Professor Rice.

This course is a continuation of Short Story I. Special stress is laid upon the preparation of the short story for publication. A study of the short story in America is made, giving special attention to types, characteristics, and tendencies. A special study of the standards set by leading magazines is a feature of the work, and market problems are considered.

FOR GRADUATES

Classes in courses listed under the graduate group are organized whenever the demand for them is sufficient. When the demand does not justify the organization of a class the work may be arranged for by appointment. Special arrangements for work should be made with the head of the department.

301. HISTORY OF THE ENGLISH LANGUAGE I. Elective, first semester. Class conference, two hours. Two semester credits. Prerequisite: English Literature. Professor Conover.

This course offers a study of the origin and development of the English language. Special emphasis is placed on Old English. Texts: Wyld's *Historical Study of the Mother Tongue*, and Bright's *Anglo-Saxon Reader*.

302. HISTORY OF THE ENGLISH LANGUAGE II. Elective, second semester. Class conference, two hours. Two semester credits. Prerequisite: English Literature. Professor Conover.

This course is a continuation of History of the English Language I. Special emphasis is placed on Middle English and Modern English. Texts: Wyld's *Historical Study of the Mother Tongue*, and Emerson's *Middle English Reader*.

304. RESEARCH IN APPLIED ENGLISH. Elective, second semester. Class conference, two hours. Two semester credits. Prerequisite: English Literature. Professor Davis.

Individual assignments are made in the fundamental fields of research in applied English. The student is required to carry on an original investigation and to make an acceptable report of his research work.

COURSES IN ENGLISH LITERATURE

FOR UNDERGRADUATES

172. ENGLISH LITERATURE. Sophomore year, both semesters and summer school. Class work, three hours. Three semester credits. Prerequisite: College Rhetoric II. Professors Davis, Conover, and Rockey, Associate Professors Rice, Matthews, Russel, and Faulkner, Assistant Professors Sturmer and Elcock, Miss Bower, Miss Garvey, Miss Rushfeldt, Miss Aberle, Miss Bogue, and Miss Dean.

In this course the students are made familiar with the principles of literary appreciation and are taught to apply them to representative texts in narrative, lyric, and dramatic poetry, as well as in fiction, the essay, and the oration. The work of the course is intensive; notebooks are kept and frequent tests are given. Texts: Heydrick, *How to Study Literature*; and Cunliffe, Pyre, and Young, *Century Readings in English Literature*.

175. AMERICAN LITERATURE. Sophomore year, both semesters and summer school. Class work, three hours. Three semester credits. Prerequisite: English Literature. Professors Davis, Conover, and Rockey, Associate Professors Rice, Matthews, Russel, and Faulkner, Assistant Professors Sturmer and Elcock, Miss Bower, Miss Garvey, Miss Rushfeldt, Miss Aberle, Miss Bogue, and Miss Dean.

This course consists of a study of the masterpieces of American prose and poetry. The aims are to apply the principles of literary appreciation studied in English Literature to standard selections from American Literature, and to familiarize the students with the best contemporary American poetry, drama, and fiction. Texts: *A Short History of American Literature*, based upon The Cambridge History of American Literature; Pattee, *Century Readings in American Literature*.

181. HISTORY OF ENGLISH LITERATURE. Junior year, both semesters. Class work, three hours. Three semester credits. Prerequisite: English Literature. Professors Davis, Conover, and Rockey, Associate Professors Rice, Matthews, Russel, and Faulkner, Assistant Professors Sturmer and Elcock.

This course presents a study in the history of English Literature by means of lectures, discussions of the texts, and class reports on assigned reading. The aim is not only to apply principles of literary appreciation to standard selections, but also to study the work of the individual author in relation to the period in which he lived. Texts: Long, *English Literature*; Cunliffe, Pyre, and Young, *Century Readings in English Literature*.

FOR GRADUATES AND UNDERGRADUATES

271. THE ENGLISH BIBLE. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: English Literature. Professor Conover.

In this course the different kinds of literature found in the English Bible are studied. Especial attention is paid to the narrative of the Old Testament, poetry, wisdom literature, and the book of Job. Text: Moulton, *The Modern Reader's Bible*.

273. SHAKESPEAREAN DRAMA I. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: English Literature. Professor Davis and Assistant Professor Sturmer.

This course aims to make the students familiar with the life and times of Shakespeare and his dramatic art as shown in five of his tragedies—King Lear, Macbeth, or Othello, Hamlet, Coriolanus, and Romeo and Juliet. Text: *Shakespeare's Principal Plays*, by Brooke, Cunliffe, and MacCracken.

274. SHAKESPEAREAN DRAMA II. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: English Literature. Professor Davis and Assistant Professor Sturmer.

This course includes collateral readings in Shakespeare, his contemporaries.

and present-day critics of Shakespeare. An intensive study is made of five of Shakespeare's comedies—The Winter's Tale, Cymbeline, As You Like It, Twelfth Night, and The Tempest. Text: *Shakespeare's Principal Plays*, by Brooke, Cunliffe, and MacCracken.

The work given in Shakespearean Drama I is not prerequisite for the work in Shakespearean Drama II.

275. EIGHTEENTH CENTURY LITERATURE. Elective, first semester. Alternate years beginning 1923-'24. Class work, three hours. Three semester credits. Prerequisite: English Literature. Professors Conover and Rockey, and Assistant Professor Elcock.

This course includes a study and discussion of the leading literary movements of the eighteenth century. Important representative works are read and are made the subject of class reports and discussions. Text: Gosse, *Eighteenth Century Literature*.

277. NINETEENTH CENTURY LITERATURE. Elective first semester. Class work, three hours. Three semester credits. Given when there is a sufficiently large demand. Prerequisite: English Literature. Professors Davis, Conover, and Rockey.

In this course there is a discussion of the literary movements found throughout the century, especially in the Victorian period. Significant works are read and are made the subjects of class reports and discussions.

283. CONTEMPORARY FICTION. Elective, first semester. Class work, three hours. Three semester credits. Prerequisites: American Literature. Professor Conover.

This course consists of a study of the more important British and American fiction since Hardy. Representative novels are read, reported upon and discussed. Texts: Manley and Rickert, *Contemporary British Literature*, and *Contemporary American Literature*; Van Doren, *Contemporary American Novelists*.

284. CONTEMPORARY DRAMA. Elective, second semester. Class work, three hours. Three semester credits. Prerequisites: American Literature. Professor Conover.

The aim in this course is to show the development of the drama since Ibsen and to give the student an acquaintance with the types of modern drama and with the works of important English, Irish, and American dramatists. Text: Dickinson, *Chief Contemporary Dramatists*, First Series.

286. THE NOVEL I. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: American Literature. Associate Professor Russel and Assistant Professor Elcock.

This course comprises a study of the English novel, including the discussion of its historic development, its relation to other forms of fiction, and its place in contemporary literature. Especial attention is given to representative works of modern writers, both English and American. Text: Cross, *The Development of the English Novel*.

287. THE NOVEL II. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: The Novel I. Associate Professor Russel and Assistant Professor Elcock.

This course is a continuation of The Novel I. A review of the essentials in the study of the novel is given, and readings of representative modern novels are continued, with definite class reports.

288. ENGLISH SURVEY I. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: Nineteenth Century Literature, or its equivalent. Professors Davis and Conover.

This course offers an advanced study in the history of English literature. Beginning with Anglo-Saxon times, the course continues through the Middle English period down to the close of the Elizabethan period. Basic text: *The Cambridge History of English Literature*.

291. WHITMAN AND DEMOCRACY. Elective, second semester. Given when there is a sufficiently large demand. Class work, three hours. Three semester credits. Prerequisite: American Literature. Professors Davis and Conover.

This course offers a study and interpretation of the most important works of Walt Whitman. Especial attention is given to the consideration of his vision of the democracy exemplified in American institutions.

292. BROWNING. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: English Literature. Professors Davis and Rockey, Assistant Professor Sturmer.

This course offers a study in the interpretation of the most important poetic and dramatic works of Robert Browning. Texts: Browning's *Complete Poetical Works*, and Phelps's *Browning, How to Know Him*.

294. TENNYSON. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: English Literature. Professors Davis and Rockey.

This course offers a study in the interpretation of the most important poetic works of Alfred Tennyson. Text: Tennyson's *Complete Poetical Works*.

295. THE ARTS AND CRAFTS MOVEMENT. Elective, second semester. Given when there is a sufficiently large demand. Class work, two hours. Two semester credits. Prerequisite: Nineteenth Century Literature, or its equivalent. Professor Conover.

This course takes as its basis the life of William Morris, and treats of the arts and crafts movement in its relation to Literature. Works of Morris, Rossetti, Ruskin, and other writers of the same group are read and discussed. Text: Mackail's *Life of William Morris*.

296. THE NEW POETRY. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: History of English Literature. Professors Crawford and Conover.

This course comprises a brief study of the new poetry movement and includes a reading and study of the leading poetic creations and representative writers of new poetry. The course also includes some practice in the writing of poetry.

299. RESEARCH IN ENGLISH. Advanced students with acceptable fundamental training may, with the approval of the head of the department, undertake original investigation in some definitely prescribed field of English literature or applied English. Such work must be pursued under the direct supervision of some member of the faculty of the department, and the final results may be used to fulfill the thesis requirements for the master's degree. Students doing research in English will be required to give evidence of approved training in the subject and to have a broad general knowledge of English literature. Professors Davis, Conover, and Rockey, Associate Professors Rice, Matthews, Faulkner, and Russel, Assistant Professors Sturmer and Elcock.

FOR GRADUATES

Classes in courses listed under the graduate group are organized whenever the demand for them is sufficient. When the demand does not justify the organization of a class the work may be arranged for by appointment. Special arrangements for work should be made with the head of the department.

310. THE ROMANTIC MOVEMENT I. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: Nineteenth Century Literature. Professors Conover and Rockey.

This course offers advanced work in the study of eighteenth century romanticism. Text: Beers, *A History of English Romanticism in the Eighteenth Century*.

313. THE ROMANTIC MOVEMENT II. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Nineteenth Century Literature. Professors Conover and Rockey.

This course continues throughout the Victorian period the work of the preceding course. Text: Beers, *A History of English Romanticism in the Nineteenth Century*.

315. RESEARCH IN THE LITERATURE OF INDUSTRY. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: Nineteenth Century Literature. Professors Davis and Conover.

This is an investigation and research course based upon a careful study of the development of the distinctive literature of industry.

Entomology

Professor DEAN *
Associate Professor MCCOLLOCH †
Associate Professor MERRILL

Associate Professor SMITH
Assistant Professor HAYS

In all courses a special effort is made to make the student realize that he is studying living things which form a part of his daily environment, and upon which his welfare in many cases vitally depends. In courses in which both class and laboratory instruction is given, the closest correlation is striven for, and wherever possible the same form is studied simultaneously in laboratory and class. The student is led to integrate his classroom knowledge with local animal life by means of frequent and carefully planned field excursions and by the free use of vivaria in laboratory and museum. The courses offered are intended to awaken in the student a keen appreciation of the general principles, underlying insect life, of the life economy of the more beneficial as well as the more injurious species, and of the general principles governing methods for their control.

Standard anatomical charts, a representative collection (especially of local species), a high-grade lantern for the projection of lantern and microscope slides, a large and excellent series of lantern slides (many of them colored), and a series of microscope slides are available for illustration. Compound and dissecting microscopes sufficient for the needs of laboratory classes have been provided.

Facilities for advanced work are provided for graduate students and others who expect to pursue the subject professionally. An advanced laboratory is equipped with individual desks, binocular microscopes, compound microscopes, rotary microtome, imbedding ovens, drawing apparatus, and a supply of glassware and reagents sufficient for histological work and for research. A well-equipped insectary is available for training in insectary methods. An air-conditioning machine in the insectary adds materially to the possibilities for experimental work. A field station with all the necessary equipment provides means for the study of insects under normal field conditions.

COURSES IN ENTOMOLOGY

FOR UNDERGRADUATES

101. GENERAL ENTOMOLOGY. Junior and senior years and elective, both semesters and summer school. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: General Zoölogy. Professor Dean, Associate Professor Smith.

This is a study of the elementary anatomy and physiology of insects, complete enough to give a thorough understanding of the life history and habits of the most important species and the general principles upon which the con-

* Absent on leave, year 1923-'24.

† In charge, year 1923-'24.

trol of these economic forms is based. It is a study of the more important general facts about insects as a class; the main characters of the different orders and groups; how they survive and multiply; and how the structure and habits of one group render it susceptible to certain measures of control, while in other groups entirely different measures are necessary. The class work consists of lectures and of text and special reference study. Laboratory charge, 50 cents.

106. HOUSEHOLD ENTOMOLOGY. Elective, first semester. Class work, two hours. Two semester credits. Prerequisites: General Zoölogy. Professor Dean.

This is a study of the elementary structure and physiology of insects, complete enough to give a clear understanding of the life history, habits, and methods of control of the principal insects injurious to house, garden, lawn, and human health. The course consists of reference study and a series of lectures.

111. APICULTURE. Elective, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: General Entomology. Associate Professor Merrill.

This course comprises a general study of the structure, life history, general behavior, activities, and products of the honeybee. Special attention is given to practical beekeeping, the best methods used among beekeepers being discussed. A study is made of bee diseases and of the standard methods to be used in their eradication and control. A study is also made of the relation of bees to agriculture and horticulture. Laboratory charge, \$1.

116. MILLING ENTOMOLOGY. Junior year, first semester. Class work, one hour. One semester credit. Professor Dean.

This is a study of the insect pests of flour mills, elevators, granaries, warehouses, and bakeries, and of the standard methods to be used in dealing with them. The course consists of lectures and special reference reading. Inspection trips are made to flour mills and warehouses.

FOR GRADUATES AND UNDERGRADUATES

201. HORTICULTURAL ENTOMOLOGY. Elective, first semester. Class work, two hours. Two semester credits. Prerequisite: General Entomology. Associate Professor Merrill.

This is a study of the most important insect pests of orchard, garden and forest, and of standard methods for controlling their ravages. The class work consists of lectures and the study of references.

206. GENERAL ECONOMIC ENTOMOLOGY. Elective, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: General Entomology. Professor Dean and Associate Professor McCulloch.

This is a study of the life economy of the more important economic insects, of methods to be used in dealing with them, and of the literature of economic entomology. The student is made familiar with our present knowledge of the most important of our injurious insects, with the sources of economic literature, and with methods commonly used in the investigation of problems in economic entomology. The class work consists of lectures, and of text and special reference reading.

Laboratory.—The laboratory work consists of the formation and study of a collection of injurious insects, and insect breeding. This work naturally involves much field study, in the course of which the student gains a first-hand acquaintance with the more important injurious insects at home in nature. Laboratory charge, \$1.

211. INSECT MORPHOLOGY I. Elective, first semester. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisite: General Entomology. Assistant Professor Hayes.

This course deals exclusively with the external anatomy of representative insects belonging to a number of orders. The types studied are selected so as to present the essentials of the structure of the exoskeleton and to afford a basis for the courses in taxonomy and for professional studies in hexapod morphology. Laboratory charge, \$1.

212. INSECT MORPHOLOGY II. Elective, first semester. Laboratory, nine hours. Three semester credits. Prerequisite: Insect Morphology I. Assistant Professor Hayes.

This course is designed for those advanced students who desire more thorough preparation in the essentials of insect anatomy than is provided for in Insect Morphology I. More extensive studies of detailed external and internal anatomy are made and preparation is afforded for advanced work in taxonomy and research in morphology. Laboratory charge, \$1.

216. PRINCIPLES OF TAXONOMY. Elective, second semester. Lectures, one hour. One semester credit. Prerequisite: (1) For students taking Taxonomy of Insects I: General Entomology and Insect Morphology I. (2) For students taking Taxonomy of Vertebrates: General Zoölogy. All students registering in Taxonomy of Insects I must also register for this course. Courses cannot be taken separately. Assistant Professor Hayes.

This course of lectures deals with the fundamental principles of modern taxonomy. The following subjects are considered in detail: Systems of classification; terminology of taxonomic groups; criteria of species and genera, binomial nomenclature, pre-Linnæan and modern nomenclature; international code of zoölogical nomenclature, and other codes; law of priority; and modern tendencies in taxonomy.

217. TAXONOMY OF INSECTS I. Elective, second semester. Laboratory, six hours. Two semester credits. Prerequisites: General Entomology and Insect Morphology I. Students registering for this course must also register for the course in Principles of Taxonomy. Assistant Professor Hayes.

This is a study of the general principles of the classification of representative insects. The purpose of the course is so to familiarize the student with the literature, methods and ideals of classification that he will be able to identify unknown forms and to pursue advanced taxonomic studies. Laboratory charge, \$1.

218. TAXONOMY OF INSECTS II. Elective, second semester. Laboratory, nine hours. Three semester credits. Prerequisite: Taxonomy of Insects I and Insect Morphology II. Assistant Professor Hayes.

This course provides for a more comprehensive preparation in the field of insect taxonomy. At the discretion of the instructor, the work may be taken in such a way that either a broader acquaintance with insects and the principles of classification is afforded, or intensive work may be done on selected groups. Laboratory charge, \$1.

221. ADVANCED GENERAL ENTOMOLOGY. Elective, first semester. Class work, three hours. Three semester credits. The class work consists of lectures, assigned readings, and written reports. Prerequisite: General Entomology. Associate Professor Smith.

The purpose of this course is to give the advanced student a comprehensive view of the broad biological aspect of the subject and an understanding of the relation of insects to the complex of environmental factors. The various subdivisions of entomology are correlated and used as a basis in the presentation of general principles as well as illustrating the problems of maintenance and the various ways in which insects have solved them. The course includes, in part, a detailed consideration of the following: Phylogeny of insects and their relatives; metamerism; reproduction; gynandromorphism; parthenogenesis, pædogenesis; polyembryony; respiration; temperature; embryology; internal and external metamorphosis; metabolism; aquatic insects, their evolution, adaptations, and activities; regeneration; experimental work with insects; insect parasitism; color and coloration; insects in relation to other organisms; insect behavior; and geological and geographical distribution.

226. MEDICAL ENTOMOLOGY. Elective, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: General Entomology. Associate Professor Smith.

The subject matter of this course deals with insects and other arthropods as transmitters and disseminators of disease, attention being confined to that phase of the subject which pertains to the health of man. Emphasis is placed on the various important species of insects which are related to disease, the pathogenic organisms and their relation to insects, and the preventive measures which have, up to date, proved most effective. Some attention is also given to the important theories which underlie this subject and to important investigations in progress at the present time.

Laboratory.—The laboratory work consists of a careful study of insects and other arthropods which may affect the health of man directly, and of those which may be instrumental in the dissemination of disease; also a study of the causative organisms of certain insect-borne diseases and the methods by which these organisms are transmitted. Laboratory charge, \$1.

227. ADVANCED APICULTURE A. Elective, summer school. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Apiculture. Associate Professor Merrill.

This course is given during the summer school and is a continuation of apiculture. The principles of bee behavior discussed in the beginning course are studied under actual conditions during the active season. Practical work is given in the manipulation of bees during the production of the honey crop, in swarm-control methods, and in making increase in the colony. Queen rearing is studied and practical applications of the work are made. Laboratory charge, 50 cents.

228. ADVANCED APICULTURE B. Elective, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Apiculture (Ent. 111) or its equivalent. Associate Professor Merrill.

This course is a continuation of Apiculture (Ent. 111). The primary object of the course is to make a detailed study of the principles of bee behavior, and how these are related to practices of good beekeeping, special attention being given to the different forms of the behavior exhibited by the bees throughout the different seasons of the year, and the beekeeping practices which should be adopted to conform to this behavior. Since it begins in the first semester, problems that apply particularly to that time of the year are taken up, such as preparation for wintering, feeding for winter, and winter protection. Observations are made on the merits and demerits of different systems of wintering. Extracting honey, preparing it for market, marketing, and other advanced subjects are studied. Laboratory charge, 50 cents.

230. INSECT HISTOLOGY. Elective, first semester. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisites: General Entomology and General Cytology. Associate Professor Smith.

This course is designed primarily for students who expect to do technical work in entomology. The work of the laboratory consists of the application of those special methods of gross and microscopical technic which are applicable to insects; practice in the use of the various special methods of killing and fixing, clearing, sectioning, staining and mounting the various groups of insects and insect tissues afforded. A study of insect tissues constitutes an important part of the course. The lectures deal with the more general matters of technic and insect histology. Laboratory charge, \$2.

231. ENTOMOLOGICAL AND ZOÖLOGICAL LITERATURE. Elective, first semester. Lectures, two hours. Two semester credits. Prerequisite: General Entomology. Associate Professor Smith.

This course deals with the literature of entomology, special consideration being given to bibliographical works and their uses. Since the literature of entomology is, to a considerable extent, inseparably associated with that of zoölogy, the course is of equal importance to the students of both subjects. The course is designed primarily to meet the needs of advanced undergradu-

ates and graduate students who are beginning research work. General and special bibliographical sources, foreign and American scientific journals and serials, and the construction of special bibliographies according to approved methods constitute the chief subjects for consideration. All advanced students of entomology and zoölogy are expected to take this course.

236. ZOÖLOGY AND ENTOMOLOGY SEMINAR. Elective, both semesters. One two-hour session each week. One semester credit. Prerequisite: Consult seminar committee.

This course consists in the presentation of original investigations, reviews of papers appearing in current journals, summaries of recent advances in the various fields, and discussion of the various aspects of the fundamental problems of modern biology.

238. ENTOMOLOGICAL PROBLEMS. Elective, both semesters. Two to four semester credits. Prerequisites: Consult instructors. Professor Dean, Associate Professor McColloch, Doctor Merrill, Doctor Smith, and Assistant Professor Hayes.

Students having sufficient training may, with the approval of the head of the department, study a special problem in one of the following subjects: Insect life history, insect control, insect classification, apiculture, insects injurious to stored grain and milled products, household insects. Such work must be pursued under the direct supervision of some member of the departmental staff.

FOR GRADUATES

316. RESEARCH IN ENTOMOLOGY. Advanced students having sufficient fundamental training may, with the approval of the head of the department, undertake original investigation in one of the following fields of entomology: taxonomy, morphology, economic entomology. Such work is pursued under the direct supervision of some member of the departmental faculty and the final results may, if of sufficient merit, be used to fulfill the thesis requirement for the master's degree. The special students may, if willing and capable, be drawn into the research work of the Agricultural Experiment Station during the summer vacation and receive training in the investigation of economic problems. Prerequisites: (1) For research in taxonomy and morphology: General Entomology, Insect Morphology I, Taxonomy of Insects I, and Cytology. (2) For research in economic entomology: General Entomology, General Economic Entomology, Insect Morphology I, and Taxonomy of Insects I. Professor Dean, Associate Professors McColloch, Merrill and Smith, and Assistant Professor Hayes.

Geology

Professor NABOURS
Instructor SPERRY

The materials and agencies that have made the earth are studied in the field and class, and by means of maps, charts and specimens. The purpose of these courses is to arouse in the student an appreciation of the general principles underlying the structure and history of the earth and the forces at work on it.

Some charts, a series of lantern slides, a representative collection of fossils and minerals, and a surrounding country exhibiting considerable variety of hill and valley, limestone, glacial drift and sand dunes, are available for illustrative purposes.

COURSES IN GEOLOGY

FOR UNDERGRADUATES

102. ENGINEERING GEOLOGY. Junior year and elective, first semester. Class work, two hours; laboratory, six hours. Four semester credits. Mr. Sperry.

The class work consists of a study of the general principles of structural and dynamic geology, and of rocks in respect to their mineral composition, structural properties, changes in weathering, etc. It is given by lectures, textbooks and references.

Laboratory.—The laboratory work comprises the observation and description of such structural and dynamic features as the locality affords, and a study of the principal rocks and their mineral constituents.

103. GENERAL GEOLOGY. Freshman year and elective, second semester. Class work, three hours; two or three field trips during semester. Three semester credits. Mr. Sperry.

This course consists of a study of the structure of the earth and of the agencies which modify the materials and determine the topographic features, with some of the history as indicated by the records in the rocks.

FOR GRADUATES AND UNDERGRADUATES

201. HISTORICAL GEOLOGY. Elective, second semester. Class work, two hours; two field trips during the semester. Two semester credits. Prerequisites: Engineering Geology, Elementary Zoology, and General Botany, or equivalent. Mr. Sperry.

This course takes up a brief study of the history of the earth as shown by the record in the rocks. Special emphasis is placed on the history of life as indicated by the fossils.

206. ECONOMIC GEOLOGY. Elective, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: General Geology and General Chemistry. Mr. Sperry.

This course treats of the origin and mode of occurrence of mineral veins and metallic deposits, the ores and the nonmetallic deposits, including coal and petroleum.

History and Civics

Professor PRICE
Professor ILES
Associate Professor JAMES

Associate Professor PEINE
Assistant Professor CORRELL
Instructor ALSOP

Training for citizenship, breadth of view, historic-mindedness, fairness of judgment and general culture are constant and specific aims of each course offered by the Department of History and Civics. As a result of the training received in these courses the student is better prepared to understand and appreciate the institutions in the midst of which he lives and of which he is a part. He is also prepared to act more wisely his part as a leader in good citizenship wherever his lot may be cast. In our modern age and self-governing nation, and in an institution supported by the state and nation, it would seem to be the imperative duty of every student to secure specific training for wise and effective leadership in the governmental affairs of the state and nation that are thus preparing him for life and its duties.

COURSES IN HISTORY

FOR UNDERGRADUATES

101. AMERICAN HISTORY I (*or* BEGINNINGS OF THE AMERICAN NATION). Junior and senior years, both semesters and summer school. Class work, three hours. Three semester credits. Professor Price.

This course gives special emphasis to the industrial phases of the origin

and development of American nationality and democracy to the end of the War of 1812. It also includes our constitutional and political development, especially with reference to origin, basis, cause, and effect. It aims to develop historic-mindedness; that is, training the student to put himself in the other fellow's place and understand fairly "the why." The European origin and background of American history; the evolution of colonial life, industries, and institutions; why we became an independent nation; our westward expansion; the establishing of nationality, and the development of government by the people, are phases definitely emphasized. Instruction is given by means of lectures, readings, and recitations, based on *An American History Notebook*, by R. R. Price.

103. AMERICAN HISTORY LECTURES. Elective, summer school. Two one-hour lectures a week. No credit. No prerequisite. Professor Price.

This series of lectures follows the outline given in *An American History Notebook*, which is used as the basis for the work in American History I, American History II, and American History III. Therefore this course is directly helpful to students taking any one of the three courses named above. To students taking only one of the above-named courses, these lectures give some insight as to the content of the other two courses. Since *An American History Notebook* has been adopted by the State Textbook Commission for use in the schools of the state, these lectures are also directly helpful for any student who expects to teach American history either in the grades or in high school. Only those who are regularly assigned to this course are permitted to attend the lectures; and when the student is assigned, regular attendance is required. There are no recitations and no examinations connected with this course. Students are permitted to ask questions at the close of each lecture. The course is based on Price's *An American History Notebook*.

105. AMERICAN INDUSTRIAL HISTORY. Sophomore and senior years, both semesters and summer school. Class work, three hours. Three semester credits. Associate Professor Peine.

This course traces the history of American agriculture, manufactures, and commerce with related activities from their colonial beginnings to the present. It includes a survey of the physical basis for American history, the growth of population and its expansion across the continent, and the reflection of these things on our industrial, social, and political life. European developments, especially the industrial revolution and the expansion of commerce, are studied for the light they throw on American history. Finally, throughout the course an attempt is made to trace the growth of our national industrial organization and its present-day aspects. This course is based on a text, such as Lippincott's *Economic Development of the United States*, supplemented by Coman's *Industrial History of the United States* or Bogart's *Economic History of the United States*, and the student is held responsible (a) for the contents of his text and (b) for assigned work and lectures.

121. ENGLISH HISTORY. Sophomore year, both semesters and summer school. Class work, three hours. Three semester credits. Not open for credit to students who offer English history for entrance; such students should take History 226 or some other three-hour College course in history. Associate Professor James.

This is a general survey of the whole field of English history with some emphasis on the modern period. It includes the outlines of political history and the essentials of English constitutional development. Special attention is given to the development of the empire, to the English background of American history, and to the industrial and social development of the English people. The work is based on Cross's *A Shorter History of England and Greater Britain*, with lectures and assigned readings.

126. CURRENT HISTORY. Freshman year, both semesters and summer school. Class work, one hour. One credit each semester. Open as elective for not to exceed a total of four semester credits. Professors Price and Iles, Associate Professor James, Assistant Professor Correll, Miss Alsop.

The content of this course differs each semester from that of any other semester. The text for the course is a good weekly or monthly magazine, such as *The Independent*, *The Outlook*, *The Review of Reviews*, *Current History*, or *World's Work*, together with the daily papers and some library references. The course is so conducted as to give a wide outlook on the world of to-day, and a better understanding of the conditions and institutions in the midst of which we live. It includes a study of as much of the everyday essentials of American and foreign governments, of international relations, of international law, of biography, of industrial developments, and of history—suggested each week by the events of the week—as can be crowded into the one hour of the recitation period. It directs the student to good habits of news reading of the right sort.

127. TEACHERS' COURSE IN HISTORY. Elective, summer school. Class work, two hours. Two semester credits. Professor Iles.

This is a seminar course of discussion based on Henry Johnson's *Teaching of History in Elementary and Secondary Schools*, together with Mace's revised work, *Method in History*, and supplemented by a study of the Report of the Committee of Seven, and of the Committee of Five on *History in the Secondary Schools*, and the Committee of Eight on *History in the Elementary Schools*. A critical examination is made of special books on methods in history and civics, such as Wayland's *How to Teach American History*, and of special articles in the *History Teachers' Magazine*. The different texts in history and civics are critically investigated as to points of excellence or weakness, including lectures on the content or viewpoint of each. Information is also given as to the best illustrative material and helps in the teaching of history and civics. The course reveals the evolution in the writing of history, and the growing importance of history and civics in the modern school curriculum, together with the improving viewpoint as to content of both the historical and the civics courses.

FOR GRADUATES AND UNDERGRADUATES

202. AMERICAN HISTORY II (or WESTWARD EXPANSION AND SECTIONALISM). Elective, both semesters and summer school. Class work, three hours. Three semester credits. Professor Price.

This course concerns itself with the industrial conditions, the issues and the leaders of the middle period of our history, from the close of the war of 1812 to the Civil War. Among the subjects investigated are the industrial and political conditions in America in 1816; the Missouri Compromise; the anti-slavery agitation; the Webster-Hayne debate; South Carolina nullification; annexation of Louisiana, Florida, and especially Texas; the Mexican War, and the resulting preponderance of the slavery issue; the Compromise of 1850; the Kansas-Nebraska bill and the early Kansas struggle "to the stars through difficulties," including the various constitutions and the final admission to statehood, the origin of the Republican party; the election of 1860; and the events leading immediately to the secession of the Southern States. Instruction is by means of lectures, recitations, and readings, based on *An American History Notebook*, by R. R. Price.

203. AMERICAN HISTORY III (or THE NEW INDUSTRIAL AGE). Elective, second semester and summer school. Class work, three hours. Three semester credits. Professor Price.

This course opens with a review of the industrial conditions in America just before the Civil War; next a careful examination is made of the industrial effects of that war; finally a study of the political and constitutional history of the last half-century is made in the light of the industrial conditions and developments of the same period. Manufactures, commerce, and especially agriculture, are carefully examined, particularly with reference to the South and West. The new developments in political parties and the new devices in self-government are carefully studied as to developments, cause, and present conditions. The new America with its spirit of nationality, its emphatic self-government, and its new world power and responsibility, are studied especially

in the light of the new industrial developments. Instruction is imparted by lectures, recitations, assigned readings, and special reports, based on Price's *American History Notebook*.

204. AMERICAN AGRICULTURAL HISTORY. Elective, first semester and summer school. Class work, three hours. Three semester credits. Associate Professor Peine.

This course is intended primarily for students in the Division of Agriculture. It devotes itself chiefly to the history of American agriculture. The course starts with a study of European background and Indian beginnings. It traces and compares the agricultural development of New England, the South and the central colonies during the colonial period; then follows the westward movement into the prairie regions of the Mississippi valley, with the distinctive American developments in methods, live stock, and especially farm machinery. The course gives special consideration to the South with its cotton, to the Northwest with its wheat, to the Southwest with its live stock, and to the corn belt with its varied industries. A special study is made of the last quarter-century, when varied industries, more intensive farming, and the high cost of living are replacing extensive mining of the soil, with its remarkable era of low cost of living, its sudden accumulation of wealth, and its rapid development of civilization. The relation of all this to our own state is constantly kept in view. This course should be supplemented by the course in American Political History. Instruction is given by lectures and recitations, readings, and reports.

206. AMERICAN POLITICAL HISTORY. Elective, first semester. Class work, two hours. Two semester credits. This course is especially intended to supplement course 204 or course 105; it is not open for credit to students who have credit in course 202. Professor Iles.

This course gives the story of the origin, development, leaders, and function of political parties in America, and studies the issues and results of the more important presidential elections. It traces the growth of nationality and the development of self-government through American history, but with special reference to present tendencies. This is a very desirable course for any one who would understand and appreciate present political and governmental conditions and tendencies.

207. LATIN AMERICA. Elective, both semesters and summer school. Class work, two hours. Two semester credits. Associate Professor James.

The history, government, industrial and social conditions of Mexico, Central America and the South American nations, and the interrelations of each of these and the United States, are studied in this course. Particular attention is given to contemporary Latin America. Lectures, assigned readings and quizzes.

223. MODERN EUROPE (SINCE 1814). Sophomore and junior years and elective, both semesters and summer school. Class work, three hours. Three semester credits. Professor Iles.

This course traces the evolution of the modern European nations since 1814, with special attention to political organization, industrial development, and colonial expansion. Political problems and social and economic adjustments due to the Great War are included. Recitations, lectures, and assigned readings. Text: Hayes's *A Political and Social History of Modern Europe*, Vol. II, with special studies on the World War.

225. HISTORY OF THE HOME. Elective, second semester. Class work, three hours. Three semester credits. Miss Alsop.

This course includes the history of the primitive family; the Hebrew family; the family life of the Greeks and of the Romans; and the history of the home and family during the Middle Ages, including the influence of the Christian church. Next, the history of the English family in the seventeenth and eighteenth centuries and of the American colonial home is studied. This is fol-

lowed by a study of the industrial revolution and its effects upon family life. Finally, the history of the family during the nineteenth century, the present situation and tendencies are examined. The course is based primarily on Goodsell's *History of the Family*, supplemented by lectures and special studies.

226. THE BRITISH EMPIRE. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Entrance credit in English history or three hours college credit in history, preferably History 121. Associate Professor James.

This course deals with the English phase of the European expansion movement, giving due consideration to the forces and influences promoting the "swarming of the English" overseas. The growth and development of the English provinces into self-governing colonies and the union of these into practically independent dominions is given detailed consideration. Finally, the drawing together of the widely scattered English peoples into a British Commonwealth of Nations under the stress of outside pressure, and the significance of this fact in the struggle for democracy, receives attention.

228. IMMIGRATION AND INTERNATIONAL RELATIONS. Elective, first semester. Class work, two hours. Two semester credits. Professor Price.

The title of the course suggests its content. It includes a study of the causes and the effects—economic, social, and political—of the coming of the foreigner to our shores, including the colonial period, the middle period, and the period since our Civil War, with special reference to the recent changes both as to the character of the immigrants and as to the conditions in Europe and in America that effect the number and quality of immigrants. The second part of the course includes a clear survey of the important epochs in our diplomatic history. The entire course deals with subjects of greatest moment to our nation, especially since the World War, subjects that should be correctly understood by every citizen, but especially by those who are to be our leaders. The text for the first part of the course is Fairchild's *Immigration—A World Movement and Its American Significance*. The text for the second part is Latane's *From Isolation to Leadership*. This course is conducted by lectures, assigned readings, recitations, and reports.

FOR GRADUATES

301. RESEARCH IN HISTORY. Elective, both semesters and summer school. One to six semester credits. For prerequisites in each case, consult instructor. Professors Price and Iles, Associate Professors James and Peine, and Assistant Professor Correll.

Work in this course consists of individual research problems in European or American history, including international relations. The conclusions will generally take the form of a thesis.

COURSES IN CIVICS

FOR UNDERGRADUATES

151. AMERICAN GOVERNMENT. Junior and senior years, both semesters and summer school. Class work, three hours. Three semester credits. Professor Iles.

This course in civics, or actual government, reviews definitely the fundamental principles and operations of our state and national governments, including the essential principles of constitutional law, but gives special emphasis to the actual present-day conditions and movements in our governmental and political life. Among the subjects especially studied are the initiative and referendum, suffrage and primary elections, the recall, city government and government of territories, the regulation of commerce, conservation of national resources, national defense, taxation and finance, the actual methods of congressional activity, and the function, organization, power, and importance of political parties in our government. The course is primarily based on Ogg and Ray, *Introduction to American Government*. Throughout this course spe-

cial and definite attention is given to recent and current events in governmental activities.

152. AMERICAN NATIONAL GOVERNMENT. Elective, first semester. May be substituted for course 151. Class work, three hours. Three semester credits. Professor Iles.

This course deals chiefly with the mechanism, functions and control of the government of the United States, but considerable attention is paid also to principles and problems. The course meets the requirements of three semester credits in government, and with course 153 affords a comprehensive study of American government, national, state and local. Students who have credit for course 151 cannot receive additional credit for either course 152 or 153.

153. AMERICAN STATE GOVERNMENT. Elective, second semester. May be substituted for course 151. Class work, three hours. Three semester credits. Professor Iles.

In this course attention is limited to state and local government, and special attention is given to functions and problems. Courses 152 and 153 are based on good modern texts, with lectures and assigned readings.

160. COMMERCIAL LAW. Junior year, both semesters. Class work, one hour. One semester credit. Assistant Professor Correll.

This course is designed solely for those curricula that require only one hour of business law. In the main, the subjects forming the content of Business Law A and B are here considered, only the most fundamental principles being studied.

Business Law A may be substituted for Commercial Law, and where the requirements of the curricula permit, the extra credit used as an elective.

161. BUSINESS LAW A. Both semesters and summer school. Class work, two hours. Two semester credits. Associate Professor Peine.

This is fundamentally a course in contracts and sales, preceded by a careful consideration of the nature of law in general, and the scope of the laws of business. A text is used in Business Law A and B, but emphasis is placed upon the concrete legal problems of business as illustrated in actual cases.

162. BUSINESS LAW B. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Business Law A. Associate Professor Peine.

The general field covered by this course is the law of credit relations and the law of business organization, with a brief consideration of the law of property. Subjects included are negotiable instruments, guaranty, damages, dissolution, agency, partnership, corporations, bailments, insurance, property.

175. FARM LAW. Elective, first semester. Class work, two hours. Two semester credits. Associate Professor Peine.

The application of the laws of real and personal property to the business of farming makes up the major part of this course. Among the topics studied are the ownership of the farm, boundaries, water rights including irrigation, mortgages, leases, ownership of crops and live stock, rights of the government under inspection and quarantine laws, liability for damages done by domestic animals, sale and transportation of farm products, insurance. A brief analysis of the elements of contracts is made as an aid to those who have had no previous work in business law. By special arrangement, this course may be taken for credit by one who has had Business Law A and B.

FOR GRADUATES AND UNDERGRADUATES

252. COMPARATIVE GOVERNMENT. Elective, first semester. Class work, two hours. Two semester credits. Professor Iles.

This course comprises a study of the leading features, especially with regard to administration, of certain European governments such as England, France, and Germany, and a comparison of essential features with government in the United States. It is planned to supplement and round out the course in American Government. Text: Macy and Gannaway's *Comparative Free Government* or Holt's *Introduction to the Study of Government*.

256. INTERNATIONAL LAW. Elective, second semester. Class work, two hours. Two semester credits. Associate Professor James.

This course includes a discussion of the fundamental principles of international law and international relations, and rights and obligations, public and private, in time of peace and in time of war, are studied, especially in the light of recent developments, such as the Hague conferences. Text: Lawrence, *Principles of International Law*.

FOR GRADUATES

351. RESEARCH IN GOVERNMENT. Elective, both semesters and summer school. One to six semester credits. For prerequisites in each case, consult instructor. Professors Price and Iles, Associate Professors James and Peine, and Assistant Professor Correll.

Work in this course consists of individual research problems in national or local government, American or European, including studies in comparative government or international law. The conclusions will generally take the form of a thesis.

Industrial Journalism and Printing

Professor CRAWFORD
Associate Professor ROGERS
Associate Professor KEITH

Assistant Professor POLSON*
Instructor AMOS
Assistant EISENHOWER

The work in industrial journalism and printing is designed to accomplish two purposes: the preparation of students in other fields to do occasional writing for newspapers and other periodicals on subjects of special interest; and the training of students fundamentally interested in journalism for positions on farm journals, newspapers, and other publications, particularly where writing on agriculture and other industrial subjects is in demand. The instruction considers the requirements of newspapers, agricultural papers, trade publications, and general magazines, and the ethical problems of the profession of journalism. *The Kansas Industrialist*, the official paper of the College, is under the editorial and mechanical direction of the department. The office of *The Kansas State Collegian*, the student semiweekly newspaper, is in the department practice room. *The Brown Bull*, a humorous magazine which has aroused much favorable comment among newspaper men, is published by students in the department. Students write also for general newspapers, farm journals, and magazines.

Attention is given to the mechanical side of the profession in the instruction in printing, two semesters of which are required of all students taking the curriculum in industrial journalism. Printing has been taught in the institution continuously since 1874—the longest period during which instruction in the subject has been given in any American college.

The equipment for instruction in journalism and printing is that of a practical publishing and printing plant.

A large amount of timely agricultural and other information is furnished regularly to Kansas newspapers, farm journals, and other publications. Special assignments are covered for these periodicals, and special inquiries are answered.

COURSES IN PRINTING

FOR UNDERGRADUATES

101. PRINCIPLES OF TYPOGRAPHY I. Freshman year, first semester. Class work, two hours; laboratory practice, three hours. Three semester credits. Associate Professor Keith and Mr. Amos.

The course comprises a study of the case, the point system, and the measurement of type and stock. The history of printing is presented and a study is made of the development of the various typographical styles. Practice is given in setting straight matter. Emphasis is laid on accuracy.

* Absent on leave, September 1, 1923, to June 1, 1924.

104. PRINCIPLES OF TYPOGRAPHY II. Freshman year, second semester. Class work, two hours; laboratory practice, three hours. Three semester credits. Associate Professor Keith and Mr. Amos.

The work of the preceding course is continued, a study being made of type faces and the topography of advertisements and head display. The principles of effective make-up are treated. The use of cost systems in printing offices receives attention.

108. AD. COMPOSITION I. Elective, first semester. Laboratory, six hours. Two semester credits. Prerequisite: Principles of Typography II. Associate Professor Keith and Mr. Amos.

This course consists of a study of the principles of display and design as applied to newspaper and magazine advertisements. Practical work is given in setting ads. for magazines, and newspapers are studied and criticised.

111. AD. COMPOSITION II. Elective, second semester. Laboratory, six hours. Two semester credits. Prerequisite: Ad. Composition I. Associate Professor Keith and Mr. Amos.

This course is a continuation of Ad. Composition I. More complicated work is studied.

114. JOB COMPOSITION I. Elective, first semester. Laboratory, six hours. Two semester credits. Prerequisite: Principles of Typography II. Associate Professor Keith and Mr. Amos.

In this course the differences in the requirements for job composition and ad. composition are emphasized. The proper selection of type faces, borders, and ornaments is considered. The work consists of setting jobs and locking them up for the pressroom.

118. JOB COMPOSITION II. Elective, second semester. Laboratory, six hours. Two semester credits. Prerequisite: Job Composition I. Associate Professor Keith and Mr. Amos.

In this course color work, tabular forms, and other complicated kinds of job work are studied.

122. PLATEN PRESSWORK I. Elective, first semester. Laboratory, six hours. Two semester credits. Prerequisite: Ad. Composition I or Job Composition I. Associate Professor Keith and Mr. Amos.

This work consists of practical platen presswork under ordinary printing-office conditions. The student is taught to feed press and make ready the jobs, and is given instruction in selection of inks and the care of printing rollers.

126. PLATEN PRESSWORK II. Elective, second semester. Laboratory, six hours. Two semester credits. Prerequisite: Platen Presswork I. Associate Professor Keith and Mr. Amos.

This work is a continuation of Platen Presswork I. The student is given more advanced work in mixing inks and in color work.

131. CYLINDER PRESSWORK I. Elective, first semester. Laboratory, six hours. Two semester credits. Prerequisite: Platen Presswork II. Associate Professor Keith and Mr. Amos.

In this course the student is taught the fundamentals for work on all kinds of cylinder presses. He is taught how to make the work ready and how to feed, and is given instruction in the general care and handling of cylinder presses.

136. CYLINDER PRESSWORK II. Elective, second semester. Laboratory, six hours. Two semester credits. Prerequisite: Cylinder Presswork I. Associate Professor Keith and Mr. Amos.

This is a continuation of Cylinder Presswork I.

139. PRINTING PAPERS AND SUPPLIES. Elective, first semester, on permission of the instructor. Laboratory, six hours. Two semester credits. Associate Professor Keith.

This course is intended to give the student the fundamental knowledge necessary for the proper selection and efficient buying and handling of printing supplies. Practical work is also given in figuring and cutting stock for the pressroom.

FOR GRADUATES AND UNDERGRADUATES

201. PRINTING COST ACCOUNTING. Elective, second semester, on permission of the instructor. Class work, two hours. Two semester credits. Prerequisite: Consult instructor. Associate Professor Keith.

Cost-finding systems adapted to various sizes and kinds of printing plants are studied in detail in this course. The figuring of costs, the economical routing of work through the plant, the purchase of stock and other supplies, and other problems of management are treated. All books and records commonly kept in printing offices are studied.

COURSES IN INDUSTRIAL JOURNALISM

151. ELEMENTARY JOURNALISM. Sophomore year, first semester. Class work, two hours. Two semester credits. Assistant Professor Polson and Mr. Eisenhower.

This course is intended to give the student practical experience in the fundamentals of news writing. Methods of obtaining news of various types, the writing of the lead, and the general styles of the news story are carefully considered.

154, 155, 158, 159. JOURNALISM PRACTICE I, II, III, IV. These courses comprise laboratory practice accompanying courses 151, 161, 167, 179. Sophomore and junior years. Six hours. Two semester credits for each course. Prerequisite for each semester is the work of all preceding semesters in Journalism Practice. Professor Crawford, Associate Professor Rogers, Assistant Professor Polson, and Mr. Eisenhower.

The work in Journalism Practice follows closely the other courses in journalism with which it is taken. Students are required to gather news, both assigned and unassigned, and to write the stories in the department workroom. The College campus is divided into "runs," which the students must cover at regular intervals, and assignments are given at specific times. The work given is suited to the advancement of the student. As he progresses in his work he is required not only to obtain news and feature stories, but to edit copy, to read proof, to write heads, to prepare editorials, to select matter worthy of reprint, and to perform other duties required in newspaper and magazine offices. Emphasis is laid on popular treatment of industrial subjects. The instructor in charge gives the students training in looking up references and in handling technical subjects simply but accurately, and also makes specific criticism on the work done by the students.

161. INDUSTRIAL WRITING. Sophomore year, second semester. Class work, two hours. Two semester credits. Prerequisite: Elementary Journalism. Assistant Professor Polson and Mr. Eisenhower.

This course applies the principles of journalism to the treatment of industrial subjects, such as are found in agriculture, engineering, home economics, and more general scientific research. The work of the College and the Experiment Stations affords the basis for study and practice.

164. AGRICULTURAL JOURNALISM. Junior year, both semesters. Class work, one hour. One semester credit. Associate Professor Rogers.

The course is intended to supply students in the curriculum in agriculture with sufficient knowledge of the principles of news writing, as applied to agriculture, to enable them to become occasional contributors to newspapers and farm journals. Much practice in agricultural writing is given in the course.

167. INDUSTRIAL FEATURE WRITING I. Junior year, first semester. Class work, two hours. Two semester credits. Prerequisite: Industrial Writing. Associate Professor Rogers.

This course takes up the feature story, with careful attention to both the informative and the entertaining type. The principles underlying the feature story are applied to writing on agricultural and other industrial subjects. The demands of newspapers, farm journals, and general magazines for writing of this character are analyzed.

171. INDUSTRIAL FEATURE WRITING II. Junior year, second semester. Class work, two hours. Two semester credits. Prerequisite: Industrial Feature Writing I. Associate Professor Rogers.

The course deals specifically with agricultural journals, trade journals, and other publications of highly specialized character. The writing which is done in the course is done for publications of these types, and the students are required to submit their material to editors. A beginning is made in the study of the desk work required on a technical journal, including the handling of copy, the use of illustrations, and the principles of make-up from the editorial standpoint.

179. PRINCIPLES OF ADVERTISING. Junior year, second semester. Class work, three hours. Three semester credits. Prerequisite: For Journalism students, Industrial Writing; for Commerce students, Written and Oral Salesmanship. Professor Davis, of the Department of English, and Associate Professor Keith.

This course considers the fundamentals of advertising as a part of modern business. The study of the goods to be advertised, the analysis of the market, the psychology of advertising, the preparation of advertising copy, and other important matters are taken up. The student is required to make application of the principles brought out in the course.

FOR GRADUATES AND UNDERGRADUATES

251. CIRCULATION AND ADVERTISING PROMOTION. Senior year, first semester. Class work, three hours. Three semester credits. Prerequisite: Industrial Feature Writing II. Professor Crawford.

This course deals with the business management of periodical publications. The building up of circulation and the soliciting of advertising receive special emphasis. Premiums and other plans for increasing circulation are discussed. The advertising agency, the circulation analysis, and the fixing of advertising rates are treated.

254. COPY READING. Senior year, first semester. Laboratory practice, six hours. Two semester credits. Prerequisite: Industrial Feature Writing II. Associate Professor Rogers.

The course continues the work begun in Industrial Feature Writing II, and gives practice in the work required of the copy reader, whether on a newspaper, an agricultural journal, or some other publication. A study is made of newspaper style and of magazine and book style, the distinction between the two being clearly pointed out. The writing of heads and titles and proof reading receive detailed attention. A large amount of copy is actually handled in class, and papers of various types are made up as practice assignments.

257. EDITORIAL PRACTICE. Senior year, second semester. Class work, two hours. Two semester credits. Prerequisite: Copy Reading. Professor Crawford and Associate Professor Rogers.

The course deals not only with the writing of editorials suitable for farm papers, trade papers, and newspapers, but with the conduct of the editorial offices of a periodical publication. Students obtain instruction and practice in writing the matter commonly prepared by the editorial staff of a paper, including editorials, paragraphs, and exchange matter. The acceptance and rejection of contributions receive consideration. Editorial policies and their influence form the subject of careful discussion.

260. ETHICS OF JOURNALISM. Senior year, second semester. Class work, two hours. Two semester credits. Prerequisite: Circulation and Advertising Promotion. Professor Crawford.

The course treats the ethics of journalism as exemplified in the use of contributed matter, in the work of the reporter or staff writer, in the editorial conduct of the paper, and in the handling of circulation and advertising. The federal and state laws relating to periodical publications, to advertising, to libel, and to author's rights, including the federal law of copyrights, are treated. The attitude of periodical publications on matters of ethics and law is observed at first hand by the students.

265. MATERIALS OF JOURNALISM. Elective, first semester. Class work, two hours. Two semester credits. Assistant Professor Polson.

This is a course intended primarily for the general student who desires to obtain a knowledge of the principal newspapers and magazines, and to be able to form judgments as to the accuracy and adequacy of news reports and other published matter. The materials handled by the publications, the methods of treatment, and the character of the editorial comment are carefully presented. Attention is given to the several types of journalism.

270. MAGAZINE FEATURES. Elective, second semester, on permission of the instructor. Class work, two hours. Two semester credits. Associate Professor Rogers and Assistant Professor Polson.

The course is intended for advanced students who desire to prepare literary work suitable for publication in magazines. The matter of the courses is varied to suit the needs and desires of the students, emphasis being laid upon such types of magazine writing as members of the class wish to practice.

274. HISTORY OF JOURNALISM. Elective, first semester. Class work, two hours. Two semester credits. Professor Crawford.

The course deals with the history of journalism from its beginning and with the history of printing so far as this is concerned with periodical publications. Most of the time of this course is given to journalism in England, Canada and the United States, though some attention is given to publications of other countries. The differentiation of journalism in the nineteenth century, and the several types which arose because of this are the subjects of careful study. Particular attention is given to the fields of agricultural and trade journalism.

278. JOURNALISM SURVEYS. Elective, second semester. Laboratory work, six hours. Two semester credits. Professor Crawford.

This course comprises the careful investigation of the periodical reading matter of communities. The information obtained is carefully tabulated, and studies are made of the relation of the reading matter to the industrial, economic, social, and moral life of the communities.

282. COLUMN CONDUCTING. Elective, second semester. Class work, two hours. Two semester credits. Given when requested by a sufficient number. Professor Davis, of the Department of English, and Professor Crawford.

The course deals with the conducting of the so-called column, humorous or semiserious. This affords opportunity for writing paragraphs, light verse, and similar material. Practice in writing humor constitutes the principal work of the course; but as a basis for this, studies are made of the humorous magazines and of humor in other periodicals.

286. CURRENT PERIODICALS. Elective, second semester. Class work, two hours. Two semester credits. Professor Crawford.

The course comprises a study of current periodicals of various types. Special emphasis is laid on the material that they contain and the nature of its appeal to the reader. It is a nontechnical course, intended to give general students some knowledge of the field of current periodical literature.

FOR GRADUATES

351. RESEARCH IN INDUSTRIAL JOURNALISM. Both semesters. Class work, two to five hours. Two to five semester credits. Professor Crawford.

Special courses will be arranged to meet the specific needs and desire of individual graduate students. These courses will in general embody creative literary work or detailed research in specialized journalism.

Library Economics

Librarian SMITH
Associate Librarian DERBY
Reference Librarian DAVIS

Reference Assistant AUSTIN
General Assistant CORY
Loan Assistant BROOKS

The Library supplements the work of every department of the College. It is a storehouse of knowledge for every student. It supplies information and the latest results of scientific research for every instructor. The Library is thus essential to the College, forming, as it were, a center from which its various activities radiate.

In order that the Library may perform its functions with the highest degree of efficiency it is necessary that instruction be given regarding its use. With this thought in mind a course is offered the purpose of which is to familiarize the student with scientific, up-to-date methods in the use of books and to acquaint him with the best general reference books as well as with standard works on various subjects. Placed at the beginning of his College course it should tend to increase largely his efficiency in study throughout the entire course.

COURSE IN LIBRARY ECONOMY

FOR UNDERGRADUATES

101. LIBRARY METHODS. Freshman year, both semesters. Class work, one hour. One semester credit. Associate Librarian Derby, Miss Davis, Miss Austin, Miss Cory, and Miss Brooks.

This course consists of lectures on classification and arrangement of books in the Library; card catalogues; the principal works of reference, such as dictionaries, encyclopedias, atlases, and standard works in history, literature, economics, quotations, statistics, etc.; public documents and their indexes; indexes to periodicals, etc. Instruction is given, also, in methods of indexing current reading for purposes of future reference.

Mathematics

Professor REMICK
Professor WHITE
Associate Professor STRATTON
Assistant Professor HYDE
Assistant Professor LEWIS

Instructor HOLROYD
Instructor ROWE
Instructor JAMES
Instructor MOSSMAN
Instructor KNEPPER

In an institution that stands as an exponent of the industrial type of education, mathematics should occupy an important place. Training in the exact science is valuable not only for its own sake but also on account of its manifold applications. On this basis the courses in mathematics are offered primarily with the following ends in view: (1) the attainment of mental power and accuracy in the interest both of general culture and special application; (2) the acquirement of facts and processes that will provide the student with an indispensable tool for further scientific and technical study.

As several of the curricula of the College are formulated on the assumption that a half-year of solid geometry will have been taken in high school, classes in this subject are provided for students who are deficient in this respect. College credit on electives is allowed for this work.

COURSES IN MATHEMATICS

FOR UNDERGRADUATES

101. PLANE TRIGONOMETRY. Freshman year, first and second semesters. Class work, three hours. Three semester credits. Prerequisites: Plane Geometry, and one and one-half years of high-school Algebra. Associate Professor Stratton, Assistant Professors Hyde and Lewis, Mr. James, and Miss Mossman.

This course treats of the functions of acute angles, right triangles, goniometry, oblique triangles, practical problems. Text: Bauer and Brooke's *Plane and Spherical Trigonometry*.

104. COLLEGE ALGEBRA. Freshman year, both semesters. Class work, three hours. Three semester credits. Prerequisites: Plane Geometry, and one and one-half years of high-school Algebra. Professor Stratton, Assistant Professors Hyde and Lewis, Mr. Janes, and Miss Mossman.

Elementary topics, functions and their graphs, quadratic equations are rapidly reviewed. The further treatment includes the subjects of complex numbers, theory of equations, permutations and combinations, partial fractions, logarithms, and determinants. Text: Ford's *College Algebra*.

107. COLLEGE ALGEBRA A. Freshman year, second semester. Class work, five hours. Five semester credits. Prerequisites: Plane Geometry and one year of high-school Algebra. Professor Stratton, Assistant Professors Hyde and Lewis, Mr. Janes, and Miss Mossman.

After a brief review of elementary subjects, a thorough treatment of quadratics, ratio, proportion, progressions, and the binomial theorem for positive exponents is given. The remainder of the course follows closely the chief content of course 104. Text: Wells and Hart's *Second Course in Algebra*, enlarged edition.

110. PLANE ANALYTICAL GEOMETRY. Sophomore year, first semester. Class work, four hours. Four semester credits. Prerequisites: Plane Trigonometry, and College Algebra. Professors White and Stratton, and Associate Professor Hyde.

This course treats of coordinate systems, projections, loci, straight line, conics, parametric and empirical equations, with a discussion of the general equation of the second degree. Text: Love's *Analytical Geometry*.

119. CALCULUS. Sophomore year and elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Analytical Geometry. Professors Remick and White.

This course is designed especially for students intending to teach secondary mathematics and for those interested in the natural sciences. It includes a brief treatment of the fundamental principles of both branches of calculus, practice with the standard formulas of differentiation and their application to geometry and mechanics. Integration of the usual elementary forms is followed by the idea of the definite integral and a few of the more important applications.

122. SPECIAL METHOD IN THE TEACHING OF MATHEMATICS. Elective, second semester. Class work, three hours. Three semester credits. Professor Stratton.

As its name indicates, this course is intended primarily for those who are planning to teach elementary mathematics. Emphasis is given to pedagogical questions, with some reference to the historical course of development. A discussion of the best methods of teaching arithmetic, algebra, and geometry; a study of the report of prominent mathematical organizations, especially those of the international commission; a comparison of the curricula of different schools—these are some of the matters which receive attention. An examination is made of books and articles on the teaching of mathematics. The course proceeds by lectures, readings, and reports on assigned topics.

126. ELEMENTS OF STATISTICS. Elective, first semester. Class work, three hours. Three semester credits. Professor White.

This course consists in the study of the parts of algebra most needed as a basis for statistical work, followed by a development of the elementary principles used in the analysis of statistical data. Use is made of farm bulletins, agricultural reports, etc. The work proceeds by lectures, readings, and recitations.

131. INSTITUTIONAL ACCOUNTING. Elective, second semester. Class work, three hours. Three semester credits. Professor Stratton.

This course treats of accounting for institutions such as colleges, schools, clubs, societies, industrial and social organizations. The practice work includes preparation for publication of statements of income and expenditure, balance sheets, treasurer's reports, financial data and statistics, and of the annual returns of net income required under the federal income-tax law. A study is made of the mathematics of investments, the handling of endowment and trust funds, and the preparation of budgets. The work proceeds by lectures, discussions, written reports, and exercises.

137 A. ACCOUNTING. Freshman year, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Mr. Rowe and Mr. Knepper.

An introduction to accounting adapted for students who have had little or no bookkeeping. The fundamental principles of bookkeeping are presented along with practice sets which emphasize the structure and significance of the accounts which make up the balance sheet and statement of profit and loss. Text: McKinsey's *Bookkeeping and Accounting*, Vol. I.

140 A. ACCOUNTING PRACTICE I. Freshman year, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Accounting or one year of high-school bookkeeping. Mr. Rowe and Mr. Knepper.

This course includes an analysis of the development and structure of accounting methods and is designed to give students power to analyze commercial accounts and statements. Controlling accounts, departmental revenue accounts, accounts with accruals and deferred items, and special accounts of single proprietors, partnerships, and corporations are studied in connection with brief practice sets to illustrate their uses in actual business. Text: Kester's *Accounting Theory and Practice*.

143 A. ACCOUNTING PRACTICE II. Sophomore year, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Mr. Rowe and Mr. Knepper.

The construction and interpretation of particular accounts peculiar to corporations, the theory of depreciation, the disposition of profits, and the analysis of bank statements and railroad reports are the chief topics considered. Text: Kester's *Accounting Theory and Practice*.

150. MATHEMATICS OF INVESTMENT. Junior year, second semester. Class work, three hours. Three semester credits. Prerequisite: Accounting Practice II. Mr. Rowe and Mr. Knepper.

The course deals with the calculation of compound interest, and includes the study of annuities, methods of measuring depreciation, and the determination of the price at which bonds should be bought to yield a market rate of interest. The amortization of premiums and the accumulation of discount on bonds are considered with special reference to their accounting significance. Some attention is given to life insurance actuarial problems. Text: Putnam's *Mathematics of Finance*.

FOR GRADUATES AND UNDERGRADUATES

The following courses are available on request by a sufficient number of students. Numbers 201, 204, 205, 210, and 213 are offered each year.

201. DIFFERENTIAL EQUATIONS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Calculus II. Professor Remick.

This course is designed for those who may wish to extend their study of mathematics beyond the usual first course in calculus, and also for those intending to take advanced work in physics, mechanics, or engineering. The various standard types of differential equations are considered, together with the usual applications. Text: Murray's *Differential Equations*.

203. THEORY OF STATISTICS. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Elements of Statistics, or its equivalent. Professor White.

This course includes a study of the theory of probability applied to statistical problems; frequency curves, correlation theory, curve fitting, problems of random sampling. Actual practice is given with data from biology, agronomy, physics, etc. The work proceeds by lectures, readings, and recitations.

204. METHOD OF LEAST SQUARES AND THEORY OF MEASUREMENT. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Calculus II. Professors Remick and White.

This course includes a study of the law of error based on the theory of probability and the probability curve; adjustments of observations by the method of least squares; development of precision measures; distribution of errors; and Gauss's method of substitution in the solution of normal equations. The solution of a number of problems is required.

205. CALCULUS I. Sophomore year and elective, second semester. Class work, five hours. Five semester credits. Prerequisite: Plane Analytical Geometry. Professors Remick, White, and Stratton.

The usual topics of differential calculus are considered together with integration of standard forms, definite integrals, rational fractions, and integration by parts. This course contains problems closely related to the work of engineering students. Text: Love's *Differential and Integral Calculus*.

206. CALCULUS II. Junior year and elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Calculus I. Professors Remick, White, and Stratton.

In the division of the subject emphasis is laid upon the applied side. Problems involving areas, lengths, surfaces, and volumes are treated by processes of single integration. The idea of successive and partial integration is applied to areas, moments, centers of gravity, surfaces, volumes, etc. The types of differential equations which the student of engineering is most likely to meet with in his subsequent work are briefly discussed. Text: Love's *Differential and Integral Calculus*.

207. SOLID ANALYTICAL GEOMETRY. Elective, second semester. Class work, three hours. Three semester credits. Prerequisites: Plane Analytical Geometry, and Calculus II. Professor White.

The topics treated include coördinates of points in space and their transformations, and involve the usual discussion of lines and planes. The standard types of quadratic surfaces are considered together with their classification and principal properties. Text: Snyder and Sisam's *Analytical Geometry of Space*.

210. ADVANCED CALCULUS I. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Calculus II. Professor White.

This course considers primarily special topics in integral calculus, including various methods of integrating elementary forms, a discussion of definite integrals with attention to the gamma and beta functions, and applications to lengths and areas. Text: Byerly's *Integral Calculus*.

213. ADVANCED CALCULUS II. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Advanced Calculus I. Professor White.

This is a continuation of course 210, including further applications to geometry and mechanics, a treatment of line, surface, and space integrals, and a discussion of elliptic integrals. Text: Byerly's *Integral Calculus*.

216. THEORY OF EQUATIONS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Calculus II. Professor Remick.

The course presupposes familiarity with the elements of the classical theory of the subject and treats particularly the modern development based upon the ideas connected with substitution groups and leading to the discussion of the solution of the general algebraic equation from the standpoint of the Galois theory. Text: Cajori's *Modern Theory of Equations*.

FOR GRADUATES

The following courses are available by appointment:

301. THEORY OF FUNCTIONS OF A COMPLEX VARIABLE. Elective, second semester. Class work, three hours. Three semester credits. Prerequisites: Advanced Calculus II and Differential Equations. Professor Remick.

The usual line of topics is treated through lectures, discussions, and reports.

306. THEORETICAL MECHANICS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Calculus II. Professor Stratton.

It is assumed that the student entering upon this course is familiar with certain preliminary ideas found in textbooks on general physics, and the subject of mechanics is treated in its relation to mathematical analysis.

311. PROJECTIVE GEOMETRY. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Analytical Geometry. Professor White.

This course includes a treatment of the fundamental forms, projective relations, point rows, and pencils of the second order, poles and polars, properties of conics, and involution.

316. ADVANCED DIFFERENTIAL EQUATIONS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Differential Equations. Professor Remick.

This is a continuation of course 201. It includes a treatment of special topics, such as the equations of Legendre, Bessel, and Ricatti, together with applications.

321. LIE THEORY OF DIFFERENTIAL EQUATIONS. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Differential Equations. Professor Remick.

This course is an introduction to Lie's theory of one-parameter groups, with special reference to its application to the solution of the various types of differential equations.

326. CALCULUS OF VARIATIONS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Differential Equations. Professor Remick.

The course includes a treatment of some of the standard problems of maxima and minima wherein a definite integral affords the fundamental form of expression.

Department of Military Science and Tactics

Professor CHAPMAN, Major C. A. C., U. S. A.
 Assistant Professor STICKNEY, Captain Inf., U. S. A.
 Assistant Professor JONES, Captain Inf., U. S. A.
 Assistant Professor WALTZ, Captain Inf., U. S. A.
 Assistant Professor SPENCER, Captain C. A. C., U. S. A.
 Assistant Professor NORRIS, Captain C. A. C., U. S. A.
 Assistant Professor BROWER, Captain Vet., U. S. A.
 Assistant Professor COLE, First Lieutenant Inf., U. S. A.
 Supply Officer CLAEREN, Major, U. S. R.
 Instructor COFFEE, Staff Sergeant, C. A. C., U. S. A.
 Instructor CONNOLLY, Sergeant Inf., U. S. A.
 Instructor FAQUETTE, Sergeant F. A., U. S. A.
 Mechanic WILSON, Private, First Class, C. A. C., U. S. A.

Since this College is one of the beneficiaries of the act of congress of 1862, military tactics is required in the College curricula. All young men of age, not physically disqualified, are required to take military training four full hours a week for two years. A student entering as a junior or above is held for military science for the time necessary to complete the remainder of his College course unless this period is reduced by credits accepted from another institution.

Requests for excuse from military science, or for postponement of the work, are acted upon by the president of the College. Such requests are presented through the student's dean, and the president obtains the advice of the commandant of cadets, who thoroughly investigates each case on its merits and makes his recommendation to the president. Requests based on physical condition must be accompanied by a recommendation made by the College physician. Students excused from military science on account of physical disability are assigned to an equivalent amount of some other College work instead. Students permitted to postpone military science for any reason are not thereby excused, but must make it up later.

The act of congress of June 3, 1916, known as the national defense act, provides for the establishment in civil institutions of a Reserve Officers' Training Corps (R. O. T. C.).

The object of this provision is stated as follows:

"The primary object of establishing units of the Reserve Officers' Training Corps is to qualify, by systematic and standard methods of training, students at civil institutions for reserve officers. The system of instruction, herein prescribed, presents to these students a standard measure of that military training which is necessary in order to prepare them to perform intelligently the duties of commissioned officers in the military forces of the United States, and it enables them to be thus trained with the least practicable interference with their civil careers.

"Units of the senior division may be organized at civil institutions which require four years of collegiate study for a degree, including state universities and those state institutions that are required to provide instruction in military tactics under the provisions of the act of congress approved July 2, 1862, donating lands for the establishment of colleges where the leading object shall be practical instruction in agriculture and the mechanic arts, including military tactics.

"Units of the junior division may be organized at any other public or private educational institution."

An infantry unit, a coast artillery unit and a veterinary unit of the Reserve Officers' Training Corps have been established in this College, the senior division consisting of men in the four years' College curricula and the Vocational School.

Members of the R. O. T. C. will receive the benefits mentioned below:

1. SENIOR DIVISION, BASIC COURSE (Freshmen, Sophomores, and Vocational School). Each student of these classes will be furnished with complete uniform, and equipment for his use during the course. The articles remain the property of the United States and must be accounted for and turned in by each student at the close of each college year.

A fee of 25 cents per semester is charged all students assigned to military training.

A six weeks' training camp is optional for this course.

2. SENIOR DIVISION, ADVANCED COURSE (students who have completed the two years' Basic Course). The student who continues in the R. O. T. C. after completing the Basic Course will receive the following benefits:

He will receive a special uniform.

He will receive commutation of subsistence at the rate of 30 cents per day, provided he executes an agreement to complete the Advanced Course, or continue in the course during the remainder of his time in College, and to take the course in camp training during such period, prescribed by the Secretary of War. The camps referred to involve no expense on the part of the student. In addition, a complete summer uniform will be issued and he will be paid at the rate of 70 cents per day for not to exceed six weeks, and five cents per mile to and from camp to cover travel expenses.

After graduation he will be eligible for appointment by the President of the United States as a reserve officer of the army, and if so appointed he may,

under certain conditions, be appointed and commissioned as a temporary second lieutenant in the regular army for a period of six months, with pay at the rate of \$125 per month, with the usual allowances. (Return allowance is \$18 and allowance for quarters, \$40.)

In order to elect the Advanced Course, R. O. T. C., a student must have the recommendation of the president of the College, his dean, and the professor of military science and tactics.

The corps of cadets at present is organized as three battalions of infantry, fourteen companies. A military band is also provided for, the members of which must be thoroughly trained in military tactics. Assignments to the military band are made upon recommendation of the bandmaster, who has charge of the technical instruction.

Officers and noncommissioned officers are selected from the students taking the Advanced Course, R. O. T. C., according to class standing. This selection is made from among those cadets who have been most studious and soldierlike in the performance of their duties, and the most exemplary in their general deportment.

Students who are regularly enrolled in the Advanced Course of the Senior Division receive three semester credits of elective work toward graduation for each semester of military training taken beyond the Basic Course.

COURSES IN MILITARY SCIENCE AND TACTICS

FOR UNDERGRADUATES

Senior Division, R. O. T. C.

BASIC COURSES, INFANTRY

101. INFANTRY I. Freshman year, first semester. Lectures, recitations, and military drill, four hours a week. One and one-half semester credits. Prerequisite: None. Lieutenant Cole.

The work of this course is divided as follows:

(a) *Practical.* Physical training, infantry drill, bayonet training, preliminary marksmanship.

(b) *Theoretical.* Recitation: Infantry drill regulations, theory of rifle marksmanship.

102. INFANTRY II. Freshman year, second semester. Lectures, recitations, and military drill, four hours a week. One and one-half semester credits. Prerequisite: Infantry I. Lieutenant Cole.

The course includes a study of infantry drill regulations, rifle marksmanship, personal combat, scouting and patrolling, signaling, and is divided as follows:

(a) *Practical.* Infantry drill, rifle range practice, bayonet and personal combat, scouting and patrolling, and signaling.

(b) *Theoretical.* Rifle marksmanship, lectures on scouting and patrolling, military courtesy and customs.

103. INFANTRY III. Sophomore year, first semester. Lectures, recitations, and military drill, four hours. One and one-half semester credits. Prerequisites: Infantry I and II. Captain Jones.

The course includes a study of infantry drill, review (as instructors), map reading, military sketching, and musketry, and is divided as follows:

(a) *Practical.* Acting as instructors of freshmen in infantry, drill, sketching and plane-table surveying, musketry problems.

(b) *Theoretical.* Sketching and map reading (panoramic and plane), musketry, fire discipline, fire control, fire direction.

104. INFANTRY IV. Sophomore year, second semester. Lectures, recitations, and military drill, four hours. One and one-half semester credit. Prerequisite: Infantry III. Captain Jones.

The work of this course includes study of infantry drill and maneuvers, musketry (continued), infantry weapons, command and leadership, hygiene and sanitation. It embraces:

(a) *Practical*. Infantry platoon problems in musketry, infantry weapons, demonstration of their uses and mechanisms, hygiene and sanitary inspections, practice in command and leadership.

(b) *Theoretical*. Study of infantry weapons, modern hygiene and sanitary methods, diseases, etc.

SIX WEEKS SUMMER TRAINING CAMP. Optional.

ADVANCED COURSES, INFANTRY

109. INFANTRY V. Junior year, first semester. Lectures, recitations, and military drill, five hours. Three semester credits. Prerequisites: Infantry I, II, III, and IV. Captain Waltz.

This course embraces a study of field engineering, accompanying infantry weapons, machine gun, 37-mm. gun, and light mortar, and is divided as follows:

(a) *Practical*. Leadership and instruction in all basic course subjects.

(b) *Theoretical*. Study and recitation, field engineering, mechanism and use of accompanying weapons.

110. INFANTRY VI. Junior year, second semester. Lectures, recitations, and military drill, five hours. Three semester credits. Prerequisite: Infantry V. Captain Waltz.

The course comprises a study of military history, administration, organization, command and leadership, and is divided as follows:

(a) *Practical*. Same as in course 109 (Infantry V).

(b) *Theoretical*. Accompanying weapons (continued), law (military and civil), rules of land warfare.

111. INFANTRY VII. Senior year, first semester. Lectures, recitations, and military drill, five hours. Three semester credits. Prerequisite: Infantry VI. Captain Stickney.

This course comprises a study of military history, administration, organization, command and leadership, and is divided as follows:

(a) *Practical*. Command and leadership, basic course.

(b) *Theoretical*. Study and recitation, military history, administration and organization.

112. INFANTRY VIII. Senior year, second semester. Lectures, recitations, and military drill, five hours. Three semester credits. Prerequisite: Infantry VII. Captain Stickney.

The course embraces study of minor tactics, pistol marksmanship, commands and leadership. It is divided as follows:

(a) *Practical*. Command and leadership, basic course subjects, tactical problems, pistol range problems.

(b) *Theoretical*. Military tactics, practical problems, mechanism and nomenclature, automatic pistol (caliber .45).

BASIC COURSES, COAST ARTILLERY

(For students of the Division of Engineering only)

113. ARTILLERY I. Freshman year, first semester. Lectures, recitations, and practical instruction, four hours. One and one-half semester credit. Prerequisites: None. Captain Norris.

The work of this course is the same as for course 101 (Infantry I).

114. ARTILLERY II. Freshman year, second semester. Lectures, recitations, and practical instruction, four hours. One and one-half semester credit. Prerequisite: Artillery I or Infantry I. Captain Norris.

The work of this course is the same as for course 102 (Infantry II).

115. ARTILLERY III. Sophomore year, first semester. Lectures, recitations, and practical instruction, four hours. One and one-half semester credit. Prerequisite: Artillery II or Infantry II. Captain Norris.

The work of this course is divided as follows:

(a) *Practical*. Infantry instruction, heavy artillery and anti-aircraft artillery, motor transportation.

(b) *Theoretical*. Infantry drill regulations, artillery material, motor transportation.

116. ARTILLERY IV. Sophomore year, second semester. Lectures, recitations, and practical instruction, four hours. One and one-half semester credit. Prerequisite: Artillery III. Captain Norris.

The work of this course is divided as follows:

(a) *Practical*. Section (a) of course 115 continued; motor transport.

(b) *Theoretical*. Motor transportation; orientation.

THE BASIC CAMP. This is held annually for about six weeks in the summer at Fort Monroe, Virginia.

ADVANCED COURSES, COAST ARTILLERY

(For students of the Division of Engineering only)

117. ARTILLERY V. Junior year, first semester. Lectures, recitations, and practical instruction, five hours. Three semester credits. Prerequisite: Artillery IV. Captain Spencer.

The course is divided into—

(a) *Practical*. Duties as cadet officers and noncommissioned officers in connection with courses 113, 114, 115, and 116; field engineering, artillery material, orientation.

(b) *Theoretical*. Gunnery, materiel and orientation.

118. ARTILLERY VI. Junior year, second semester. Lectures, recitations, and practical instruction, five hours. Three semester credits. Prerequisite: Artillery V. Captain Spencer.

This course is divided into—

(a) *Practical*. Section (a) of course 117 continued.

(b) *Theoretical*. Section (b) of course 117 continued, administration, military hygiene, military policy.

119. ARTILLERY VII. Senior year, first semester. Lectures, recitations, and military drill, five hours. Three semester credits. Prerequisite: Artillery VI. Major Chapman.

The course is divided into—

(a) *Practical*. Duties as cadet officers and noncommissioned officers; artillery materiel, orientation.

(b) *Theoretical*. Administration, gunnery, employment of artillery.

120. ARTILLERY VIII. Senior year, second semester. Lectures, recitations, and military drill, five hours. Three semester credits. Prerequisite: Artillery VII. Major Chapman.

This course is divided into—

(a) *Practical*. Section (a) of course 119; gunnery.

(b) *Theoretical*. Military law, gunnery, military policy, field engineering.

NOTE.—Advanced-course students are required to attend one camp. This comes normally at the end of the junior year and is held at the same place as mentioned above for the basic camp.

BASIC COURSES, VETERINARY CORPS

(For students in the Division of Veterinary Medicine only)

121. MILITARY SCIENCE (VET.) I. Freshman year, first semester. Lectures, recitations, and military drill, four hours. One and one-half semester credit. Prerequisites: None. Captain Brower.

The work of this course is divided as follows:

(a) *Practical*. Same as course 101 (Infantry I).

(b) *Theoretical*. Organization and administration, military art.

122. MILITARY SCIENCE (VET.) II. Freshman year, second semester. Lectures, recitations, and military drill, four hours. One and one-half semester credit. Prerequisite: Course 121. Captain Brower.

The work of this course is divided as follows:

(a) *Practical*. Same as course 102 (Infantry II).

(b) *Theoretical*. Organization and administration, sanitation, logistics, first aid.

123. MILITARY SCIENCE (VET.) III. Sophomore year, first semester. Lectures, recitations, and military drill, four hours. One and one-half semester credit. Prerequisite: Military Science (Vet.) 11. Captain Brower.

The work of this course is divided as follows:

(a) *Practical*. Same as section (a) of course 102; duties of privates and noncommissioned officers of the veterinary corps demonstrated.

(b) *Theoretical*. Tactics, logistics.

124. MILITARY SCIENCE (VET.) IV. Sophomore year, second semester. Lectures, recitations, and military drill, four hours. One and one-half semester credit. Prerequisite: Course 123. Captain Brower.

The work of this course is divided as follows:

(a) *Practical*. Same as courses 102 (Infantry II) and 123.

(b) *Theoretical*. Organization and administration; sanitation; military art, logistics, first aid.

ADVANCED COURSES, VETERINARY CORPS

(For students in the Division of Veterinary Medicine only)

129. MILITARY SCIENCE (VET.) V. Junior year, first semester. Lectures and recitations, three hours. Three semester credits. Prerequisite: Course 124. Captain Brower.

This course is divided into—

(a) *Practical*. Duties of junior officers demonstrated.

(b) *Theoretical*. Organization and administration, sanitation, and logistics.

130. MILITARY SCIENCE (VET.) VI. Junior year, second semester. Lectures and recitations, three hours. Three semester credits. Prerequisite: Course 129. Captain Brower.

This course is divided into—

(a) *Practical*. Continuation of section (a), course 129.

(b) *Theoretical*. Sanitation.

131. MILITARY SCIENCE (VET.) VII. Senior year, first semester. Lectures and recitations, three hours. Three semester credits. Prerequisite: Course 130. Captain Brower.

This course is divided into—

(a) *Practical*. Continuation of section (a), course 129.

(b) *Theoretical*. Organization and administration, sanitation.

132. MILITARY SCIENCE (VET.) VIII. Senior year, second semester. Lectures and recitations, three hours. Three semester credits. Prerequisite: Course 131. Captain Brower.

This course is divided into—

(a) *Practical*. Continuation of section (a), course 129.

(b) *Theoretical*. Organization and administration (continued), résumé of entire course.

Modern Languages

Professor CORTELYOU
Associate Professor LIMPER
Assistant Professor HESSE *

Instructor TOLLE
Instructor WILLMANN
Instructor HYDE **

The study of modern foreign languages serves a number of purposes. It gives the student general training and culture; it throws helpful side lights upon English, his mother tongue; and it gives him important aid in scientific research. It is desired that the instruction in modern languages here given be as practical as possible, without, however, failing to encourage an appreciation of modern foreign literature. The plan of instruction in general is a combination of the grammatical and conversational methods, each of which has its own special advantages.

A number of literary and scientific periodicals published in French, Spanish, and German are received by the College Library, and afford the student excellent opportunity to amplify his reading knowledge of these languages.

Students who have had French, Spanish, or German in high school are required, as a rule, to take more advanced courses as their elective or required work in that language.

COURSES IN GERMAN

FOR UNDERGRADUATES

101. GERMAN I. Freshman and junior years and elective, first semester. Class work, three hours. Three semester credits. No prerequisite. Professor Cortelyou and Associate Professor Limper.

In the work of this course there are included the study of articles, declensions of nouns and pronouns, the indicative mode of weak verbs, sentence order, and the comparison of adjectives. Frequent reviews enable the student to digest the facts presented, while the abundant conversation and written work subserves the same end. Text: Vos's *Essentials of German* (first eighteen lessons).

102. GERMAN II. Freshman and junior years and elective, second semester. Class work, three hours. Three semester credits. Prerequisites: German I, or its equivalent. Professor Cortelyou and Associate Professor Limper.

Students are repeatedly drilled on the grammatical constructions already emphasized in German I, of which this course is a continuation. The remaining important grammar points are studied. Essential facts of grammar are insisted upon, but German is taught as a living language. Written translations from English into German are frequent. Text: Vos's *Essentials of German* (completed).

111. GERMAN READINGS. Senior year and elective, first semester. Class work, three hours. Three semester credits. Prerequisite: German II, or its equivalent. Professor Cortelyou and Associate Professor Limper.

This course embraces readings of easy, idiomatic selections from modern authors. Grammatical drill is continued. German conversations based on the texts read are frequent. Text: *Aehrenlese*, by Bierwirth and Herrick.

FOR GRADUATES AND UNDERGRADUATES

201. GERMAN SHORT STORIES. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: German Readings. Offered when requested by a sufficient number. Professor Cortelyou and Associate Professor Limper.

The material read in this course comprises a number of short stories of considerable interest, by such modern authors as Auerbach, Niese, Goldhammer, La Roche, Leander, Scheffel, and Polenz.

* Absent on leave, year 1923-'24.

** Appointed for the year 1923-'24.

206. GERMAN COMEDIES. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: German Readings. Offered when requested by a sufficient number. Professor Cortelyou and Associate Professor Limper.

The course comprises the reading of recent one-act comedies of literary merit, and of a realistic, lively, and cleanly humorous nature, including the following: Julius Rosen's *Ein Knopf*, Gustav von Moser's *Ein amerikanisches Duell*, Hugo Mueller's *Im Wartesalon erster Klasse*, and Emil Pohl's *Die Schulreiterin*. Exercises in conversation and sight reading are occasionally introduced. Text: Manley and Allen's *Four German Comedies*.

226. GERMAN CLASSICS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Course 231. Offered when requested by a sufficient number. Professor Cortelyou.

This is a course introductory to a study of the German classics. Two or three of the simpler works of classic authors, such as Lessing's *Minna von Barnhelm* and Goethe's *Hermann und Dorothea*, are translated in the work of this term. Textbooks: Lessing's *Minna von Barnhelm*, edited by von Minckwitz and Wilder, and Goethe's *Hermann und Dorothea*, edited by Allen.

231. GERMAN PROSE. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Course 201 or 206. Offered when requested by a sufficient number. Professor Cortelyou.

This course is designed to give the student facility in the rapid translation of fairly easy prose. A number of modern short stories are read. Besides the more formal work, there are sight translations of easy selections. Text: Allen and Batt's *Easy German Stories*, Vols. I and II.

237. SCIENTIFIC GERMAN I. Senior year and elective, first semester. Class work, four hours. Four semester credits. Prerequisite: German II. Professor Cortelyou.

This course is designed as an introduction to the vast field of scientific publications appearing in German. It consists chiefly in translating miscellaneous scientific articles, especially those dealing with chemistry and physics. Text: Wright's *German Science Reader*.

COURSES IN FRENCH

FOR UNDERGRADUATES

151. FRENCH I. Sophomore and senior years and elective, both semesters and summer school. Class work, three hours. Three semester credits. Associate Professor Limper and Mrs. Tolle.

The first two class periods are devoted to learning the phonetic symbols and a number of useful French expressions. Conversation is used merely as a means to the acquisition of a reading knowledge of French. The fundamentals of grammar are covered in this and the succeeding course. Text: Lamb's *Inductive French Grammar*, complete edition (first twenty-five lessons).

152. FRENCH II. Sophomore and senior years and elective, both semesters and summer school. Class work, three hours. Three semester credits. Prerequisite: French I, or one year of high-school French. Associate Professor Limper and Mrs. Tolle.

This course is a continuation of French I. The grammar is completed, special attention being given to irregular verbs. Reading and conversation are continued throughout the course. Text: Lamb's *Inductive French Grammar* (completed).

161. FRENCH READINGS. Elective, first semester and summer school. Class work, three hours. Three semester credits. Prerequisite: French II. Associate Professor Limper and Mrs. Tolle.

This is essentially a reading course, the purpose being to enlarge the student's vocabulary. Grammar is reviewed and considerable time is devoted to conversation. Text: Monvert's *La Belle France*.

FOR GRADUATES AND UNDERGRADUATES

251. FRENCH SHORT STORIES. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: French Readings or two years of high-school French. Associate Professor Limper and Mrs. Tolle.

The purpose of this course is to introduce the student to modern French literature. The modern short story, since it covers so large a range of subjects, also offers excellent material for the enlargement of the vocabulary. Stories by such writers as Daudet, Maupassant, and Zola are read. Text: Buffum's *French Short Stories*.

256. THE FRENCH DRAMA. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: French Readings. Associate Professor Limper.

A few of the outstanding plays of the seventeenth, eighteenth, and nineteenth centuries by Molière, Corneille, Beaumarchais, Labiche et Martin, and Hervieu are read in this course. The place that these plays occupy in the history of the French drama is brought out by lectures and collateral reading.

261. FRENCH COMPOSITION AND CONVERSATION. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Twelve hours of college French, or the equivalent. Offered when requested by a sufficient number. Associate Professor Limper.

This course is for those who desire to acquire fluency in writing and speaking French. The class period is devoted to practice in the spoken language. Written themes are required as preparation for each recitation.

270. TEACHERS' COURSE IN FRENCH. Elective; offered when requested by a sufficient number. Class work, three hours. Three semester credits. Prerequisite: Consult instructor. Associate Professor Limper.

The subject matter of this course includes the following: The anatomical basis for the production of the sounds peculiar to the French language; methods of presenting grammar, with a thorough and systematic review of the subject; a careful examination of the various French reading texts used in the state; and methods of conducting a *cercle français*, and material to be used in it.

COURSES IN SPANISH

FOR UNDERGRADUATES

176. SPANISH I. Elective, both semesters and summer school. Class work, three hours. Three semester credits. Assistant Professor Hesse and Miss Willmann.

In this course nouns, adjectives, pronouns, demonstratives, and numerals are treated and the indicative mode of verbs is studied. The course is largely conducted in Spanish, the student gradually acquiring a fair-sized and practical vocabulary. Texts: Olmsted's *First Course in Spanish* and reader.

177. SPANISH II. Elective, both semesters. Class work, three hours. Three semester credits. Prerequisite: Spanish I, or one year of high-school Spanish. Assistant Professor Hesse and Miss Willmann.

In addition to study of grammar which is here completed, considerable reading is done. Stress is laid upon training the ear to understand spoken Spanish. Texts: Olmsted's *First Course in Spanish* and Rivera and Doyle's *En España*.

180. SPANISH READINGS. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Spanish II. Assistant Professor Hesse and Miss Willmann.

A thorough study is made of one or two of the best works in Spanish literature from the more modern writers. One hour a week is devoted entirely to conversation and composition, the subjects being taken from current topics of the day. Texts: Marmol's *Amalia*, edited by Corley, and Alarcon's *El Final de Norma*.

183. COMMERCIAL SPANISH. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Spanish II. Assistant Professor Hesse.

This course is intended to equip the student with a commercial vocabulary and with the elements indispensable to success, especially necessary if he should pursue his business in Latin-American countries. Text: McHale's *Commercial Spanish*.

186. SPANISH SHORT STORIES. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Spanish Readings. Assistant Professor Hesse and Miss Willmann.

An effort is made in this course to give a glimpse into the realm of Spanish literature without the necessity of reading various length novels and histories of literature. The stories here read are chosen from the most eminent of modern Spanish authors, such as Bèquer, Trueba, Alarcón, Valès, and Ibañez. The rich and varied vocabulary here offered has both literary and practical value and furnishes ample material for conversation. Text: *Spanish Short Stories*, by Hills and Reinhardt.

196. SPANISH COMPOSITION AND CONVERSATION. Elective, first semester. Class work, three hours. Three semester credits. Prerequisite: Spanish Readings or Commercial Spanish. Assistant Professor Hesse and Miss Willmann.

The aim of the course is to give the student the tools with which to really use the Spanish language, to enable him to read, write and speak the language correctly and idiomatically. Two hours a week are devoted to composition and one hour to conversation. Text: Crawford's *Temas Españoles*.

Music

Professor PRATT
Associate Professor WHEELER
Associate Professor SMITH
Assistant Professor PUTNAM
Assistant Professor GORDON
Assistant Professor DANIELSON
Assistant Professor ELLIS
Assistant Professor RINGO
Assistant Professor WARREN

Instructor GRUBER
Instructor LAMONT
Instructor SMITH
Instructor MANNING
Instructor ROSEMOND
Instructor BROWN
Instructor ILLINGWORTH
Assistant THORNBURG
Assistant SCOTT

The aim of the Department of Music is, to be of vital value in the life of every student. The department strives to create and foster a love and appreciation for the best in music and to give to students that broader culture and more complete education which is gained through academic and professional and vocational training combined with musical and artistic study. Believing that this can be accomplished to a much greater degree by having artistic performers among us, courses are offered which will prepare those who so desire to be efficient in some chosen musical line. Students enrolled in the department participate in the musical contributions to the public programs of the College, and such participation is a part of their training and study.

METHODS OF INSTRUCTION

Instruction in voice and instrumental music is given in private lessons. No two students have the same mental, physical or artistic capacity, and their individual capabilities can be neither properly nor fully developed without painstaking personal attention. The best results are dependent on a close adaptation to the individual needs of the pupils, and this, of course, cannot be gained in classes, as is the case in the individual lessons. The effectiveness of the methods used is demonstrated by the interest and progress of the pupils.

All theoretical work is taught in classes. These and some other classes in the Department of Music are free to any student in the institution.

CREDITS

Students taking work in the Department of Music to a sufficient extent are allowed credits on their electives in the Divisions of General Science, Home Economics, and Agriculture, while substitutions in music, with the approval of the dean, may be made in the Division of Engineering, as follows: For Voice or some instrument, two hours each semester; for Musical History, two hours each semester; for Harmony, two hours each semester; for Counterpoint, Musical Form and Musical Analysis, two hours each semester; for Chorus, Orchestra or Band, one hour each semester; for Public-school Music Methods, two hours each semester. Any student having a full assignment may, upon recommendation of the director of music together with the approval of the student's dean, take music without credit.

Students coming from other schools to enter our courses in music may be sufficiently advanced as players or singers to enter the second or third year of the regular music curricula but prohibited therefrom owing to their lack of knowledge of theory. If such students enter the first year of the theoretical course, their progress as players and singers is not retarded, but it would be much to their advantage to make special theoretical preparation in the hope of qualifying for more advanced standing.

Applicants for freshman standing in the four-year music curricula must pass an examination over certain required work. Examinations also will be held at the close of each year before advanced standing is allowed. A list of this examination material may be had by writing the director of the Department of Music.

PRELIMINARY PIANO TRAINING

Preliminary training in piano is undertaken by two classes of students. The first class consists of College students not able to meet the College entrance requirements in piano, and of high-school students. The second consists of children; they take one hour of class work each week, supplementing private lessons.

Special training is given in rhythm, sight reading, scale building, melody writing, ear training, and appreciation. This work aims to develop in the student a natural means of expression through music and to furnish the right foundation for a musical education.

AUXILIARY PIANO TRAINING

Attendance at a one-hour auxiliary class alternate weeks is required of all students majoring in piano. Frequent opportunity for playing is given here and a study is made of musical terminology and of the development of piano literature.

THEORETICAL COURSES IN MUSIC

The aim of theoretical courses is to give the student an intelligent conception of music through the study of its historical development and scientific constructions in either composition or interpretation.

FOR UNDERGRADUATES

101, 102. **HARMONY I AND II.** Freshman year, first and second semesters, respectively. Class work, two hours. Two semester credits for each. Prerequisite: Knowledge of fundamentals of musical notation. Assistant Professor Gordon.

This course includes the study of scales, intervals, primary and secondary triads and their inversions; harmonizing given basses and melodies; chords of the dominant seventh; secondary seventh chords, modulation; original work begun, and keyboard harmony.

103, 104. **HARMONY III AND IV.** Sophomore year, first and second semesters, respectively. Class work, two hours. Two semester credits for each course. Prerequisite: Harmony II. Assistant Professor Gordon.

This course includes the study of: modulation (continued); altered chords,

embellishments, pedal point, accompaniments, and original work in the use of all the material in courses 101, 102, 103 and 104.

105, 106, 107 and 108. EAR TRAINING AND SIGHT SINGING I, II, III AND IV. Freshman and sophomore years, first and second semesters, respectively. Class work, two hours. Two semester credits in the music curricula; no credit elsewhere. Prerequisite: Same as for Harmony I. Assistant Professor Danielson.

This course is a study in the reading and hearing of intervals, chords, and rythmical forms.

108 A. COUNTERPOINT. Junior year, first semester. Class work, two hours. Two semester credits. Prerequisite: Harmony IV. Assistant Professor Gordon.

The course in counterpoint consists of the study of simple counterpoint in two parts; first, second, third, fourth and fifth species, and florid counterpoint.

109. MUSICAL FORM AND ANALYSIS. Junior year, first and second semesters. Class work, two hours. Two semester credits. Prerequisites: Harmony IV and Counterpoint. Assistant Professor Gordon.

Chord reading and the accounting theoretically for every note in a piece of music, combined with analytical study of hymn tunes, preludes, inventions, and dance forms of Bach, small instrumental forms, song forms, sonata forms, cantata and oratorio forms are the substance of this course.

110, 111. HISTORY OF MUSIC I AND II. Freshman year, first and second semesters, respectively. Students may enter at the beginning of either semester, however. Class work, two hours. Two semester credits for each course. Professor Pratt.

A modern text forming the basis of this work is supplemented by lectures and library research. Time is given to the early and primitive development of the art, but special stress is laid upon the classical, Roman and modern periods, together with the present-day conditions and tendencies. In addition to theses upon the general historical and critical subjects, the class is also given practice in journalistic criticism of concert and recital performances.

115, 116. MUSICAL APPRECIATION I AND II. Freshman year, first and second semesters, respectively. Class work, one hour. No credit. Required of students in music curricula. Professor Pratt.

The appreciation of all things in life comes through familiarity with them. For the majority of people familiarity with good music must come entirely through hearing it. This course is presented in a nontechnical way, with extensive use of gramophone records, player piano and personal illustrations by faculty members, with the sole design of facilitating intelligent listening and greater appreciation of the beauties of music.

117. CONDUCTING. Junior year, first semester, music curricula, and second year, second semester, public-school music curriculum. Class work, one hour. One semester credit. Associate Professor Wheeler.

Practical training is given in the essentials of good conducting. This includes the correct method of indicating all forms of rhythm, the seating arrangements of bands, orchestras, and choruses, and a practical illustration of the use of this information in the various ensemble organizations of the College. The value of such a course can be readily appreciated by anyone who has tried to do conducting.

118. VOCAL COMPOSITION. Elective, second semester. Class work, one hour; six hours of preparation. Two semester credits. Prerequisites: Harmony I, II, III and IV. Professor Pratt.

Rhythm and tone color in poetry are studied comprehensively. Original musical settings are written for the different poetic forms. Vocal solos, duets, trios and quartets are composed, both with and without piano accompaniment.

119. INSTRUMENTAL COMPOSITION. Elective, second semester. Class work, one hour; six hours of preparation. Two semester credits. Prerequisites: Harmony I, II, III and IV, and Counterpoint. Assistant Professor Gordon.

This is an advanced study in composition. Music is written for all instruments, both in solo and ensemble.

120, 121. PUBLIC-SCHOOL MUSIC I AND II. First year, first and second semesters, respectively. Lectures and research, two hours. Two semester credits for each course. Prerequisite: An understanding of musical notation and the piano keyboard. Assistant Professor Danielson.

These courses are given for the training of teachers of music in the public schools. They meet the requirements of the state of Kansas for such training.

122, 123. PUBLIC-SCHOOL MUSIC III AND IV. Second year, first and second semester, respectively. Lectures, research, and practice teaching, two hours. Two semester credits for each course. Assistant Professor Danielson.

These courses are a continuation of Public-school Music I and II.

124, 125. PUBLIC-SCHOOL MUSIC V AND VI. Junior year, first and second semesters respectively. Lectures, research and practice teaching, two hours. Two semester credits for each course. Prerequisites: Public-school Music I, II, III, and IV. Assistant Professor Danielson.

These courses are a continuation of Public-school Music I, II, III and IV.

126, 127. PUBLIC-SCHOOL MUSIC VII AND VIII. Senior year, first and second semesters, respectively. Lectures, research, and practice teaching, two hours. Two semester credits for each course. Prerequisites: Public-school Music V and VI. Assistant Professor Danielson.

These courses are a continuation of Public-school Music I to VI.

130. INSTRUMENTATION. Senior year, first semester. Class work, two hours. Two semester credits. Prerequisites: Harmony I and II. Associate Professor Wheeler.

All the instruments of the band and orchestra are studied with relation to their characters, ranges and functions. Simple and familiar compositions are scored for small ensemble, viz., string trio, quartet, quintet, and for wind quartet and sextet.

133. ORCHESTRATION. Senior year, second semester. Class work, two hours. Two semester credits. Prerequisites: Harmony I, II, III, and IV, and Counterpoint. Associate Professor Wheeler.

The writing of music for the orchestra and the band is studied. Analytic and synthetic study is made of music scores.

140. NORMAL PIANO METHODS. Junior year, first semester. Class work, two hours. Two semester credits. Associate Professor Smith.

Teaching material for the piano is studied and presented, and there is frequent observation of lessons given in the preliminary piano classes.

145. METHODS OF TEACHING MUSIC. Junior year, first semester. Lectures, research, and demonstration, one hour. One semester credit. Professor Pratt, Associate Professors Wheeler and Smith, Mr. Lamont.

This course is designed for those preparing to teach applied music in high schools. It is taught in separate divisions for piano, voice, violin and the other instruments of band and orchestra. The course comprises a study of methods of teaching fundamental technic, selection of teaching materials, and the outlining of courses of study.

PRACTICAL COURSES IN MUSIC

FOR UNDERGRADUATES

155. MUSICAL FUNDAMENTALS. Elective, both semesters. Class work, one hour. One semester credit. Assistant Professor Gordon.

This course is presented to meet the needs of many students who come to us each year with a desire for some training in music, but with no knowledge of music notation and without sufficient time or money to devote to a regular musical instruction course. The work consists largely of class singing, the

study of note values, rhythm, scales, intervals, key signatures, etc., and the application of this knowledge to the singing of part songs.

160A to 160H. VOICE I to VIII. Two private lessons each week; twelve hours of preparation. Four semester credits for each course. Professor Pratt, Assistant Professor Putnam, Assistant Professor Ellis, Mr. Gruber, Miss Manning, and Miss Scott.

The instruction in these courses is based primarily on the Garcia method of voice training, adapted to meet the needs of English-speaking pupils. The production of tone in singing is controlled by certain fundamental, explainable laws of phonetics, and breath control. Teaching the intelligent use of these laws is the constant object in these courses. Coaching is given in the singing of French, Italian, and German songs, but the greater part of the work is in English, and pure enunciation of our language is stressed constantly. Teachers are provided for all grades of students from the very beginning to those preparing for professional work.

161A to 161H. VOICE A-I to A-VIII. Freshman year, first semester to senior year, second semester, public-school music curriculum, and elective. Two private lessons each week; six hours of preparation. Two semester credits. Professor Pratt, Assistant Professors Ellis and Putnam, Mr. Gruber, Miss Manning, and Miss Scott.

The instruction in this course follows the same plan as that pursued in courses 160A to 160H, but less preparation is required.

163A to 163H. VOICE B-I to B-VIII. Freshman year, first semester to senior year, second semester, and elective. One private lesson each week; six hours of preparation. One semester credit for each course. Professor Pratt, Assistant Professors Putnam and Ellis, Mr. Gruber, Miss Manning, and Miss Scott.

The instruction in this course follows the same plan as that pursued in courses 161A to 161D, with but one lesson per week instead of two.

165A to 165H. VIOLIN I to VIII. Two private lessons each week. For freshmen and sophomores, twelve hours of preparation; four semester credits for each course. For juniors and seniors, twenty-four hours of preparation; six semester credits for each course. Assistant Professor Gordon, Mr. Lamont.

In this course the aim is to teach the fundamentals of violin playing in such a manner as to lay the foundation of intelligent musicianship. Mastery of the instrument is a task that imposes different difficulties upon each student, and no definite method of instruction can be outlined which can be pursued profitably by all players. However, a graceful and natural method of playing is insisted upon and great care is exercised to develop an accurate feeling for good intonation. Studies and exercises from the best writers are selected, and as the student develops the entire field of violin literature is open for study.

Violoncello, viola and contrabass receive the same attention in these courses as does the violin.

166. VIOLIN A. Elective in College curricula. Two private lessons each week; six hours of preparation. Two semester credits. Mr. Lamont.

Instruction in this course is much the same as in Violin I to VIII, but less preparation is required to meet the needs of students taking this course as an elective.

167. VIOLIN B. Elective in College curricula. One private lesson each week; six hours of preparation. One semester credit. Mr. Lamont.

Instruction in this course is the same as in Violin A, with but one lesson per week instead of two.

168A, 168B. VIOLIN ENSEMBLE I AND II. Junior year, first and second semesters, respectively. Class work, two hours. Two semester credits. Prerequisites: Freshman and sophomore violin, viola, violoncello, or contrabass, or the equivalent. Mr. Lamont.

This is a practical course in the playing of string duets, trios, quartets, and other ensemble compositions.

170A to 170H. PIANO I TO VIII. All four years. Two private lessons each week. For Piano I to IV: eighteen hours of preparation; four semester credits. For Piano V to VIII: twenty-four hours of preparation; six semester credits. Associate Professor Smith, Assistant Professors Ringo and Warren, Miss Brown, Miss Rosemond, Miss Smith, and Miss Thornburg.

The methods pursued in these courses are direct and simple and are based on scientific principles. The purpose of piano instruction is to make music lovers of its students, and for those who plan to make music their profession to give a sound technical foundation, to cultivate a thinking musicianship, to acquaint students with a generous amount of the best music literature, to develop capable teachers and good amateur performers, and thus to furnish the foundation upon which the superstructure of the artist may be built. The piano instruction as outlined for each year is a conservative estimate of what a student of average talent is expected to accomplish. In the piano ensemble classes, where the purpose is to develop sight reading and concerted playing, the student has an opportunity to become acquainted with some of the best orchestral works arranged for this purpose.

172A to 172H. PIANO A-1 TO A-VIII. Freshman year, first semester to senior year, second semester, public-school music curriculum, and elective. Two private lessons each week; six hours of preparation. Two semester credits. Associate Professor Smith, Assistant Professors Ringo and Warren, Miss Brown, Miss Rosemond, Miss Smith, and Miss Thornburg.

Instruction is much the same as in Piano I to VIII, but less preparation is required and less credit is given.

174A to 174H. PIANO B-I TO B-VIII. First year, first semester, to senior year, second semester, public-school music curriculum, and elective. One private lesson each week; six hours of preparation. One semester credit for each course. Associate Professor Smith, Assistant Professors Ringo and Warren, Miss Brown, Miss Rosemond, Miss Smith, and Miss Thornburg.

Instruction follows the same plan as in Piano I to VIII, but less preparation is required than in those courses.

175A to 175D. PIANO C-I TO C-IV. This course is a prerequisite to course 170A. No credit.

This work may be done in one semester or may require longer, according to the ability and previous training of student.

176A to 176H. PIANO ENSEMBLE I TO VIII. Required throughout the piano curriculum. One hour each week. No credit. Associate Professor Smith and Assistant Professor Ringo.

During the first and second years classes of four students each are formed for practice in ensemble sight reading. During the third and fourth years the work is done partly in classes of four, but develops into two-piano work, training for accompanying, and ensemble with various groups of orchestra instruments. Every two weeks a playing class is held, at which students in the piano curriculum play frequently. This class is open to all piano students for performance and attendance.

180A to 180H. ENSEMBLE I TO VIII. One course each semester throughout the music curricula. Class work, one hour. One semester credit for each course. Professor Pratt and Associate Professor Wheeler.

The required ensemble work may be taken in Choral Society (courses 190A to 190H), Orchestra (courses 193A to 193H), or College Band (courses 196A to 196H). For further information concerning this work, see these courses.

182. WIND INSTRUMENTS. Elective, both semesters. Two private lessons each week; six hours of preparation. Two semester credits. Associate Professor Wheeler, Assistant Professor Gordon, and Mr. Illingworth.

In this course opportunity is offered for the study of any wind instrument. Both the Albert and the Boehm systems of clarinet playing are used. The instruction begins with elementary scale and technical study and extends over the more difficult literature written for wind instruments. Instruction in instrumentation, conducting and formation of bands is also given.

183. WIND INSTRUMENTS A. Elective, both semesters. One private lesson each week; six hours of preparation. One semester credit. Associate Professor Wheeler, Assistant Professor Gordon, and Mr. Illingworth.

Instruction in this course is the same as that in course 182 with but one lesson per week instead of two.

184A to 184F. RECITAL I TO VI. Sophomore, junior, and senior years. Courses I, II, III, and V carry no credit; courses IV and VI carry two semester credits each.

These courses are required of each student in each of the three four-year music curricula. In the second semester of the junior and senior years (courses IV and VI) the student gives an entire solo recital.

186A, 186B. REPORTOIRE I AND II. Junior and senior years, voice curriculum. Class work, two hours. Two semester credits. Professor Pratt.

These courses present an exhaustive study of vocal literature of all periods. Songs are prepared out of class and presented in class for criticism. Classes in this course are limited to a maximum membership of eight.

188. PRACTICE TEACHING OF MUSIC. Junior year, second semester. Class work, two hours. Two semester credits. Professor Pratt, Associate Professors Smith and Wheeler, and Mr. Lamont.

Students in the piano, violin, voice and public school music curricula are required to do practice teaching in private classes during the second semester of the junior year.

MUSICAL ORGANIZATIONS

The existence of an organization of individuals is justified by the service such a body renders. The musical organizations of this College are second to none in the colleges of America. Students are here given a rare opportunity to study the great musical compositions that have been written for various ensemble combinations, and to render very real service to the College and community as well as to themselves in the presentation of public programs.

190A to 190H. CHORAL SOCIETY I TO VIII. This group of courses covers four years. Weekly rehearsals, all special rehearsals and public performances. One semester credit for each course. Prerequisite: Ability to read musical notation and to sing in tune. Professor Pratt.

The Choral Society numbers over two hundred and is one of the best student singing organizations in the Middle West. In connection with the local singers of Manhattan, "The Messiah" is presented every year before the Christmas vacation, and some other great oratorio is presented during the Spring Festival of Music.

THE MEN'S GLEE CLUB. The Men's Glee Club is composed of about thirty of the best men's voices in the College. Membership is open to the best voices that try out from the whole College. This organization is available for a limited number of concert engagements throughout the state. Assistant Professor Putnam and Mr. Gruber.

THE WOMEN'S GLEE CLUB. This is an organization of the young women of the College. The voices are selected in the same manner as are those of the Men's Glee Club. These two clubs are unexcelled in the Middle West and are combined for choir singing at the College. Assistant Professor Ellis directs the Women's Glee Club.

193A to 193H. ORCHESTRA I TO VIII. This group of courses covers all four years of the curriculum. Regular rehearsals, all special rehearsals and public performances. One semester credit for each course. Associate Professor Wheeler.

The College Orchestra is a definite organization in which discipline prevails and permanent membership with regular attendance is insisted upon. This body maintains a correct and well-balanced instrumentation, containing all the instruments of the modern symphony orchestra. The work is highly edu-

cational, and offers in the preparation of concerts and performances with the Choral Society the actual experience and routine necessary for efficient orchestra playing. Membership is open to all in the College who are capable of playing acceptably.

196A to 196H. BAND I to VIII. This group of courses covers all four years of the curriculum. Regular rehearsals, all special rehearsals and public performances. One semester credit for each course. Associate Professor Wheeler.

Practice in the College Band may be accredited through the Department of Military Science in lieu of drill and theoretical instruction. The band furnishes music for all ceremonies of a military character and for various other College occasions.

FEEES IN MUSIC

Two lessons each week for a semester:

Piano	\$40, \$34, \$30 or \$27
Voice	45, 34, 30 or 27
Violin	34, 30
Other orchestral instruments.....	34

One lesson each week for a semester:

Piano	\$22, \$19, \$16, \$14
Voice	26, 22, 19, 16, \$14
Violin	19, 16
Other orchestral instruments.....	19

Physical Education and Athletics

Professor AHEARN
 Professor BACHMAN
 Assistant Professor KNOTH
 Assistant Professor CORSAUT

Assistant Professor MORRIS
 Instructor WATSON
 Assistant WADE

The purpose of the Department of Physical Education and Athletics is to assist the students of the College to live to the best advantage, and so to aid them in the formation of hygienic habits that during their College course they may make profitable physical preparation for life. It is an urgent necessity that each student have an intelligent appreciation of the means requisite for the preservation of his health, in order that he may be able to formulate intelligently his own policy of health control.

All young men and all young women of the College are entitled to the privileges of the gymnasium, which is one of the largest in the West and is well equipped with all sorts of apparatus for physical training, with lockers, plunge baths, shower baths, and other accommodations.

In certain courses, as shown below, a locker deposit of \$2 is required. Upon return of lock, key, and towels a refund of \$1.50 is made in each case.

PHYSICAL EDUCATION FOR MEN

Physical education is required of all freshmen and sophomores unless excused for disability by the College physician. After the requirement is completed, advanced work may be elected for a total of four hours of credit.

PHYSICAL EXAMINATIONS

The work of the department is based largely upon a physical examination given each student when he enters upon the work of the department. A second examination is given at the close of his first year. All students, whether taking work in the department or not, are entitled to receive a physical examination and advice as to their physical condition.

The measurements taken and the tests given have each a definite purpose with reference to ascertaining the muscular condition of the individual. A diagnosis is also made of the vital organs to ascertain their functional condi-

tions, and a complete inspection of the whole body is made to detect any weakness or deformity that may exist. Based upon the information thus obtained, advice is given and work is assigned to students in accordance with their physical needs, tastes, and capabilities. Delicate students and those suffering from functional disorders receive individual attention. Students organically sound are assigned work in a carefully graded and progressive system of gymnastics and athletics. All candidates for athletic teams should enroll in the department, submit to a thorough physical examination, and pass the grade tests before being allowed to compete for positions on the various teams. Students engaging in two or more sports during the school year must undergo a physical examination preliminary to participation in each sport. This is required in order that no student may engage in athletics to his own permanent physical injury. Each student may secure a copy of his physical measurements, and an anthropometric chart, showing in graphic form his development as compared with that of the average man.

Members of the teams, reporting regularly, are excused from regular class work, and are entitled to full credit in that portion of their work; but before the completion of the course at least two semesters' work must be done in the gymnasium. Credit, the equivalent of a one-hour subject, is given and counts toward the College degree. The individual's grade rests largely on the basis of attendance, punctuality, earnestness, and application, but practical tests are also given.

Regulation uniforms must be worn in the gymnasium. Students are advised not to procure uniforms until after their arrival at the College.

Various grades of gymnastic and athletic exercises are offered by the department. The great variety of exercises offered is intended to meet all individual needs, capacities and tastes. A physical examination and test determine the grade or class of exercises for which a student is fitted.

COURSES IN PHYSICAL EDUCATION

103. PHYSICAL EDUCATION M-I. Freshman year, first semester. Two hours a week. Assistant Professor Knoth.

Hygiene and social problems are discussed as an essential part of this course. This instruction gives an insight into the practical problems of daily healthy living from a personal point of view. Directions are given for avoiding the common ills of student life, and for maintaining the highest physical and mental condition while in College, as well as for gaining the highest development of vital power and health for future duties.

During the winter the practical work is conducted indoors, and consists of light and heavy gymnastics, which are selected with a view to obtaining progressive effect upon the bodily organism. During the fall a man may select Rugby football or soccer football. Beginning about December first the work consists of the following:

a. *Free Calisthenics*. Exercises are selected for their different effects upon the bodily organism, and are arranged in the order of increasing difficulty. They involve hygienic or body-building work, educative movement, and corrective or remedial exercises. Both the Swedish and the German systems are used.

b. *Light Apparatus*. Training is given in the use of Indian clubs, dumb-bells, wands, bar bells, etc.

c. *Heavy Apparatus*. Graded exercises are given on parallel bars, vaulting bars, bounce board and mat, side and long horse, high and low horizontal bars, traveling and flying rings, etc.

d. *Indoor Athletics*. Instruction is given in all indoor track events preparatory to indoor track meets.

e. *Games*. There are included basket ball, indoor baseball, volley ball; also other games of more recreative nature.

Locker deposit, \$2.

104. PHYSICAL EDUCATION M-II. Freshman year, second semester. Two hours a week. Assistant Professor Knoth.

This course is a continuation of Physical Training M-I. Baseball, track and field athletics are given in the spring as soon as weather conditions permit outdoor work. A part of the regular instruction for the spring semester is in swimming. A passing grade must be made in this phase of the work also. Locker deposit, \$2.

105. PHYSICAL EDUCATION M-III. Sophomore year, first semester. Two hours a week. Assistant Professor Knoth.

This course is a continuation of Physical Education M-II. It is required of all young men of the sophomore class. Locker deposit, \$2.

106. PHYSICAL EDUCATION M-IV. Sophomore year, second semester. Two hours a week. Assistant Professor Knoth.

This course is a continuation of Physical Education M-III. It is required of all young men of the sophomore class. Locker deposit, \$2.

110. ADVANCED APPARATUS I. Elective, first semester. Three hours a week. One semester credit. Assistant Professor Knoth.

This course is open only to those men who show ability as gymnasts. From this class men are picked for the gymnastic team. Tumbling and work on the various pieces of apparatus are given. Locker deposit, \$2.

111. ADVANCED APPARATUS II. Elective, second semester. Three hours a week. One semester credit. Assistant Professor Knoth.

This is a continuation of Advanced Apparatus I. Locker deposit, \$2.

120. PHYSICAL TRAINING SPECIALTIES. Under this head come fencing, boxing, wrestling, offered as advanced work to those who have had not less than two semesters of work in the gymnasium. Hours are arranged with the instructor. Locker deposit, \$2.

126. FOOTBALL. Elective, second semester and summer school. Lectures and recitations, two hours. Two semester credits. Professor Bachman.

This course covers the following phases: Spirit of the game, discussion of the rules, tackling the dummy, charging sled, defense in general, line defense, secondary defense, kick-off, punting, place kicking, drop kicking, direct pass plays, systems of offense in general, quarter-back pass plays, interference signals, training, and equipment.

130. BASKET BALL. Elective, first semester and summer school. Lectures and recitations, one hour. One semester credit. Assistant Professor Corsaut.

The work covers a discussion of the rules, technic of basket shooting, foul throwing, catching and passing, dribbling, reverse turn, different styles of play, offense, defense, team work, selection of players, training and equipment.

135. BASEBALL. Elective, second semester and summer school. Lectures and recitations, one hour. One semester credit. Assistant Professor Corsaut.

This course includes discussion of the rules, fielding, batting, bunting, base running, sliding, team work, pitching, catching, proper way to play each position, indoor and outdoor practice methods, coaching, signals, training and equipment.

140. TRACK AND FIELD SPORTS. Elective, first semester and summer school. Lectures and recitations, one hour. One semester credit. Professor Bachman.

This course covers discussion of the rules, starting, sprinting, distance running, hurdling, jumping, vaulting, shot putting, discus throwing, javelin throwing, training, dieting, and equipment.

142. THEORY OF PHYSICAL EDUCATION AND PLAYGROUND MANAGEMENT. Elective, summer school. Lectures and recitations, two hours. One semester credit. Assistant Professor Knoth.

The theory of the systems of physical education is studied. The philosophy of play, and the organization and equipment of the playground are considered.

144. CALISTHENICS AND GAMES. Elective, summer school. Lectures and recitations, six hours. Three semester credits. Assistant Professor Knoth.

In this course the following topics are studied: Calisthenics with and with-

out hand apparatus, including gymnastic marching tactics; personal proficiency in execution and exactness of form; progression and value of system in these exercises; use of wands, clubs, dumb-bells, etc.; practice teaching; plays and games to meet the requirements of children of all ages; simple teams, group and competitive teams.

146. ADMINISTRATION AND ORGANIZATION IN PHYSICAL EDUCATION. Elective, summer school. Lectures and recitations, two hours. One semester credit. Assistant Professor Knoth.

Problems in administration and organization of work in physical education are taken up. Intercollegiate, intramural, and mass athletics are studied. Sportsmanship and ethics are considered.

148. TEACHERS' COURSE IN PHYSICAL EDUCATION. Elective, summer school. Lectures, recitations, and practice teaching. Three semester credits. Assistant Professor Knoth.

This is a general course in physical education which touches on all the phases of physical education. It gives the teacher a good working basis upon which to conduct this work in the high school.

ATHLETICS

DEPARTMENTAL ATHLETICS. In the fall and in the spring the courses in the gymnasium are partly supplemented by instruction in outdoor athletics. Individuals are assigned to the kind of work best suited to them. Attendance is compulsory upon those participating. In the fall the following sports are offered: football; track and field events; cross-country running; and outdoor basket ball. In the spring are offered: baseball; track and field events; cross-country running; and outdoor basket ball.

Cross-country running is encouraged throughout the year. Natural exercise in the open air takes precedence of all other forms of exercise. Opportunity is offered for tennis, but it cannot be elected in place of required work.

Days unsuited for outdoor work are devoted to a discussion of playing rules, the principles of training for athletic contests, and lectures on team work.

INTRAMURAL ATHLETICS. All athletics within the institution, including the Vocational School teams, come directly under the supervision of the Department of Physical Education. It is the aim of the department to furnish an opportunity for all students to participate in some form of healthful athletic competition. To carry out the above aims, class football is maintained during the fall among the different classes of the College, also among the different classes of the Vocational School. Basket ball also is promoted during the fall and early part of the winter among the different fraternities, different classes, and different cadet companies, as well as among the students of the different departments of the College.

The work of the spring is largely given over to competition in baseball among the different classes, both in the College and Vocational School, the different departments of the institution and boarding-house teams. It is the aim of the department, too, to revive an interest in track athletics among the different classes of the institution. All these activities as promoted will be run, as nearly as possible, on a tournament plan, making it possible for a large majority of the students to participate in some form of activity. Suitable trophies will be presented and suitable emblems will be granted to participants on winning teams.

In addition to interclass competition there will be a small outside schedule for the Vocational School in the different forms of athletics promoted by the department.

By action of the Student Council, approved by the Faculty, the following rules govern class athletic contests:

1. Managers of class teams are required to play only men who hold assignments to the class with which they play.

2. The requirements for participation in class games are the same as for varsity teams.

3. The respective managers of class athletics are required to present a certified list of eligible players to each other at each game.

4. No man who has been a member of the varsity squad during a given season shall participate in a class game during that season.

5. No man shall participate in a class game who has won a K in that sport.

INTERCOLLEGIATE ATHLETICS. These contests are promoted and encouraged for the more vigorous students, because of their effect upon College life and their wide social and moral value to the participants. Intercollegiate teams should represent the final stage of selection in an educational process and development among a large number of students, thereby giving both a rational physical-education system and a healthful system of sport. Intercollegiate contests are scheduled for football, basket ball, track athletics, and tennis. The College is a member of the Missouri Valley Conference and competes with the best teams in the Middle West.

Intercollegiate athletics are placed under the supervision of the Athletic Board by an order of the Board of Administration. This Athletic Board consists of the president of the College, four other members of the Faculty appointed by the Board of Administration, and one member from each College class, elected by the respective classes.

Participation in intercollegiate athletic contests is fixed by the following Missouri Valley Conference rules:

1. No student is eligible who receives pay from his institution as a regular instructor.

2. No student is eligible who receives pay for his services as player or manager of his team.

3. No student who has received pay for his athletic skill or knowledge is eligible to participate in any intercollegiate contest (except for summer baseball prior to 1912.)

4. No student shall participate in contests as a member of an athletic team except on his home baseball team. No student shall play under an assumed name.

5. No student shall participate in intercollegiate sport for more than three years.

6. No graduate student shall participate in any intercollegiate contest.

7. No student shall participate in intercollegiate contests who has not been in attendance one full year prior to the date of contests, who has not passed in his entrance requirements, who has not passed in at least 30 semester hours' work during the year previous to the contest, and who is not maintaining passing grades in 12 credit hours during the current semester.

8. No person who, having participated in any intercollegiate contest, fails to remain in College the remainder of that semester, unless excused by his dean for sickness, or other sufficient reason, shall participate again until he shall have completed six months of work following his last participation.

PHYSICAL EDUCATION FOR WOMEN

All young women in the College are required to take two years of physical education unless excused by the College physician.

After the two years' required physical education have been completed women have the privilege of electing physical education for a total of four credit hours; such elective work must be approved by their dean. Athletic Association points are awarded for elective work.

PHYSICAL EXAMINATIONS

A physical examination of each young woman is made by the instructor in charge of women before permission to enter a class is given. This includes a system of body measurements, strength tests, and examination of the condition of the heart and lungs. Physical defects, abnormalities and weaknesses

are noted, and special classes are provided for the student needing the individual corrective work.

A suit has been adopted which consists of all-white middie blouse, black tie, and black, plaited bloomers. White tennis shoes with white rubber soles are used. For swimming, girls must have the regulation one-piece tank suit made from gray cotton covert, according to a pattern approved by the Department of Physical Education. Girls should not buy their swimming suits before arriving at Manhattan. For further information address Women's Department of Physical Education, K. S. A. C., Manhattan, Kan.

COURSES IN PHYSICAL EDUCATION

151A. PHYSICAL EDUCATION W-I. Freshman year, first semester. Lectures and gymnasium, three hours. One semester credit. Dean Van Zile, Assistant Professor Morris, Miss Watson, and Miss Wade.

Instruction in hygiene and social problems is an essential part of this course. In these lectures, in addition to the problems of hygiene as applied to individual health, the biological truths that lead to serious, respectful consideration of social and sex hygiene are presented. This part of the course is given by the dean of women.

The physical training part of this course is divided into two hours a week of regular gymnasium work and one hour of interpretative dancing, folk dancing, games, tennis, hockey, basket ball, or swimming. Classes are in part held out of doors when the weather permits. Locker deposit, \$2.

152A. PHYSICAL EDUCATION W-II. Freshman year, second semester. Gymnasium, three hours. One semester credit. Prerequisite: Physical Education W-I. Assistant Professor Morris and Miss Wade.

In this course the marching tactics, floor work, etc., are continued for two hours a week, and basket ball, games, interpretative dancing, folk dancing, tennis, and swimming are carried on for one hour a week. Locker deposit, \$2.

153, 154. PHYSICAL EDUCATION W-III AND W-IV. Sophomore year, first and second semesters, respectively. Gymnasium, three hours. One semester credit. Assistant Professor Morris and Miss Wade.

The work in these two courses is a continuation of that of courses 151A and 152A. More advanced work in marching tactics and apparatus is here given. Locker deposit, \$2.

175. GYMNASTICS. Elective, summer school. Lectures and recitations, one and one-half hour; practical work, three hours. One semester credit. Assistant Professor Morris.

This course is especially planned for the needs of the teacher in the public schools where no special teacher in this subject is employed. Lectures are given on the general theory of gymnastics and the physiological reason for each exercise. A notebook is required. Locker deposit, \$2.

Practical Work.—The practical work includes free exercises, hand apparatus, heavy apparatus, and practice teaching.

177. CORRECTIVE GYMNASTICS. Practical work, three hours. One semester credit. Miss Wade.

This course is intended for those who have physical defects, abnormalities, and other weaknesses. Special exercises are given to students needing individual corrective work. Locker deposit, \$2.

178. FOLK DANCING. Elective, summer school. Lectures and recitations, one hour; practical work, four hours. One semester credit. Assistant Professor Morris and Miss Wade.

Lectures are given on the physiological benefit derived from the dances, in costuming, and in the use of the dances in festivals and fêtes. A notebook is required.

Practical Work.—This course offers graded folk dances of the different nations, suitable for use in the schoolrooms, playgrounds, or gymnasiums. Locker deposit, \$2.

182. PLAYGROUND MANAGEMENT. Elective, summer school. Lectures and recitations, one hour; practical work, to be arranged. One semester credit. Miss Watson.

This course includes discussions of the organization and administration of playground activities and equipment, and practical experience in conducting such activities. Locker deposit, \$2.

185. INTERPRETATIVE DANCING. Elective, summer school. Class work and practical work, five hours. One semester credit. Miss Watson.

This course aims to teach dancing, not dances, through logical, conscious control of body movements, motivated by music which has been studied and is understood. This study of music includes the simple, common rhythms, which are easily adapted to many uses. Locker deposit, \$2.

187. TECHNIC OF BASKET BALL, BASEBALL, AND HOCKEY. Elective, summer school. Lectures and recitations, three hours. One semester credit. Miss Watson.

This course is devoted to the technic of these sports, the physiological benefit derived, and the organization of each into interclass contests. Locker deposit, \$2.

190. SWIMMING W. Open to all women students of the College. Both semesters. No credit. Assistant Professor Morris and Miss Watson.

This is a course in swimming in which individual instruction is given in several styles of swimming and diving. Locker deposit, \$2.

Physics

Professor HAMILTON
 Professor RABURN
 Professor FLOYD
 Associate Professor CONVERSE
 Associate Professor BRACKETT

Assistant Professor HARTEL
 Assistant Professor COOK
 Instructor TAYLOR
 Instructor LYON
 Instructor CHAPIN

Recognizing the need of a thorough knowledge of the fundamental laws and principles involved in all physical changes, provision has been made, in the courses which follow, for both a theoretical and a practical treatment of the subject. Instruction is based upon the facts given in selected textbooks, and these topics are enlarged upon by lectures and illustrated by experimental demonstrations. The purpose is to give a training in exact reasoning, and a knowledge of principles that will be factors in the solution of problems in all branches of science as well as in everyday life.

The laboratory work which accompanies the courses in physics gives a student abundant opportunity to test the principal laws of the science; and, since he is expected to arrange and operate the apparatus, the work should enable him to acquire skill in manipulation, precision of judgment, and care in the use of delicate instruments. The laboratories are well arranged for the work, and the equipment provided is of a nature adapted to meet the requirement of accurate work in all courses. The manual in use in most of the courses is one prepared by the department to meet the exact conditions and equipment of the laboratory.

As the several curricula of the College are all formulated on the assumption that a year of elementary physics will have been taken in high school, classes in this subject are provided for students who are deficient in this respect. College credit on electives is allowed for this work.

COURSES IN PHYSICS

FOR UNDERGRADUATES

101. HOUSEHOLD PHYSICS. Freshman year, both semesters. Class work, three hours; laboratory, three hours. Four semester credits. Prerequisite: One year of high-school physics or its equivalent. Professor Hamilton, Professor Floyd, and Miss Taylor.

This course consists of lectures and demonstrations, in which the laws relating to principles involved in appliances of the household are explained and illustrated. The work in heat is based upon thermometry, calorimetry, radiation, absorption, and methods of refrigeration and ventilation. The course includes a study of light, with its color phenomena and actinic effects; of some of the optical instruments used in scientific work; a study of electric lighting, and illumination, and of cost of operating many of the appliances used in the home, including suggestions for the proper use and care of electrical apparatus for the protection of the appliances and of the operator. Laboratory deposit, \$2.50.

120. PHOTOGRAPHY. Elective, both semesters. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Training in physics and chemistry. Professor Hamilton.

The importance of a record of exact details, as shown in a photograph, makes this work valuable to all scientists. The course gives the student some knowledge of the chemical and physical principles involved in the art, as well as practice in making good negatives and prints. The lecture and laboratory work deals with: Things to be considered in selecting a camera; proper exposures; composition of pictures; proper development of plates; tests of different developers; retouching; reducing and intensifying negatives; printing and mounting; making lantern slides, bromide enlargement, and the prints best adapted for illustrated articles in newspapers and magazines: Laboratory deposit, \$2.50.

130. WIRELESS TELEPHONY. Elective, both semesters. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Elementary Physics. Mr. Lyon.

The work includes a study of the most efficient types of receiving and transmission sets, a study of the fundamental principles of electric waves, and of the most important points to be observed in the erection of a good plant.

Laboratory.—A series of experiments is provided in which various radio circuits are assembled by the student from standard parts, and tried out for their transmitting or receiving properties.

133. METEOROLOGY. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Physics. Professor Hamilton or Associate Professor Converse.

This course is designed to give an understanding of weather phenomena and of the underlying principles of weather forecasting. A special study is made of the factors that fix the climate of Kansas and of the United States. Applications of weather to agriculture and the teaching of general science and physiography are emphasized. In order to give the student practice in the use of weather apparatus and in handling meteorological data, laboratory exercises are included in the required work. Text: Milham's *Meteorology*.

135. GENERAL PHYSICS I. Sophomore year, first semester. Class work, three hours; laboratory, three hours. Four semester credits. Prerequisites: Elementary Physics and Plane Trigonometry. Professor Raburn, Professor Floyd.

This course, like the one following, is provided for those intending to specialize in scientific lines. It covers, in as thorough a manner as possible, the general principles involved in mechanics, sound, and heat. Text: Ferry's *General Physics*. Laboratory charge, \$2.50.

Laboratory.—The work is based upon laws and principles discussed in the classroom, and is so arranged that the students may have a practical illustra-

tion of the facts learned. Associate Professor Brackett, Assistant Professor Cook and Mr. Lyon.

140. GENERAL PHYSICS II. Sophomore year, second semester. Class work, three hours; laboratory, three hours. Four semester credits. Prerequisite: General Physics I. Professor Raburn and Professor Floyd.

This course includes a study of the theory of electricity and light. The class follows the subject as outlined in the text, but special emphasis is placed upon those parts that have an immediate bearing on the work of other sciences, such as electrolysis, thermal effects, relation of electrical and mechanical energy. Text: Ferry's *General Physics*. Laboratory charge, \$2.50.

Laboratory.—The work follows the subjects presented in the class and is conducted with a grade of apparatus that gives training in the use of the better class of instruments employed in scientific investigations.

145. ENGINEERING PHYSICS I. Sophomore year, both semesters. Class work, four hours; laboratory, three hours. Five semester credits. Prerequisites: Elementary Physics and Plane Trigonometry. Professor Hamilton, Professor Raburn, and Associate Professor Brackett.

This course in mechanics, sound and heat is intended to give the engineering students as thorough a working knowledge as possible of the fundamental units and laws involved in force, work, power, and energy; also the laws of simple machines, gases, and liquids as they occur in the transformation of force and energy. Text: Anderson's *Physics for Technical Students*.

Laboratory.—The work consists of the use of apparatus to test the laws of inertia, moments of force, moments of torsion, elasticity, and rigidity, and other laws and principles involved in mechanics and heat. Accurate measurements and carefully recorded data are required. Associate Professors Brackett, Assistant Professor Cook and Mr. Lyon.

150. ENGINEERING PHYSICS II. Sophomore year, both semesters. Class work, four hours; laboratory, three hours. Five semester credits. Prerequisite: Engineering Physics I. Professor Hamilton, Professor Raburn, and Associate Professor Brackett.

This course treats of electricity and light. The work in electricity is of such a nature as to give the student working knowledge of the units employed, and of the fundamental laws; and to acquaint him with methods of producing a current, its uses, and the system by which electrical energy is measured. The principal phenomena of light, together with the laws that may have direct bearing upon light as a standard and method of measurement, are treated in this course. Text: Anderson's *Physics for Technical Students*.

Laboratory.—The electrical work in this course includes measurements of resistances, a study of primary cells, and the transformation of mechanical into electrical energy. The work of light consists of a study of the laws of reflection and refraction, and measurements of wave lengths by means of the spectroscope, the use of the interferometer, and photometry. Laboratory charge, \$2.50.

155. DESCRIPTIVE ASTRONOMY. Elective, second semester. Class work, three hours. Three semester credits. Prerequisite: Physics.

This is an introductory course largely descriptive in character, designed primarily for those desiring such a general knowledge of the principal facts, theories, and methods of astronomy, as might be expected of every liberally educated person. At times laboratory periods may be substituted for class periods. Text: Molton's *Introduction to Astronomy*, also a pocket star guide for the study of constellations.

FOR GRADUATES AND UNDERGRADUATES

203. LABORATORY TECHNIC. Elective, summer school. By appointment. Laboratory, twelve hours. Two semester credits. Professor Floyd.

This course includes saw filing and tool grinding; glass blowing, cutting,

grinding, polishing, and cementing; metal filing, drilling, soldering and brazing; and making a set of punches, reamers, and cold chisels.

Students may, in certain cases, undertake problems chosen from the following, at a cost covering the raw materials: Making a mercury-in-glass barometer; a seconds pendulum; an accelerated motion machine; a fourteen-in-one laboratory tool; a Berthelot calorimeter; small induction coil; wireless apparatus; rheostats for power circuits; Langeub galvanometer; velocity of sound apparatus, photometer, etc. Laboratory deposit, \$2.50.

213. ACOUSTICS. Elective, first semester. Class work, one hour. One semester credit. Prerequisite: Engineering Physics II. Professor Floyd, Associate Professor Brackett.

In this course a special study is made of the acoustic properties of buildings, of the architectural defects which give rise to poor acoustics, with a study of special methods used to avoid such troubles in construction of buildings or to correct them in constructed buildings.

220. MOLECULAR PHYSICS AND HEAT. Elective, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: One year of College Physics. Professor Floyd or Professor Raburn.

The subject of molecular physics is presented and utilized as a basis of an explanation of such phenomena as depend upon the interaction of molecules and such as are fundamental in the presentation of the mechanical theory of heat. Lectures, collateral reading, and recitations from the text are used as a means of presentation. Text: Edser's *Heat*.

Laboratory.—The laboratory work is based on the fundamental principles presented in the classroom.

222. HARMONICS. Elective, second semester. Class work, two hours. Two semester credits. Prerequisites: One year each of music and elementary physics. Professor Hamilton, Professor Floyd.

This course is given to students of music so that they may learn the fundamental principles of sound that are associated with harmony. It is a lecture and demonstration course that deals with many facts of interest relating to the construction of scales and chords. A clearer understanding of composition and of tone quality may be had if the physical laws of sound are understood.

224. SPECIAL METHODS IN THE TEACHING OF PHYSICS. Elective, second semester. Class work, two hours; laboratory, three hours. Three semester credits. For credit towards the state teachers' certificate this must be taken in the student's senior year. Prerequisites: Educational Psychology and College Physics. Professor Floyd and Associate Professor Brackett.

This course is intended for those who are either teaching or expecting to teach physics in secondary schools. This class work includes an analysis of the present status of physics and of physics instruction in our high schools, and is based upon a critical study of the state text as well as other modern texts that may be used as reference. Special effort is made to vitalize the work and to make it apply to everyday life. Lectures, library work, demonstrations and practice teaching are used as methods of directing the course.

Laboratory.—The laboratory work includes the formation and adaptation of courses suitable for either rural or city high schools.

230. SPECTROSCOPY. Elective, first semester. Class work, one hour; laboratory, six hours. Three semester credits. Prerequisites: College Physics and College Chemistry. Professor Raburn, Professor Floyd.

This is an advanced course in light, intended to cover the theory and use of the spectroscope and spectrometer as instruments for identifying elements or their compounds, when rendered incandescent, by means of their characteristic spectra or definite wave lengths.

Laboratory.—The laboratory work consists of calibration of prisms and gratings for ready use in chemical laboratories and also gives ample training in measuring wave lengths and in identifying the spectra of many substances.

231. OPTICS. Elective, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: One year of College Physics. Professor Hamilton or Professor Floyd.

This course is designed for those who may wish to extend and to intensify the first College course in light. Reflection, refraction, interference, diffraction, and polarization are treated by means of lectures, demonstrations, collateral readings, and recitations. Text: Wood's *Physical Optics*.

Laboratory.—The laboratory work is based on the fundamental principles presented in the theory part of the course.

233. RADIO-ACTIVITY AND ELECTRON THEORY. Elective, second semester. Class work, three hours. Three semester credits. Prerequisites: College Physics and College Chemistry. Professors Hamilton and Raburn.

The nature of the electron and its behavior in electric and magnetic fields, are studied. Temperature effects and behavior of the electron in cathode tubes using a hot cathode are discussed and studied in detail. The methods of determining the mass and velocity of electrons are developed from the historical standpoint. A study is made of the nature and effects of the various rays, including x-rays and ultra-violet rays and the emanations from the known radio-active substances.

235. STORAGE BATTERIES. Elective, second semester. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: Physics and Chemistry. Professor Hamilton, Professor Floyd.

In the lecture-recitation part of this course, the following are studied: the history and development of the storage cell, lead and other types of cells, characteristics and behavior of cells on charge and discharge, care and operation of storage batteries, and renewal of sulphated cells. Text: Lyndon's *Storage Batteries*.

Laboratory.—The laboratory work comprises the testing of batteries for efficiency, the rebuilding of broken-down cells, and the rejuvenation of sulphated cells.

240. TEACHERS' COURSE IN ELECTRON THEORY, ALTERNATING CURRENTS AND RADIO. Elective, summer school. Lectures and laboratory, two three-hour periods each week. Two semester credits. Prerequisite: Physics. Instructor Mr. Lyon.

Theory and practice in this course are closely correlated. Laboratory exercises immediately follow or are intermixed with each lecture. Experiments include examples of demonstration, use of models, properties of alternating-current circuits, rectifiers, transformers, transmitting and receiving radio circuits, and radio sets suitable for use in high school, and the construction of these appliances may be undertaken by members of the class under the direction of the instructor.

245. RADIO MEASUREMENTS. Elective, both semesters. Class work, one hour; laboratory, three hours. Two semester credits. Prerequisite: College Physics, and an elementary course in radio or the equivalent. Instructor, Mr. Lyon.

The work in this course is in standard radio measurements, such as the determination of tube characteristics, calculation and design of inductances and capacities, properties and designs of antennas, tuning of transmitting sets, wave lengths and calibration of receiving sets, decrement, etc. The lecture hour furnishes a certain amount of ground work for the laboratory. A student may arrange in this course to carry on an investigation in some special problem of radio.

Public Speaking

Professor HILL
Associate Professor SHINN
Associate Professor SUMMERS

Assistant Professor HOLCOMBE
Graduate Assistant BURR

It is the constant effort of the Department of Public Speaking to relate the training in public speaking with the work of all other departments of the College and to harmonize it with the spirit of the College. With this object in view, students are trained in the presentation and discussion of the valuable ideas acquired in their various fields of study. The method pursued in this training is that of actual practice on the platform before an audience.

The department seeks to place itself at the service of those various organizations of the College which desire or need its assistance, and at the service of the communities of the state. In addition to its regular courses, it aims to make itself available as far as possible for individual rehearsals. It trains the orators of the College, coaches and directs college plays, and prepares intercollegiate debating teams. Students are urged to ally themselves with the organizations representing these various activities.

COURSES IN PUBLIC SPEAKING

FOR UNDERGRADUATES

101. ORAL INTERPRETATION. Elective, both semesters. Class work, two hours. Two semester credits. Professor Hill, Associate Professor Shinn, and Assistant Professor Holcombe.

The purpose of the course is to enable the student to attain some proficiency in the art of oral interpretation. The training given seeks to develop a natural style. In connection with the practice work upon the platform the student is given such points of theory and such routine drill as are necessary for the development and use of the voice and for proper platform deportment.

102. DRAMATIC READING. Elective, both semesters. Class work, two hours. Two semester credits. Prerequisite: Oral Interpretation, or by arrangement with the head of the department. Professor Hill, Associate Professor Shinn, Assistant Professor Holcombe.

This course is a continuation of Oral Interpretation and involves a more advanced study of the principles of oral interpretation and their application to platform reading.

106. EXTEMPORE SPEECH I. Freshman and junior years, and elective, both semesters. Class work, two hours. Two semester credits. Professor Hill, Associate Professor Shinn, Associate Professor Summers, Assistant Professor Holcombe, Assistant Burr.

The work of this course consists in the preparation and delivery of short addresses based on prepared outlines. Careful preparation of material is required. The plan of the speech is made in advance, but the choice of language is left for the moment of speaking. Criticism and points of theory given by the instructor supplement the practice.

108. EXTEMPORE SPEECH II. Elective, second semester. Class work, two hours. Two semester credits. Prerequisite: Extempore Speech I, or its equivalent. Professor Hill, Associate Professor Shinn, Assistant Professor Holcombe.

This course continues the method of instruction and the underlying theory of Extempore Speech I. Special attention is given to the specific application of the principles of the former course to particular occasions, after-dinner occasions, conventions, and other types.

115. LECTURE RECITAL. Elective, both semesters. Two semester credits. Prerequisites: Oral Interpretation and Dramatic Reading, or by special arrangement with the head of the department. Professor Hill.

In this course the work consists of the preparation and delivery by the student of one extended lecture-recital, lecture, or address during the semester.

This is supplemented by class lectures and practice, and by a study of types. It may include the preparation and delivery of short recitals.

120. ARGUMENTATION AND DEBATE. Elective, both semesters. Class work, three hours. Three semester credits. Prerequisite: Extempore Speaking I, or by arrangement with the head of the department. Associate Professor Summers.

This course includes a systematic study of the theories of argumentation as applied in debating; the making of briefs, collecting and organization of material, structure and style of the debate speech, and methods of refutation being especially emphasized. Each student will be given opportunity to participate in a number of classroom debates for criticism.

125. PARLIAMENTARY PROCEDURE. Elective, both semesters. Class work, two hours. Two semester credits. Associate Professor Summers.

College men and women are expected, in and out of college, to be able to organize and conduct meetings, and to take their part in deliberative assemblies. Three phases of the problem are emphasized: How to conduct a meeting as chairman; how to take part from the floor; and how to organize and work in committee, the chief method of present-day accomplishment in deliberative bodies. Class instruction is liberally supplemented with practice in all three fields. Text: Hall and Sturgis, *A Textbook on Parliamentary Law*.

130. DRAMATIC PRODUCTION I. Elective, both semesters. Class work, two hours. Two semester credits. Assistant Professor Holcombe.

This course is intended to answer the many fundamental questions which face every teacher and community leader when called upon to stage community entertainment. A historical background of the theater is first presented, followed by a brief study of the little-theater movement. Next are studied: how to choose a play, what material is available and where, fundamentals of directing, problems in high-school play production, suggestions and practice in the use of the equipment available in the average community, and how to improve that equipment. Actual practice in stage craft is provided. Text: C. M. Wise, *Dramatics for School and Community*.

135. DRAMATIC PRODUCTION II. Elective, both semesters. Class work, two hours. Two semester credits. Prerequisite: Dramatic Production I must precede or be taken with this course. Assistant Professor Holcombe.

Building upon Dramatic Production I, the course specializes in a study of the method of directing. One or more visits back of the scenes at important productions supplements the study of the mechanics of production. Members of the class are given experience in various capacities in the production of at least five one-act plays. A definite problem in dramatic research is worked out by each student.

140. HISTORY AND COMPOSITION OF COMMUNITY DRAMA AND PAGEANTRY. Elective, first semester. Class work, three hours. Three semester credits. Miss Burr.

This course is designed to give information on the history of community drama and pageantry, the forms which the art has taken in different times and places, the recent and present tendencies, and the relation of the art to the modern community movement. Its place in the activities of school and church is especially stressed. Practice is given in finding materials and arranging them in proper form for community drama and pageantry production. Instruction is by class lectures, class discussion and library reference.

145. PRODUCTION OF COMMUNITY DRAMA AND PAGEANTRY. Elective, second semester. Class work, three hours. Three semester credits. Miss Burr.

Students are given training in the organization and financing of community drama and pageants, the finding of characters for definite parts, the proper relation of episodes, musical accompaniments, costuming, grouping, lighting and setting.

Zoology

Professor NABOURS
 Professor ACKERT
 Professor HARMAN
 Assistant Professor HISAW*
 Instructor GUNNS
 Instructor JEWELL

Instructor ZIMMERMAN
 Instructor WHITEHEAD
 Assistant HARTMAN
 Assistant SNYDER
 Assistant DOLL

The courses have been planned to give a fundamental knowledge of the structures, functions and relations of animals; information concerning the manner in which animals respond to the conditions of the environment; an appreciation of their human values; and a consideration of the problem of heredity and evolution.

General Zoology (course 105) constitutes a general survey, and forms an introduction to all lines in agriculture, general science, and home economics. Embryology and Physiology (201), Cytology (214), Advanced Embryology (220), Parasitology (208), Parasites and Public Health (218), Evolution and Heredity (217), Heredity and Eugenics (216), Human Physiology (235), and Historical Geology (Geol. 201) are preliminary to advanced work in animal breeding, animal husbandry, dairy husbandry, veterinary medicine, home economics, and nursing. Selections may be made among these courses and Embryology (219), Ornithology (230), Field Zoology (205), Animal Ecology (211), Zoological Problems (203), Research in Zoology (301), and the Seminars (225, 227), by those who expect to do advanced work in zoology or entomology, or become teachers of biology.

The classrooms and laboratories are equipped with charts, models, microscopes, microtomes, paraffin baths and other apparatus both for elementary and advanced work, and a good natural history museum is available. A specially trained technician is in charge of equipment and available in matters connected with zoological technic.

COURSES IN ZOOLOGY

FOR UNDERGRADUATES

105. GENERAL ZOOLOGY. Sophomore year, both semesters. Class work, three hours; laboratory, six hours. Five semester credits. Professors Nabours, Ackert and Harman, Assistant Professor Hisaw, Mr. Sperry, Miss Jewell and Miss Zimmerman.

The structures, functions, relations and evolution of types of both invertebrates and vertebrates are studied.

Laboratory.—Studies are made of animals in nature and in the laboratory; inquiries are made into structures and functions by means of dissections and experiments. Laboratory charge, \$2.50.

109. ZOOLOGY AND EMBRYOLOGY (VET.) Freshman year, first semester. Class work, three hours; laboratory, six hours. Five semester credits. Professor Ackert and Assistant Professor Hisaw.

The first part of the semester is devoted to a general survey of the animal kingdom, with attention to classification, distribution, habitats and relations to each other and to man. The rest of the time is devoted to the consideration of the origin of the germ cells, fertilization, implantation, the development of membranes, and the nutrition of the fetus.

Laboratory.—Animals are observed in the field, vivaria and museum, and a comparative study is made of the organs and systems in a few selected types. Examination is made of germ cells, stages in fertilization and development of chick and pig embryos, and types of placenta. Laboratory charge, \$2.50.

* Absent on leave, 1923-'24.

201. EMBRYOLOGY AND PHYSIOLOGY. Sophomore year, both semesters. Class work, three hours; laboratory, six hours. Five semester credits. Prerequisites: Zoöl. 105 (General Zoölogy) or equivalent, and Chem. 121 (Organic Chemistry HE). Professor Harman, and Miss Zimmerman.

The first part of the course is devoted to embryology and the remaining part to human physiology. The course, depending upon the preceding work in zoölogy, falls into two closely related parts: (a) a study of the development of the germ cells, fertilization, origin of the germ layers, initiation and growth of organs and systems, establishment of fetal relations, and nutrition and growth with special reference to man; and (b) a study of the functions of the organs and systems of the human body, with special consideration of the digestive, respiratory, circulatory, nervous and urinogenital systems and organs of special sense.

Laboratory.—The laboratory work includes: (a) studies of the male and female germ cells, stages in the process of fertilization, the segmenting ovum, and whole mounts and serial sections of the chick and pig embryos in several stages of development, with demonstrations of types of mammalian fetal relations; and (b) experiments for the demonstration of the composition and functions of bone, blood, lymph, and the reaction of muscles, nerves, parts of the digestive, respiratory, excretory and other systems. Laboratory charge, \$2.50.

203. ZOÖLOGICAL PROBLEMS. Elective, both semesters. One or two semester credits. Professor Nabours, Professor Ackert, Professor Harman, Assistant Professor Hisaw, Miss Jewell, and Miss Zimmerman.

Individual problems in heredity, parasitology, cytology, embryology, and ecology are assigned by the instructors in charge.

205. FIELD ZOÖLOGY. Elective, first semester. Class work, one hour; laboratory or field work, six hours. Three semester credits. Prerequisite: Zoölogy 105. Doctor Jewell.

The work consists of the collection, identification and preservation of the various local animals with notes on their life histories, behavior and distribution. Laboratory charge, \$150.

206. ZOÖLOGICAL TECHNIC. Elective, first or second semester. Laboratory, three or six hours. One or two semester credits. Prerequisite: General Zoölogy (Zoöl. 105) or equivalent. Mr. Gunns.

The work consists of methods in killing, fixing, imbedding, using microtome, staining, dehydrating and other processes in the preparation of microscopical slides, principles of photomicrography, museum mounting and labeling, and introduction to taxidermy. Laboratory charge, \$2.50.

208. PARASITOLOGY. Senior year, first semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisite: Zoölogy and Embryology (Vet.). Professor Ackert.

A study is made of the biology, life histories and economic importance of the principal external and internal parasites of the domestic animals.

Laboratory.—The structural and functional adaptations of selected types of parasites are studied, and methods of diagnosis are utilized. Laboratory charge, \$1.50.

211. ANIMAL ECOLOGY. Elective, second semester. Lectures, one hour; laboratory and field work, six hours. Three semester credits. Prerequisites: General Zoölogy (Zoöl. 105) or equivalent. Assistant Professor Hisaw.

This course deals with the relation of animals to the complete environment. The associational method of study is used and the subject is considered from the descriptive, comparative and explanatory standpoints. Special attention is given to the dynamic factors of the environment and their effect on the present status and future changes of the animal community. The field work gives practice in the methods of field ecology and deals with the application of general principles to local conditions. The fundamental principles and other general aspects of the science are presented in the form of lectures. Laboratory charge, \$1.50.

214. **CYTOLOGY.** Elective, first semester. Lectures, two hours; laboratory, six hours. Four semester credits. Prerequisite: Zoöl. 201, or equivalent. Professor Harman.

Methods of preparing the material for microscopical study, the development of the germ cells and theories of structures and functions of the different parts of the cell are matters considered in this course. The work forms a basis for studies in heredity and related subjects. Laboratory charge, \$2.50.

216. **HEREDITY AND EUGENICS.** Elective, first semester. Lectures and recitations, two hours. Two semester credits. Prerequisite: Zoölogy 105, or equivalent. Professor Nabours.

This lecture and reading course deals with human inheritance and the interactions of nature and heredity.

217. **EVOLUTION AND HEREDITY.** Elective, second semester. Lectures, two hours; library reference reading and reports, three or six hours. Three or four semester credits. Prerequisites: Zoöl. 105 and Genetics (An. Husb. 221), or equivalent. Professor Nabours.

This is a lecture and reading course dealing with the development of the idea of evolution; the evidence and the principal theories of the causes; problems of variation, heredity, and experimental evolution.

218. **PARASITES AND PUBLIC HEALTH.** Elective, second semester. Lectures and demonstrations, three hours in class. Three semester credits. Prerequisites: Zoöl. 105, or equivalent. Professor Ackert.

This course deals with certain biological, pathological and prophylactic phases of the principal parasitic maladies, such as amebic dysentery, Texas fever, syphilis, sleeping sickness, dourine, nagana, and hookworm disease. Life histories and adaptation of protozoan parasites, and of tapeworms and round worms are considered.

219. **EMBRYOLOGY.** Elective, second semester. Class work, two hours; laboratory, three hours. Three semester credits. Prerequisites: Zoöl. 105, or equivalent. Professor Harman and assistants.

The development of the germ cells, fertilization, origin of the germ layers, initiation and growth of systems of organs, establishment of fetal relations, and nutrition and growth in mammals are studied in this course.

Laboratory.—Studies of the male and female germ cells, stages in the processes of fertilization, the segmenting ovum, and whole mounts, serial sections, and reconstruction of the chick and pig embryos in several stages of growth, with demonstration of types of mammalian fetal relations, form the subject matter of the laboratory investigation. Laboratory charge, \$1.50.

220. **ADVANCED EMBRYOLOGY.** Elective, first semester. Lectures, two hours; laboratory, six hours. Four semester credits. Prerequisites: Zoöl. 105 and 201 or 109, or the equivalent. Professor Harman.

This course consists of further study of the main facts of embryology, with special reference to their bearing upon biological theories, the consideration of embryological problems, and a comparative study of the physiology of reproduction in mammals, including man. Laboratory charge, \$2.50.

225. **ZOÖLOGY AND ENTOMOLOGY SEMINAR.** Elective, both semesters. One semester credit. Prerequisite: Zoöl. 105, or equivalent.

This course consists in the presentation of original investigations, reviews of papers appearing in current journals, summaries of recent advances in the various fields, and discussions of the various aspects of the fundamental problems of modern biology.

227. **GENETICS SEMINAR.** Elective, both semesters. One semester credit. Prerequisite: Zoöl. 105, or equivalent. Professor Nabours, Professor Lippincott, Associate Professor Parker, and Assistant Professor Ibsen.

This course continues through the first and second semesters and includes the study and criticism of genetic experiments in plants and animals, the biological and mathematical methods employed, and validity of conclusions drawn.

230. ORNITHOLOGY. Elective, second semester. Class work, one hour; laboratory and field work, three hours. Two semester credits. Prerequisite: Zoöl. 105. Given in 1921-'22 and alternate years thereafter. Professor Harman.

Birds are studied with reference to classification, habits, habitats, adaptations and economic importance.

Laboratory.—The mounted birds and skins of the museum are used in the application of the principles of classification and adaptation. Field excursions are made for the purpose of identifying birds and studying their habits, habitats and migrations. Laboratory charge, \$1.50.

235. HUMAN PHYSIOLOGY. Elective, first semester. Class work, three hours; laboratory, three hours. Four semester credits. Prerequisite: Zoöl. 105. Miss Zimmerman.

The fundamental principles and theories of the functions of muscle, nerve, circulation, digestion, respiration, secretion and excretion are discussed in this course. Laboratory charge, \$2.50.

FOR GRADUATES

301. RESEARCH IN ZOOLOGY. Elective, both semesters and during the summer. One to five semester credits. Prerequisites: Zoöl. 105. Professors Nabours, Ackert, and Harman, Assistant Professor Hisaw, Miss Jewell, and Miss Zimmerman.

Individual research problems in heredity and experimental evolution, parasitology, cytology, embryology, and ecology are assigned.

Special Courses for Teachers

At the present time teaching of vocational subjects in the public schools is undergoing great development. Many schools are introducing manual training, agriculture, food and nutrition and clothing and textiles, and many others are extending the work hitherto given. The state law requiring the teaching of agriculture in the rural schools is also creating a strong movement in the same direction. There is an active demand for teachers who can handle such work successfully.

The College offers to graduates of other institutions, and indeed to all who have studied such subjects as may be prerequisite, unexcelled facilities for securing training in the industrial subjects indicated. Courses extending over one or two years may be arranged by means of which the student who is already prepared in English, mathematics, and to a certain extent in the sciences, may prepare himself to enter a broader and, frequently, a more remunerative field.

Nos. 31, 32, 35, 36 and 37 of the groups of electives in the Division of General Science exhibit groupings that illustrate the possibilities in work of this character, and other arrangements may be made. Those taking such courses will be cared for in the regular classes provided for other students, and no limitation is imposed except that the prerequisites for any subject must have been taken previously, here or elsewhere. These prerequisites are stated in this catalogue in connection with the description of each subject. The catalogue also shows the semester in which a subject is regularly given.

The conditions and requirements for the different classes of state certificates are stated in the introductory paragraphs for the Department of Education.

The course for persons who wish to prepare for teaching vocational agriculture under the Smith-Hughes law is outlined under the Division of Agriculture, and the course for those wishing to qualify as teachers of vocational home economics, under the same law, is given under the Division of Home Economics.

The Division of College Extension

HARRY UMBERGER, *Dean and Director*
SAMUEL PICKARD, *In Charge of Information*

The people of Kansas believe in using their educational institutions to their full capacity, not only for the students privileged to come to them, but also for the state at large. They know that the number who complete a College course in agriculture, engineering, or home economics is small in comparison with the great majority of the people who cannot go to college, and it is their wish that this majority also be served. The Agricultural College is in full sympathy with this desire and is ambitious not only to give its resident students the best possible training for leadership in life's work, but to be of direct service to every community of the state.

As far back as 1864 conventions of the farmers of Manhattan and vicinity were held at the College. The first well-organized farmers' institute conducted under the auspices of the Faculty was held at Manhattan, November 14, 1868, and this was followed by a similar gathering at Wabaunsee, November 21 and 22 of the same year. In 1868 the Board of Regents adopted a resolution recommending "that a system of lecturing on agricultural subjects at this College and the populous settlements of the several counties of the state should be conducted, so that the benefits of farming according to correct agricultural principles may be disseminated throughout the state."

A few meetings were held each year for the next several years, increasing in number from 1879, but no definite appropriation for extension work was made until 1899, when \$2,000 per year was appropriated for this purpose by the state legislature. The annual appropriation remained at this figure until 1905, when the legislature appropriated \$4,000 for the work, to which the College added \$800. Up to this time no regular staff for extension work was employed, and all extension activities were conducted by a committee. In October of that year, however, a superintendent to organize the institute work was selected by the Board of Regents, and in July, 1906, the Department of Farmers' Institutes was formally organized.

The interest in extension work throughout the state then developed rapidly. In 1907 the legislature appropriated \$10,500 for the two years, to which the College added \$1,000. In 1909, \$52,500 was appropriated by the legislature for the biennium, and the following appropriations were made by the succeeding legislatures: For the biennium 1911-'13, \$75,000; for the biennium 1913-'15, \$95,000; \$41,240 for 1915-'17; for the biennium 1917-'19, \$89,759; \$138,277 for the biennium 1919-'21; \$184,289 for the biennium 1921-'23; and \$165,000 for the biennium 1923-'25.

This rapid development of extension work was made possible not only because the people of the state wished to have such work done, but because much new light has been thrown on the essentials in agriculture by the effective experimental work done by the Experiment Stations and by the United States Department of Agriculture.

In 1914 the federal government felt that the useful and practical information on subjects connected with agriculture and home economics developed by the experiment stations, by the Department of Agriculture, and by the experience of the best farmers and farm homes should be made more readily available to everyone; and in order that this information might be more fully and effectively diffused among the people of the several states and its practical application encouraged, the congress of the United States, in 1914, passed the Smith-Lever bill, which provides for "coöperative agricultural extension work between the agricultural colleges in the several states receiv-

ing the benefits of an act of congress approved July 2, 1862, and of acts supplementary thereto, and the United States Department of Agriculture." To further this act the congress provided for an annual appropriation of \$480,000, of which \$10,000 is paid each year to each state which assents to the provisions of the act. This initial appropriation is increased each year for seven years, such increase being allotted annually to each state in the proportion which the rural population of such state bears to the total rural population of all the states, providing a sum equal to such increase has been appropriated for that year by the legislature of such state, or has otherwise been provided from within the state, for the maintenance of the coöperative agricultural extension work.

Under this act the coöperation of the agricultural colleges and the United States Department of Agriculture has been assured, extension work has become a national as well as state project, and its effectiveness has been greatly increased.

The governor of the state and the Kansas legislature of 1914 accepted the provision of the Smith-Lever act immediately, and \$10,000, therefore, was secured from the federal government for extension work for the year ending June 30, 1915, and for each succeeding year thereafter. The additional sums coming from the federal funds under this act to the state for the years ending June 30, 1916 and 1917, respectively, were \$14,555 and \$26,685; for the years 1918 and 1919, \$38,815 and \$50,944, respectively; for the years 1920 and 1921, \$63,074 and \$75,203, respectively; for the years 1922 and 1923, \$80,641 and \$90,842, respectively; and for the years 1924 and 1925, \$101,842, respectively. These sums were duplicated by an equal appropriation by the legislature of Kansas for the years named with the exception of 1924 and 1925, for each of which the legislature appropriated \$82,500. In addition, from the appropriation made to the Agricultural College for all its work, \$31,000 was set aside for extension work for the year ending June 30, 1923. During the war congress made an emergency appropriation to extension work, in order that special attention might be given to maximum production of food, conservation and economic utilization of farm products. This appropriation terminated June 30, 1919. There was such great demand for continuation of much of the work started under this appropriation, with a view to carrying it on a more constructive and permanent basis, that congress appropriated funds for this purpose, effective July 1, 1919. This is known as the supplementary federal Smith-Lever appropriation. The total sum for extension work under the Smith-Lever act and from state funds for the year ending June 30, 1924, therefore, is as follows: From the federal government, through the Smith-Lever act, \$101,842; from the federal government through the supplementary Smith-Lever appropriation, \$29,121; from the state through the Agricultural College, \$31,000; from the state direct appropriation to offset the Smith-Lever appropriation, \$82,500; from county appropriations offsetting the supplementary federal Smith-Lever appropriation, \$29,121; total, \$273,584.

County funds are appropriated for the support of the county farm bureaus through a special act of the legislature enabling the county commissioners to levy a direct tax for this purpose. (Session Laws of Kansas for 1915, p. 204, ch. 166, sections 1, 2 and 3; Session Laws of Kansas for 1919, p. 217, ch. 157, sections 1, 2 and 3.)

The rapid growth of extension work has demanded efficient administrative machinery. In the judgment of the president of the College and the Board of Regents it became necessary to create, in December, 1912, a Division of College Extension coördinate with the other divisions of the College. This at first was subdivided into four distinct sections or departments, but the increase in work and personnel of the division has made necessary a reorganization into eight departments, namely: institutes and extension schools, county-agent work, boys' and girls' club work, home economics, home demonstration-agent work, rural engineering, rural service, and home-study service, each with its own head and staff. The heads of the departments are responsible to the director, who is dean of the Division of College Extension.

Through this organization it is possible to administer the extension work effectively and economically, to reach directly more than 500,000 people in the state each year, and to conduct some activity in every county.

Publications covering practical subjects in the field of agriculture, home economics and rural engineering are issued from time to time by the Division of College Extension as bulletins, circulars and leaflets. The authors of these publications are the extension specialists or the specialists of the departments in the other divisions of the College. The regular publications of the Agricultural Experiment Station also are used extensively in the extension work. A series of publications in cooperation with the United States Department of Agriculture is receiving special attention. Extension publications are mailed regularly to a list, composed of members of farm and home institutes, homemakers' clubs, extension schools, and farm bureaus; *i. e.*, to members of organizations cooperating closely with the Agricultural College. Any citizen of the state, however, on request, may secure copies of individual publications.

While the extension work is directed by the Division of College Extension for administrative efficiency, its scope would be limited were it not for the close cooperation of the other divisions and departments of the College, which not only help in supplying lectures for agricultural meetings and extension schools, material for publication, assistance in demonstration work and helpful counsel, but also are responsible for all subject matter taught by the extension specialists.

Institutes and Extension Schools

AGRICULTURAL EXTENSION SPECIALISTS

—————, in Charge

J. H. McADAMS, Poultry	M. H. COE, Swine and Baby Beef
D. J. TAYLOR, Poultry	Production
L. E. WILLOUGHBY, Crops	CARL G. ELLING, Animal Husbandry
A. E. OMAN, Zoölogy	V. M. WILLIAMS, Dairy
E. B. WELLS, Soils	A. W. KNOTT, Dairy
E. G. KELLEY, Entomology	L. C. WILLIAMS, Horticulture
ROY W. KISER, Animal Husbandry	J. J. BLACK, Animal Diseases
H. R. SUMNER, Crops	E. A. STOKDYK, Plant Pathology
A. J. SCHOTH, Garden and Crops Clubs.	I. N. CHAPMAN, Farm Management
	Demonstrations

The Department of Institutes and Extension Schools has direct supervision over farm and home institute organizations, all extension schools in agriculture and home economics, and the work of the agricultural extension specialists. The department also has charge of the program and arrangements for Farm and Home Week, an annual state-wide farmers' meeting, and the scheduling of judges to county and local fairs.

Each farm and home institute of the state is an association or farmers' club, with regular officers, constitution and by-laws. Some organizations hold six or more monthly meetings, and practically all of them have no fewer than three, because no institute organization can obtain state aid unless in addition to the annual meeting, at which some representatives of the College must be present, it also holds at least three local meetings. The College plans to send two specialists to the annual meeting—one in agriculture and one in home economics, to present certain well-defined lessons, and to give the results of demonstration work for the county or locality. The specialists and their subjects are chosen because of a known need or interest of a particular community or a plan to start or encourage certain definite lines of work.

The programs for all annual meetings are based on suggested outlines sent out by this department. These are completed and returned by the local officers. The department furnishes literature, on request, for members who are to take part in the program of an institute, grange, farmers' union or other organization.

The monthly meetings which are held by many of the local organizations

in this state are an important feature of the institute work. The Department of Institutes and Extension Schools suggests the subject for discussion, and the same subject may be discussed in every institute in the state. In this way certain important, timely subjects are discussed by farmers and their wives at seasonable times, thus promoting a general uniformity of action.

Each year some special topics, such as farm management, etc., are made especially important in institute programs, either for the whole state or for certain specified districts. The monthly meetings are largely concerned with the consideration of topics of value to farmers and their wives who are interested in more economical production and in establishing their agricultural program upon a peace-time basis.

Every institute has a membership paying a membership fee. The membership lists constitute the mailing list for the publications issued by this department. In addition to receiving these pamphlets, each member who fills out and returns a membership blank receives from the College, from the government, or from some state experiment station, such other available literature as his interests demand.

EXTENSION SCHOOLS

Owing to the nature of the farm and home institutes, the demand for instruction can be met only in part, and for that reason extension schools or short courses in agriculture and home economics have been organized in communities which desire more complete courses in these subjects than can be given at the institutes.

The College now conducts extension schools in agriculture and home economics of from one to five days' duration, sending to each school two or more instructors. Here well-planned, comprehensive courses are given in the various lines of agriculture and home economics, so that some of the essentials of these subjects may be learned. The local committees are required to organize the classes and pay the local expenses for each school. The Agricultural College supplies the teachers and pays their traveling expenses from funds appropriated for this purpose.

In addition to these general schools, special schools in breeding, animal diseases, dairying, poultry, orcharding, road making, tractors and farm machinery, and cement construction are held in communities desiring them and willing to defray the local expenses.

Extension schools are popular where the communities are brought to understand the work given. Almost every community which has had one school has petitioned for another. Each community is now required to submit the names of at least thirty men and twenty women who agree to attend as many sessions of the school as possible. This requirement has increased materially the attendance, interest and coöperation.

EXTENSION SCHEDULES

The specialists of this department work in extension schools and institutes during the winter months only, and a portion of this time is devoted to coöperative demonstration work in agriculture and home economics. During the spring, summer and fall they conduct special campaigns, such as silo building, poultry culling, wheat improvement, grasshopper control, cow testing, better sires, hog-cholera control, and coöperative demonstration work. The latter phase of the work of the extension specialists is being especially met by the organization of coöperative demonstration work in each branch of agriculture in a certain number of counties each year. In much of the coöperative work each specialist has from 10 to 100 or more coöperators in each county. These men and women work under the direction of the specialist and the county agent. They keep records of the work and call demonstration meetings at their farms on each trip of the specialist. The number of visits which the specialist makes to each point varies from two, in the case of the specialist in soils, to six, in the case of the specialists in horticulture and entomology.

The aim in all of this coöperative demonstration work is to show as well as to explain. This line of work is especially appreciated, and the representatives of the department have been able to meet only a fraction of the demands for it.

The extension specialist takes to the farm and farm home the newest research work of the Agricultural Experiment Station and the United States Department of Agriculture in a practical, effective and usable form. He is also of material assistance to the Agricultural Experiment Station of the College and to the United States Department of Agriculture in reporting the progress and success of demonstration work in the field. He seldom makes a trip without coming in contact with new agricultural problems or old ones requiring the attention of the research workers of the Agricultural Experiment Station. By working in the closest coöperation with the subject-matter departments of the College, the specialists become the carriers of information, not only from the Agricultural Experiment Station to the farmers, but from the farmers to the research workers of the Experiment Station. The extension specialist is, therefore, a medium through which both the Agricultural Experiment Station and the farmers can function to their mutual advantage.

To reach all the people of the state, the work of the specialist becomes largely a matter of teaching and training leaders, such as the county agents, the home demonstration agents, the boys' and girls' club agents, and project leaders. If they are successful in teaching these leaders how to carry forward their various projects they are most efficient in carrying their messages to all the farmers in the state. The specialists, therefore, are becoming more and more each year teachers of leaders instead of public speakers at general farmers' meetings as they were in times past.

Through these various leaders a definite check is kept regarding cost of production, need of follow-up work, and the progress made in the demonstration work undertaken. Haphazard, hit-and-miss extension work, therefore, has no place in our program under the present system.

The calls for extension specialists in all lines of work are so many that it is impossible to meet more than two-thirds of them for assistance from county agricultural agents and from farmers' organizations. The number of specialists is being increased rapidly, yet the work is growing still more rapidly, thus indicating a healthy condition.

FARM-MANAGEMENT DEMONSTRATIONS

Farm-management demonstrations are conducted by a farm-management specialist in coöperation with the county agents. In these demonstrations such records are taken as are essential to the determination of the net profits of the individual farms. These records are classified according to different types of farming, the profits of each type are determined, and individual farm records are compared with the average of all the farm records taken. The results of the study are made known to each farmer interested, in order that he may use the suggestions received in any need or reorganization of his own business. For those who desire it, farm account books are opened and instruction is briefly given in keeping simple records. This work was begun in September, 1914. The demand for this work was greatly increased by the enactment of the income-tax law, and the resulting need of business records by which the income might be determined, and by the demand for accurate cost-of-production figures by price-fixing commissions.

COUNTY AND LOCAL FAIRS

The animal husbandry and crops specialists devote from one to two months in judging the live stock and agricultural products at county and local fairs, which furnish an excellent opportunity for lectures and demonstration work. Large numbers of people are reached through the fair judging work. In many cases people become interested in the work of the specialists who have not been interested or reached through farmer's meetings and demonstrations. Each specialist endeavors to make his judging work as practical and instructive as possible.

FARM AND HOME WEEK

The purpose of Farm and Home Week is to interest the farmers of the state in better methods of production and of farm management that will increase farm profits, to demonstrate to farm women methods of household management that will add to the comfort and enjoyment of farm life, and to encourage farm folks in social organization that will enrich the social life of the rural community.

All meetings, lectures and demonstrations during Farm and Home Week are free of charge, and the expense of the trip to Manhattan, with reduced railroad rates, should not prevent any farmer from attending. The investment in knowledge and enthusiasm will make bigger profits on the farm.

During this week the College Experiment Station, the Extension Service, the United States Department of Agriculture, agricultural specialists and leading farmers bring to those in attendance the latest results of investigative work in all lines of agriculture, home economics and mechanical engineering.

Problems concerning crops and soils, dairying, beef cattle, horses, hogs, sheep, poultry, horticulture, community service, beekeeping and diseases of animals are discussed by some of the leading agricultural authorities in America. In addition to these lectures and demonstrations there are many other interesting features, such as the display of the live stock of the College, the barns, machinery, buildings, libraries, museums, dairy, experimental plots, orchards and gardens.

County Agent Work*

H. UMBERGER, Dean
A. L. CLAPP, District Agent
G. W. SALISBURY, District Agent
FRANK C. BLECHA, District Agent
A. F. TURNER, Field Agent

JAMES A. MILHAM, Allen
 , Anderson
JOE E. GOODWIN, Atchison
R. E. WILLIAMS, Barton
C. O. GRANDFIELD, Bourbon
CHAS. E. CASSEL, Butler
J. A. HENDRICKS, Chase
ROY E. GWIN, Cherokee
E. BRUCE BRUNSON, Cheyenne
R. W. McCALL, Clark
C. R. JAGCARD, Clay
SAM J. SMITH, Cloud
 , Coffey
J. B. PETERSON, Comanche
W. L. TAYLOR, Crawford
CHAS. E. LYNNESS, Doniphan
H. C. COLGLAZIER, Douglas
 , Ellis
F. W. CALDWELL, Finney
HARRY C. BAIRD, Ford
F. JOE ROBBINS, Franklin
L. M. KNIGHT, Gray
J. W. FARMER, Greenwood
A. B. KIMBALL, Harvey
RAY L. GRAVES, Hodgeman
H. F. TAGGE, Jackson
W. H. ROBINSON, Jefferson
KYLE D. THOMPSON, Jewell
C. A. WOOD, Johnson
H. L. HILDWEIN, Kingman

HERBERT MOSS, Labette
E. H. LEKER, Leavenworth
S. D. CAPPER, Lincoln
CECIL L. McFADDEN, Lyon
M. L. ROBINSON, McPherson
ARTHUR L. MYERS, Marion
WM. O'CONNELL, Marshall
C. S. MERIDITH, Meade
E. H. WALKER, Miami
HAYES M. COE, Montgomery
PAUL B. GWIN, Morris
H. A. BISKIE, Nemaha
CHAS. D. THOMPSON, Neosho
GEO. W. SIDWELL, Ness
E. L. McINTOSH, Osage
ROBT. E. CURTIS, Ottawa
CARL L. HOWARD, Pawnee
CHAS. H. STINSON, Pratt
CARL CARLSON, Rawlins
V. S. CRIPPEN, Reno
A. I. GILKISON, Rice
 , Rooks
DONALD B. IBACH, Rush
E. J. MACY, Sedgwick
W. H. METZGER, Shawnee
G. L. CLELAND, Sherman
J. J. INSKEEP, Sumner
JOHN V. HEPLER, Washington
C. E. AGNEW, Wilson
C. E. GRAVES, Wyandotte

County-agent work in this state is provided for by the federal Smith-Lever act and the state farm-bureau law. The federal Smith-Lever act provides an appropriation which increased each year until 1922 when it reached its maxi-

* The United States Department of Agriculture coöperates in furnishing part of the salary of every member of this department. In the case of the county agents, counties, through farm bureaus, furnish a part of the salary and all expenses.

mum and which is distributed among the states according to their agricultural population. In addition to the regular Smith-Lever appropriations, Kansas receives additional funds from the so-called supplementary Smith-Lever appropriation. This appropriation was made available immediately following the war period in order that permanent work which had been established during the war period need not be discontinued due to the inability of the regular Smith-Lever appropriations to finance it. Before the federal funds are available they must be duplicated within the state.

The state legislature appropriates at each session an amount equal to that available to this state from the federal Smith-Lever appropriation. In addition to this, the state farm-bureau law, effective June 17, 1919, provides that when one-fourth, or as many as 250, of the *bona fide* farmers of a county shall form a farm-bureau organization, adopt a constitution and by-laws and elect officers, and when an equipment fund of at least \$800 has been provided and deposited in a local bank, the county commissioners shall appropriate at least \$1,200 per year (which sum may be raised by a special tax levy), and the Agricultural College shall appropriate at least \$1,200, so long as funds are available from the state or federal funds above mentioned, for the purpose of hiring a county agent or agents and paying their expenses.

Previous to 1914 county agents were financed by membership dues, private subscription and a small state appropriation. At that time a membership of at least 100, each paying dues of \$5, was required. In 1914 congress passed the Smith-Lever act and in 1915 the Kansas legislature passed the farm-bureau law, which has since been the basis of the extension of this work. During the war period, July 1, 1917, to June 30, 1919, supplemental agricultural appropriations were made by congress for more rapid extension of county-agent work.

August 1, 1912, the first county agent in Kansas was employed by the Leavenworth county farm bureau. The number has increased gradually, until at the present time, January 1, 1924, there are sixty active farm bureaus in Kansas, as follows:

Allen	Doniphan	Labette	Ottawa
Anderson	Douglas	Leavenworth	Pawnee
Atchison	Ellis	Lincoln	Pratt
Barton	Finney	Lyon	Rawlins
Bourbon	Ford	McPherson	Reno
Butler	Franklin	Marion	Rice
Chase	Gray	Marshall	Rooks
Cherokee	Greenwood	Meade	Rush
Cheyenne	Harvey	Miami	Sedgwick
Clark	Hodgeman	Montgomery	Shawnee
Clay	Jackson	Morris	Sherman
Cloud	Jefferson	Nemaha	Sumner
Coffey	Jewell	Neosho	Washington
Comanche	Johnson	Ness	Wilson
Crawford	Kingman	Osage	Wyandotte

The county agents are active in conducting demonstrations in the best methods of production and marketing, in assisting farmers with suggestions and plans relative to farm management and the farm business, and in organizing rural activities. Field demonstrations are conducted for the purpose of introducing crops and of testing relative values of varieties already grown, and methods of cultivation and harvesting. Proper methods of the feeding, care and management of live stock, of controlling insects and live stock and plant diseases are among the most popular demonstrations. Surveys of the farm business are made in order to study the conditions prevailing in typical areas, and possible improvements in farm-management methods that should be instituted. Improved methods of marketing and community welfare, in which better social relations are fostered, also are important features of this work. The county agent interests himself in practically every farm activity, especially where there is need of improvement.

A course suggesting special lines of training for those desiring to enter extension work will be found elsewhere in this catalogue.

Home Economics

MISS AMY KELLY, Acting in Charge
 MISS MINNIE SEQUIST, Specialist in Clothing and Textiles
 _____, Specialist in Nutrition and Assistant in Institutes
 MISS PEARL MARTIN, Specialist in Home Nursing and Assistant in Institutes
 MRS. HARRIET ALLARD, Specialist in Household Management and Assistant in Institutes
 MISS MAUDE FINLEY, Specialist in Millinery
 MISS LUELLA SHERMAN, Nutrition Specialist

There are approximately 800 women who annually receive instruction in home economics at the Agricultural College, and there are many thousands throughout the state who have had the advantages of resident instruction either in this or some other institution through the services of the Extension Department. While thousands have received instruction in home economics either through the Resident Department or through the Extension Department, this is a small number when compared to the great majority of women and girls in the state to whom such work has not been available. To give as much assistance as possible to this vast majority of women is the aim of the Department of Home Economics Extension, and with this in view, seven women are regularly employed and two others have been employed part time as special assistants during the year. The extension work in home economics is conducted through farm and home institutes, extension schools, special women's meetings, home-makers' clubs, by judging at fairs, and by means of personal correspondence. During the institute season, from January to March, four women give lectures and demonstrations before farm and home institutes. From March to September, inclusive, the same specialists carry on intensive project work with the farm women in the state in county institutes, in special extension schools and judging at fairs. From March to September all the specialists of this department give their time to intensive work upon the projects of which they are in charge.

Extension schools in home economics are held throughout the year as a means of carrying on the regular project work.

Home Demonstration Work

MISS AMY KELLY, State Home Demonstration Leader
 MISS ELLEN M. BATCHELOR, Assistant State Home Demonstration Leader
 MISS JESSIE BARR, Secretary to State Home Demonstration Leader
 _____, Home Demonstration Agent, Anderson County
 MISS SARA JANE PATTON, Home Demonstration Agent, Cherokee County
 MISS ETHEL McDONALD, Home Demonstration Agent, Sedgwick County
 *MISS FLORENCE WHIPPLE, Home Demonstration Agent, Meade County
 MISS EDITH HOLMBERG, Home Demonstration Agent, Reno County
 MRS. JULIA KIENE, Home Demonstration Agent, Shawnee County
 _____, Home Demonstration Agent, Washington County
 MISS MAUDE COE, Home Demonstration Agent, Wyandotte County
 MISS MAUDE E. DEEBLY, Home Demonstration Agent, Clay County
 MISS NINA E. HURLBERT, Home Demonstration Agent, Franklin County
 MISS FLORENCE WHIPPLE, Home Demonstration Agent, Meade County
 MISS CAROLINE KESLER, Home Demonstration Agent, Meade County
 MRS. LILA S. COE, Home Demonstration Agent, Montgomery County

Home demonstration work was made possible in August, 1917, through the passage by congress of the emergency extension bill. This bill provided funds for the employment of county and city home demonstration agents. This appropriation provided for the salaries of these agents, but the expenses and office room and equipment had to be provided by the county or city in which the home demonstration agent was placed. These expenses were met in this state in each case by a fund guaranteed by the city or county at the time the services of a home demonstration agent were requested. These agents

* Resigned October 27, 1923.

were called emergency home demonstration agents. Before the end of a year there were twenty-five of these agents in the state. The emergency fund was discontinued June 30, 1919.

In the early days the work of the emergency home demonstration agents was instituted under the auspices of city or county organizations, but after following this plan for a short time it was found that it would be advantageous to defer the placing of a home demonstration agent until the counties were properly organized.

Since August, 1918, farm-bureau counties which have requested home demonstration agents have been organized on the basis of an ideal farm bureau; that is, the women have been taken into the farm bureau as regular members, having all the rights and privileges, and have become part of the working organization. In such counties the work of the home demonstration agents is taken up as part of the regular extension program, which includes the development of farm activities, home activities, and community activities. There are ten counties organized with an extension program which includes the home demonstration agent.

During the war the program of work for the home demonstration agent was suggested largely by the Federal Food Administration, but at the close of the war the program was based on the needs of the communities in the county and was evolved through the community, committee and mass meetings. To-day each county has a county program of work based on the needs of the communities in the county, and this is a part of the state program. The home demonstration agent, in cooperation with the Agricultural College and United States Department of Agriculture, works to carry out the community, county and state program.

Since July 1, 1921, the counties desiring a home demonstration agent are required to meet the following conditions:

1. Supply an office equipped for work and adequate stenographic help.
2. Provide a fund of not less than \$500 for the purchase of equipment in addition to that provided for the county agent.
3. Provide a membership of not less than 100 farm women, each of whom pays at least \$1 membership fee into the county farm bureau and has all the privileges and duties of a member as a *bona fide* farmer.
4. Secure a total county appropriation of not less than \$2,400 to the county farm bureau for the salary and expenses of the county agent and the home demonstration agent.

When this is done this candidate appears before the board of the county desiring the home demonstration agent and enters into a contract with them to serve as their agent.

The work in the counties is now on a permanent basis and is met with appreciation and the same measure of success as has been accorded the county-agent work.

Boys' and Girls' Club Work

R. W. MORRISH, State Club Leader
ELEANOR HOWE, Assistant State Club Leader

Boys' and girls' club work has become one of the very important phases of Agricultural College extension service. The club work is divided into club demonstrations. Each demonstration represents some specific phase of farm or home activities, such as baby-beef production, pig feeding, poultry hatching, canning, meal preparation, etc.

Clubs are organized and conducted in cooperation with farm bureaus, farmers' institutes, county boards of education, and business men's organizations. Any community may have a club by interesting the boys and girls in some of the club demonstrations and by having them agree to carry on the work as outlined by county and state leaders. Each club should have an adult local leader to supervise the work of the club members and assist with club meetings. Through these clubs the College is able to reach and serve a large class of

young people which it could neither reach nor serve in any other way. A large number of boys and girls receive an incentive for higher training in agriculture and home economics and gain their first acquaintance with the College through the club work. Boys and girls receive frequent visits from the county extension agents, and the local leaders and club groups are given first-hand information by visits of the subject-matter specialists or other College representatives. Written material is prepared by the College specialists and sent out by the state club leader through the Extension office, and to the club members, giving them definite information regarding the results of many of the more important experiments conducted by the Agricultural Experiment Station, and regarding farm and home practices recommended by the College. Some of the most valuable methods and practices which the College has to offer are put into actual practice by these young people and demonstrated to the community.

Complete records showing expenses and receipts are kept by the boys and girls, and they meet regularly once per month with their local and county leaders to consider various matters pertaining to their different demonstrations. Through the organization of the club, much valuable experience in leadership is gained by hundreds of boys and girls who have no other source for such experience. Exhibits at local, county and state contests are entered by club members. At the close of the club season the different club members send in their records and stories. In short, the club boys and girls shoulder responsibilities, meet with failure as well as with success, and do on a small scale what they will be obliged to do on a larger scale when in later years they become real farmers and home-makers. Beginning with 1923 the practice of holding the Boys' and Girls' Club Week at Manhattan in connection with Farm and Home Week was discontinued. As was the case this year, hereafter an annual "Round-up" of junior club members will be held each spring.

A special feature of the year's club program is the Annual Boys' and Girls' Club Round-up held in May. This is held at the Agricultural College and the boys and girls are given a week's instruction by the College faculty. Any boy or girl club member is eligible to attend, but as a rule the attendance is largely of county and state champions.

Rural Engineering

MARK HAVENHILL, Extension Engineer in Charge
WALTER G. WARD, Extension Architect

At one time the person who failed at other occupations could take up farming, as a last resort, and still manage to live. That time has passed. The modern farm is equipped with power machinery, a water system, a lighting system, a sewage system, up-to-date buildings, and a shop. The installation and maintenance of this equipment require a considerable knowledge of engineering. It is the duty of the Department of Rural Engineering to disseminate this engineering information and to render all the assistance possible to farmers in the solution of their engineering problems.

The extension engineer offers suggestions and assistance in the solution of the drainage, irrigation, machinery, water-supply, and sewage-disposal problems. Field visits and surveys are made from which plans and specifications are prepared and a written report submitted. A copy of these reports is placed on file in the county agents' offices, and these reports are used many times as patterns in other engineering problems of a like nature. By this and other means a general campaign of rural engineering education is carried on.

Owing to the fact that a very large proportion of the farm buildings of Kansas will soon need replacing or remodeling, and due to the increased cost of labor, the farmstead and farm buildings must be more efficiently arranged. The extension architect offers assistance with the planning of the farmstead, the farm buildings, the water and sewage systems, and many related con-

veniences. A number of farm building plans and specifications, with particular reference to Kansas conditions, have been prepared. These plans are furnished to any one interested, at the cost of blue-printing.

The engineers of this department answer thousands of mail inquiries of an engineering nature each year, and furnish hundreds of small sketches showing how particular engineering problems can be solved. The services of the engineers of this department are free except when requests are made for special trips. Then a charge for travel and local expenses is made.

Rural Service

—, Director

The work of the Rural-service Department is now on the project basis, approved by the States Relations Service of the United States Department of Agriculture, under the title "Rural Organization," and is now conducted as a state project, wholly from the state extension funds.

The object of this department is to advise with and assist county agents and farm bureaus in coordinating the activities of groups of farmers, community leaders and farmers' organizations for more effective work in the development of the agriculture and home economics of the rural community.

Conferences of leaders are held in local communities for discussion and consultation in regard to the work undertaken by organized groups, and ways in which the efforts of these groups may be coordinated. Suggestions are given by letter and personal visit to individuals and groups contemplating organization, as to what type of organization is best suited to local needs. Where communities lack unity, because of a multitude of unrelated and overlapping organizations, efforts are made through personal visits and correspondence to interest the organizations in coordinating their activities through the farm bureau.

Programs for all-round community development in harmony with county farm-bureau plans are worked out on the request of community leaders in cooperation with other specialists on the extension staff. One state-wide rural organization conference is conducted each year. At this conference methods of rural organization and community programs are given consideration.

Home-study Service

(Correspondence Study)

GEORGE GEMMELL, Head of Department	ADA BILLINGS, History and Civics
CHARLES NICHOL, Animal Husbandry	MARCIA HALL, English
B. H. FLEENOR, Education	J. C. WINGFIELD, Horticulture
FLOYD PATTISON, Industrial Subjects	MARGARET DUBBS, Home Economics

NOTE.—The Faculty members employed in the Home-study Service devote their entire time to the work of teaching by correspondence. They keep in close touch with the various departments of the College, and all credit courses which are offered by correspondence must first meet the requirements of the regular College departments handling the courses in residence.

There are many people in Kansas who, for many reasons, cannot attend classes on the campus, although they have interest in and need for the work offered by the Kansas State Agricultural College. Moreover, it has quite generally come to be recognized that even the completion of a college course does not end the necessity for education. It is in recognition of these manifold demands, far greater in number than the resident attendance at the College, that the institution offers to citizens of the state an opportunity to study at home various lines of agriculture, home economics, mechanic arts, farm engineering, and numerous high-school subjects.

The Home-study Service attempts to meet the widely varying needs and conditions of the people of Kansas by offering the following types of service:

1. *Extension or Vocational Courses*, which are complete, comprehensive courses adapted to the needs of those who are ambitious for thorough, scientific training to meet in an effective way the various practical and technical problems found in the various vocational activities. These afford the nearest possible home equivalent of a college education, and offer the particular advantage of utilizing the practical situations of life as their laboratory and shop exercises. For full information concerning the Vocational Courses, write to Home-study Service for catalogue.

2. *Credit Courses*, which are offered for those who for any reason are unable to attend school and wish to do work of a type that can be used for college or high-school credit. These courses are also of value to those who wish to use their time to advantage when school is not in session. For further information concerning Credit Courses, write to Home-study Service, K. S. A. C., Manhattan, Kan.

3. *Special Courses for Teachers*, which are a series designed as helps for teachers of industrial, agricultural and home-economics subjects. A particular effort is made in these courses to make available to the teachers of the state all the materials and aids which the Kansas State Agricultural College can offer them.

4. *Emergency Courses*. During the war a number of these courses were offered to help meet the new difficulties and duties imposed. It is the purpose of the department to continue a service of this kind. Whenever new situations arise calling for such courses, requests for them will be appreciated.

5. *Study Centers*. Under regulations established for this purpose, study centers may be arranged where college subjects may be studied under the personal direction of members of the College Faculty.

6. *Information Service*, the purpose of which is to afford a definite source to which technical or informational questions may be referred. All such questions which are referred to the Home-study Service will be promptly answered if possible, or referred to a specialist in the College elsewhere, who will supply the information desired.

7. *Lantern-slide Service*. A number of sets of lantern slides on agricultural, industrial and home economics subjects have been prepared by specialists in the College with particular reference to Kansas conditions. These will be loaned, free of cost (except transportation charges), to any responsible resident of Kansas. For further information concerning these, inquiries should be addressed to the Home-study Service of the College.

VOCATIONAL COURSES

SUBJECTS COVERED. Vocational courses treat subjects covered in the three general fields, *Agriculture*, *Industry* and *Home Economics*. The list which follows is being revised from time to time according to demands.

BY WHOM CONDUCTED. The courses are prepared and taught by specialists in correspondence study, who keep in close touch with the College Faculty in their respective fields.

METHODS OF WORK. Each course is based upon a recognized standard text treating the subjects, and is covered in a number of definite lessons, ranging from ten to twenty. A written report is required of the student on each lesson, according to instructions sent upon enrollment.

EXAMINATIONS. Examinations in courses completed may be taken at the College or locally under the direction of some suitable person with whom arrangements can be made, such as a county superintendent or city superintendent.

FEES. The enrollment fee for a single vocational course is \$3 (\$6 to non-residents of Kansas).

BOOKS AND STATIONERY. Students will be expected to provide all textbooks, drawing instruments, stationery and other materials required in their courses, and to pay postage on lessons sent in.

AGRICULTURE.

EA 1. Essentials of Agriculture.	EA 17. Floriculture.
EA 2. Elementary Agricultural Chemistry.	EA 18. Landscape Gardening.
EA 3. Soils.	EA 19. Farm Forestry.
EA 4. Cereal Crops.	EA 20. Dairy Products.
EA 5. Forage Crops.	EA 21. Milk Testing.
EA 6. Gardening.	EA 23. Breeding Types of Live Stock.
EA 7. Orcharding.	EA 24. Horse Production.
EA 8. Feeds and Feeding.	EA 25. Dry-land Farming.
EA 9. Animal Feeding.	EA 26. Beef Production.
EA 10. Types and Classes of Live Stock.	EA 27. Pork Production.
EA 11. Farm Dairying.	EA 28. Sheep Raising.
EA 12. Poultry Production.	EA 29. Live-stock Production.
EA 13. Economic Entomology.	EA 30. Beekeeping.
EA 14. Poultry Management.	EA 31. Farm Management.
EA 15. Small Fruits.	EA 32. Poultry Culling.
EA 16. Greenhouse Management.	

HOME ECONOMICS

EH 1. Household Management.	EH 11. Home Decoration.
EH 2. Foods and Cookery I.	EH 12. Personal Hygiene.
EH 3. Foods and Cookery II.	EH 13. Household Bacteriology.
EH 4. Sewing.	EH 14. Child Life and Care of Children.
EH 5. Textiles.	EH 15. Household Chemistry.
EH 6. Elementary Needlework.	EH 16. Costume Design.
EH 7. Home Nursing.	EH 17. Laundering.

INDUSTRIAL SUBJECTS.

EI 1. Shop Mathematics.	EI 13. Blacksmithing.
EI 2. Mechanical Drawing, Applied.	EI 15. Highway Construction.
EI 3. Architectural Drawing.	EI 17. Automobiles.
EI 4. Constructive Carpentry and Inside Finishing.	EI 18. Machine Shop Work.
EI 5. Heating and Ventilating.	EI 19. Bridge and Culvert Construction.
EI 7. Farm Buildings.	EI 20. Elementary Woodworking.
EI 8. Concrete Construction.	EI 23. Gasoline and Oil Traction Engines.
EI 10. Farm Machinery.	EI 25. Plumbing.
EI 11. Steam Boilers and Engines.	EI 26. Practical Electricity.
EI 12. Gasoline Engines.	EI 27. Sheet Metal Drafting.
	EI 31. Automotive Ignition.

CREDIT COURSES

GRADES OF WORK. Credit courses are offered in both high-school, or entrance-credit subjects, and college subjects. The courses in each case are the full equivalent of resident courses in like subjects.

BY WHOM CONDUCTED. The courses are prepared under the supervision of the heads of departments of the Agricultural College Faculty, and are taught by specialists in correspondence study under the same regulations that govern resident work.

EXAMINATION. Examinations may be taken at the College or under conditions approved by the College. In the latter case, arrangements can often be made with the local county superintendent, or city superintendent of schools, to conduct the examination.

REGULATIONS. 1. Enrollments for correspondence-study work will be received at any time during the year, and students may continue their work uninterruptedly throughout the entire year.

2. Correspondence students will be expected to complete any course for which they are enrolled within twelve months from the date of enrollment.

3. Not more than two courses are advised by correspondence at any one time. It is recommended that a student carry but one subject at a time, particularly where only part of the time is given to the work.

4. Each subject listed under the various departments constitutes what is known as a correspondence "course."

5. Students enrolling for correspondence courses must meet the prerequisites the same as if undertaking the work in residence.

6. A student may not be enrolled for correspondence work while in attendance at any institution of learning without special permission from the dean or proper authorities in the institution of which he is a student.

FEES. An enrollment fee of \$10 is charged for residents of Kansas; \$15 for nonresidents. For this amount the student is entitled to eight semester hours of college work, or three semester credits of high-school work, and is given a year in which to finish them. No fee is refunded because of the student's inability to enter upon the course for which once registered. Extensions of time can be granted only where the work has been delayed because of personal illness of the student. All such cases must be taken up individually with the director of this department.

BOOKS AND STATIONERY. Students will be expected to provide all textbooks, drawing outfits, stationery and other materials required in their courses, also to pay postage on lessons one way.

FOR WHOM INTENDED. Though credit courses offered by the Home-study Service are still limited, the number is steadily growing, and it is the purpose of the department to add courses whenever a demand for them becomes evident. The other types of work are sufficiently broad to be of value to a great variety of people. The following classes in particular should be able to profit by them:

1. Those who have completed a common-school course, but for any reason are unable to attend high school.
2. High-school graduates temporarily or permanently unable to attend college.
3. Students whose attendance at high school or college has been interrupted.
4. Students who for any reason have fallen behind in their work and wish to use their spare time catching up.
5. The strong, aggressive student who does not wish to halt his progress for vacations and other interruptions.
6. High-school and grade classes in practical courses that need supplementing and enrichment.
7. Teachers who wish further professional or other training, or who need help in planning and conducting their work.
8. Professional and business men who wish to keep growing along some line of interest, professional or avocational.
9. Clubs and other organizations which wish to make systematic studies.
10. Men and women who wish effective help in meeting the demands in their vocations for technical and scientific knowledge and training.

COURSES OF INSTRUCTION.

The list of Credit Courses offered is being extended constantly, the new courses added in each case being those for which there seems to be the most demand. The following is the present list:

High-school Courses		
	<i>Number of assignment</i>	<i>Unit H. S. credits</i>
AGRICULTURE		
PCA 1. Elementary Agriculture I.....	20	1/2
PCA 2. Elementary Agriculture II.....	20	1/2
DRAWING		
PCD 3. Shop Mechanical Drawing I.....	20	1/2
PCD 4. Shop Mechanical Drawing II.....	20	1/2

	<i>Number of assignment</i>	<i>Unit H. S. credits</i>
ENGLISH		
PCE 1. Grammar and Composition (first year).....	20	1½
PCE 2. Literature (first year).....	20	1½
PCE 3. Composition (second year).....	20	1½
PCE 4. Literature (second year).....	20	1½
PCE 5. Composition (third year).....	20	1½
PCE 6. Literature (third year).....	20	1½
HISTORY.		
PCH-A. Ancient History	20	1½
PCH 3. Medieval History	20	1½
PCH 4A. Modern History I.....	20	1½
PCH 4B. Modern History II.....	20	1½
PCH 5. American History I.....	20	1½
PCH 6. American History II.....	20	1½
PCH 7. Community Civics	20	1½
PCH 8. Civics	20	1½
PCH 9. Economics	20	1½
MATHEMATICS		
PCM 1. Algebra I	20	1½
PCM 2. Algebra II	20	1½
PCM 3. Algebra III	20	1½
PCM 4. Plane Geometry I.....	20	1½
PCM 5. Plane Geometry II.....	20	1½
PCM 6. Solid Geometry	20	1½
PCM 7. Bookkeeping	20	1½
SCIENCE		
PCS 1. Physical Geography	20	1½
PCS 2. Botany	20	1½
PCS 4. Physiology	20	1½

College Credit Courses

DIVISION OF AGRICULTURE

	<i>Semester credits</i>	<i>Assign- ments</i>
AGRONOMY		
CA 3. Farm Crops	3	24
ANIMAL HUSBANDRY		
CL 2. History of Breeds	2	16
CL 4. Pork Production	2	16
CL 5. Horse Production	2	16
CL 6. Sheep Production	2	16
HORTICULTURE		
CH 1. Orcharding	2	16
CH 2. Gardening	2	16
CH 3. Floriculture	2	16
CH 4. Greenhouse Construction and Management.....	3	24
CH 5. Landscape Gardening	1	8
CF 1. Farm Forestry	3	24
CH 6. Small Fruits	2	16
POULTRY HUSBANDRY		
CPP 1. Farm Poultry Production.....	1	8

DIVISION OF ENGINEERING

	<i>Semester credits</i>	<i>Assign- ments</i>
APPLIED MECHANICS		
CE 2. Engineering Drawing	2	16
CE 6. Machine Drawing I	2	16
CE 4. Mechanism	3	24
CE 11. Descriptive Geometry	2	20
CIVIL ENGINEERING		
OE 1. Highway Engineering I.....	2	16
SHOP PRACTICE		
CE 7. Metallurgy	2	16
MECHANICAL ENGINEERING		
CE 3. Farm Motors	2	16
CE 10. Elements of Steam and Gas Power Engineering.....	2	16

DIVISION OF HOME ECONOMICS

CLOTHING AND TEXTILES		
CHE 1. Textiles	2	16
FOOD ECONOMICS AND NUTRITION		
CHE 2. Foods Study	1	8
HOUSEHOLD ECONOMICS		
CHE 3. Sanitation and Public Health.....	3	24

DIVISION OF GENERAL SCIENCE

ECONOMICS AND SOCIOLOGY		
CEc 1. Economics	3	24
CS 2. Rural Sociology	3	24
CS 3. Sociology	3	24
CS 4. Rural Organization	2	16
EDUCATION (PROFESSIONAL)		
CP 1. Industrial Education	3	24
CP 2. Educational Psychology	3	24
CP 3. Educational Sociology	3	24
CP 4. History of Education.....	3	24
CP 5. Principles of Education.....	3	24
CP 6G. Methods of Teaching in the Grades.....	3	24
CP 6H. Methods of Teaching in High School.....	3	24
CP 7. Educational Administration	3	24
CP 8. Psychology	3	24
CP 9. School Discipline	2	16
CP 10. Rural Education	3	24
CP 11. Agricultural Education	3	24
CP 12. Home Economics Education.....	2	16
CP 13. Vocational Guidance	1	8
ENGLISH		
CCE 1. College Rhetoric I.....	3	24
CCE 2. College Rhetoric II.....	3	24
CCE 3. Business English	3	24
CCE 4. The Short Story.....	3	24
CCE 6. English Literature	3	24
HISTORY AND CIVICS		
CHC 1. Community Civics	2	16
CHC 2. Modern Europe I.....	3	24
CHC 4. English History	3	24
MATHEMATICS		
CM 7. Plane Trigonometry	3	25
CM 8. College Algebra	3	25
PHYSICAL SCIENCE.		
CG 1. General Geology	3	24

The Agricultural Experiment Station

The Kansas Agricultural Experiment Station was organized under the provisions of an act of congress, approved March 2, 1887, which is commonly known as the "Hatch act," and is officially designated as—

"An act to establish agricultural experiment stations in connection with the colleges established in the several states under the provisions of an act approved July 2, 1862, and the acts supplementary thereto."

The wide scope and far-reaching purposes of this act are best comprehended by an extract from the body of the measure itself, in which the objects of its enactment are stated as being—

"To aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and practice of agricultural science."

The law specifies in detail—

"That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and waters; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses for forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable."

On the day after the Hatch act had received the signature of the President, the legislature of Kansas, being then in session, passed a resolution, dated March 3, 1887, accepting the conditions of the measure, and vesting the responsibility for carrying out its provisions in the Board of Regents of the Kansas State Agricultural College.

Until 1908 the expenses of the Agricultural Experiment Station were provided for entirely by the federal government. The original creative act (the Hatch act) carried an annual congressional appropriation of \$15,000. No further addition to this amount was made until the passage of the Adams act, which was approved by the President March 16, 1906. This measure provided, "for the more complete endowment and maintenance of agricultural experiment stations," a sum beginning with \$5,000, and increasing each year by \$2,000 over the preceding year for five years, after which time the annual appropriation was to be \$15,000—

"To be applied to paying the necessary expenses of conducting original researches or experiments bearing directly on the agricultural industry of the United States, having due regard to the varying conditions and needs of the respective states or territories."

It is further provided that—

"No portion of said moneys exceeding five percentum of each annual appropriation shall be applied, directly or indirectly, under any pretense whatever, to the purchase, erection, preservation or repair of any building or buildings, or to the purchase or rental of land."

The Adams act, providing as it does for original investigations, supplied the greatest need of the Agricultural Experiment Station—means of providing men and equipment for advanced research. Only such experiments may be entered upon, under the provisions of this act, as have first been passed upon and approved by the Office of Experiment Stations of the United States Department of Agriculture.

In the neighborhood of sixty projects, covering practically all phases of agricultural investigation, are being studied by the members of the Experiment Station staff.

The farms, live stock, laboratories, and general equipment of the College are all directly available for the use of the Agricultural Experiment Station.

The results of the work of the Experiment Station are published in the form of bulletins, circulars, and scientific papers other than bulletins and circulars. These bulletins are of two classes—those which record the results of research work of a purely scientific character and those which present technical information in a simplified form, suitable for the general reader. The circulars are brief and condensed popular presentations of data which call for immediate application, as well as timely and useful information not necessarily new or original. The scientific papers are usually published as reprints or addresses given before scientific bodies. These reprints contain original information or report definite steps in the progress of investigations under way.

All bulletins and other publications from the Agricultural Experiment Station are sent without charge to citizens of the state. Any person in the state who so desires may have his name placed on the permanent mailing list of the Station.

Letters of inquiry and general correspondence should be addressed: "Agricultural Experiment Station, Manhattan, Kan." Special inquiries should be directed, so far as possible, to the heads of departments having in charge the matters concerning which information is desired.

CONTROL WORK OF THE STATION

In addition to the work of agricultural investigation, the state has enlarged the activities of the Station along various lines of state executive or control work.

One of the important lines of control work is that of state dairy commissioner. This official, appointed by the Board of Administration, and having his office at the seat of the Agricultural College, is required (Laws of 1909, ch. 237)—

"To inspect or cause to be inspected all the creameries, public dairies, butter, cheese and ice-cream factories, or any place where milk or cream or their products are handled or stored within the state, at least once a year, or oftener if possible."

He may in connection with the Board of Administration of the College—

"Formulate and prescribe such reasonable rules and regulations for the operation of creameries, butter, cheese and ice-cream factories and public dairies as shall be deemed necessary by such board to fully carry out the provisions of this act."

He may act on complaints regarding the sale of unwholesome or unclean dairy products, and may prohibit their sale. He may—

"Condemn for food purposes all unclean or unwholesome milk, cream, butter, cheese or ice cream, wherever he may find them."

Another important state function is that of the State Entomological Commission. (Laws of 1907, ch. 336; 1909, ch. 27.) This commission, created in 1907, was established—

"To suppress and eradicate San José scale and other dangerous insect pests and plant diseases throughout the state of Kansas."

The professors of entomology at the Agricultural College and at the University of Kansas are by law designated as two of the five members of the above commission. Acting under the title of state entomologists, they divide between them the territory of the state, for the purpose of inspection.

They are empowered—

"To enter upon any public premises . . . or upon any land of any firm, corporation or private individual within the state of Kansas, for the purpose of inspection, destroying, treating, or experiment upon the insects or diseases aforesaid."

They may treat or cause to be treated "any and all suspicious trees, vines, shrubs, plants, and grains," or, under certain conditions, may destroy them.

They must annually inspect all nursery stock, and no nursery stock is to be admitted within the state without such inspection.

Concerned with the live-stock interests of the state is the State Live Stock Registry Board, with regard to which there is the following provision (Laws of 1913):

"Every person, persons, firm, corporation, company or association that shall stand, travel, advertise or offer for public service in any manner any stallion in the state of Kansas, shall secure a license certificate for such stallion from the Kansas State Live Stock Registry Board, as herein provided. Said board shall consist of the dean of the Division of Agriculture, head of the Animal Husbandry Department, and the head of the Veterinary Department of the Kansas State Agricultural College."

To this board is assigned the duty of licensing stallions used for breeding purposes within the state, and authority to verify their breeding and to classify them under the following heads: pure bred, grade, crossbred, and scrub. No animal not thus approved and licensed with the board is permitted to be used for public breeding purposes.

By legislative act (Laws of 1909, ch. 49), a "division of forestry" at the Agricultural College is also provided for in the following terms:

"For the promotion of forestry in Kansas there shall be established at the Kansas State Agricultural College, under the direction of the Board of Regents, a division of forestry. The Board of Regents of the Kansas State Agricultural College shall appoint a state forester, who shall have general supervision of all experimental and demonstration work in forestry conducted by the Experiment Station. He shall promote practical forestry in every possible way, compile and disseminate information relative to forestry, and publish the results of such work through bulletins, press notices, and in such other ways as may be most practicable to reach the public, and by lecturing before farmers' institutes, associations, and other organizations interested in forestry."

It will thus be seen that the state of Kansas is making increasing use of the scientific staff of the Agricultural Experiment Station in matters of state importance requiring the application of technical knowledge.

Branch Agricultural Experiment Stations

FORT HAYS BRANCH STATION

The land occupied by this Station is a part of what was originally the Fort Hays military reservation. Being no longer required for military purposes, it was turned over to the Department of the Interior, October 22, 1899, for disposal under the act of congress of July 5, 1884. Through the influence of Senator, later Regent, W. A. Harris, and of Congressman Reeder, a bill was passed in the fifty-sixth congress, setting aside this reservation "for the purpose of establishing an experimental station of the Kansas Agricultural College and a western branch of the Kansas State Normal School thereon and a public park." This bill was approved by the President on March 28, 1900. By act of the state legislature, approved on February 7, 1901, the act of congress donating this land and imposing the burden of 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 small fund for preliminary work. In the division of this land, the College received 3,560 acres.

The land at the Fort Hays Branch Station consists mainly of high, rolling prairie, with a limited area of rich alluvium bordering on a creek, and is situated on the edge of the semi-arid plains region. It is well suited for experimental and demonstration work in dry farming, in irrigation, and in crop, forestry, and orchard tests, under conditions of limited rainfall and high evaporation.

The work of this Station may be divided into two divisions: (A) experimental projects, (B) general farm and live-stock work. The experimental

projects are as follows: Dry-farming investigations, forage-crop investigations, cereal-crop investigations, forest, nursery and park demonstrations and investigations, farm dairying, and experiments in the feeding and breeding of live stock. All this work is confined to the study of the problems peculiar to the western half of the state, and relates especially to crop production under limited rainfall, to the development of varieties better adapted to the climatic conditions there prevailing, and to studies of the systems of animal husbandry and dairy husbandry suited to this region. The facilities of this Station are being used for the growing of large quantities of pure seed of the strains and varieties which have proved in actual test to be most productive in the western part of the state.

GARDEN CITY BRANCH STATION

In 1906 the county commissioners of Finney county purchased, for purposes of agricultural experimentation, a tract of land amounting to 320 acres, situated four and one-half miles from Garden City, on the unirrigated upland.

The land has been leased for a term of ninety-nine years to the Kansas Agricultural Experiment Station as an "experimental and demonstration farm," for the purpose of determining the methods of culture, crop varieties, and crop rotations best suited to the southwestern portion of the state, under dry-land farming conditions. A pumping plant irrigating from eighty to one hundred acres has been installed for the purpose of investigating the expense of pumping and the cost of equipment necessary for plants of this type, which are common in the shallow-water districts between Garden City and Scott City and along the Arkansas valley. The Agricultural Experiment Station's investigations in irrigation agriculture are centered at this branch station.

COLBY BRANCH STATION

The legislature of 1913 provided for the establishment of a branch experiment and demonstration station near Colby, in northwestern Kansas, "for the purpose of advancing and developing the agricultural, horticultural, and irrigation interests of this state and western Kansas." This Station was located upon a tract of three hundred and fourteen acres of land bordering upon the town site of Colby. This land was purchased by the county and deeded to the state for the purposes named above. Operations were begun in March, 1914. Cropping experiments are being conducted under dry-land conditions and under irrigation. Water is being lifted one hundred and fifty feet for irrigating a garden, fruit trees, and a few desirable crops, such as alfalfa, that could not be grown successfully in western Kansas with the natural rainfall. The primary purpose of the Colby Station is to determine the best methods of developing the agriculture of northwestern Kansas and to make it a still more desirable place to live.

TRIBUNE BRANCH STATION

At the Tribune Station experimental and demonstration work is conducted for the benefit of the surrounding territory. Special attention is paid to the problems of producing, storing, and utilizing crops for winter feeding of cattle which in summer graze the extensive range areas of the extreme western part of the state.

The Bureau of Research in Home Economics

The bureau of research in home economics conducts investigations in the scientific, economic and social problems of the home. The purpose of this research is to discover new facts and new methods of the application of scientific knowledge bearing upon the welfare of the members of the family and the conditions under which they live.

The fields of research included in the bureau are: child welfare, clothing and textiles, food economics, household administration, institutional administration, human nutrition, and dietetics.

The laboratories of the Division of Home Economics include equipment suitable for work on certain of the problems. Opportunities for surveys and investigations of conditions in the state are found through the coöperation of various educational and social agencies.

The results of all investigations are published from time to time and are available on request to all citizens of the state.

The personnel of the bureau staff includes members of the teaching faculty in home economics. Several of the departments in other divisions of the College advise or collaborate with officers of the bureau on problems of related interest.

Among the investigations in progress are the following:

A study of relation of weight of clothing to respiratory infection.

Survey of clothing and purchasing habits.

The effect of limited diet on the growth and strength of bone.

Rate of growth after periods of slow or retarded growth induced by a diet low in ash.

Experimental studies in human metabolism.

Digestibility of starch in cereals following various methods of preparation.

Relationship of low incomes to dietary habits of families, with special emphasis on the nutrition of children.

Survey of the food consumed by groups of college students during a specified period of time, noting adequacy, cost, and difference in food habits between men and women.

Studies on the cost of sickness.

Efficient furnishing of farm kitchens based upon an economical expenditure of time, money, space, and labor.

A study of the farm woman's expenditures of time, energy, and money.

A study of records showing heights, measures, physical condition, and mental development of infants and children of preschool age.

The Engineering Experiment Station

The Engineering Experiment Station was established for the purpose of carrying on tests and research work of engineering and manufacturing value to the state of Kansas, and of collecting, preparing, and presenting technical information in a form readily available for the use of the various industries within the state. It is the intention to make all the work of the Experiment Station of direct importance to Kansas.

All of the equipment of the various engineering and scientific laboratories, the shops, and the College power plant are available for this work, while the personnel of the Station consists of members of the teaching staff from the various departments of the Division of Engineering and from other scientific departments whose work is directly related to the work of this division.

Among the tests now being carried on are: Tests of automatic ventilators; heating systems for the prevention of insect infestation in flour mills; the use of corn as a fuel; concrete used in highway construction; temperature stresses in rigid pavement slabs; air resistance to motor vehicles; farm sewage-disposal systems; and radioactivity of gas-well borings.

Various other investigations are being carried on upon brick, concrete, fuels, lubricating oils, pipe coverings, insulation for refrigeration, belt lacings, blacksmith coals, foundry sands, centrifugal pumps, and problems in farm architecture.

Records have been obtained of the discharge of the Kansas river, and it is hoped that a gauge can be installed at some future date, so that a continuous record can be made of the stage of the river at Manhattan, to be used in computing the flood discharge of that stream, as a basis for designing works for flood protection.

The testing laboratories of this Station have been designated by law* as the testing laboratories for the State Highway Commission and the state highway engineer, and as such have charge of the testing of all road materials for use in federal-aid road construction in this state.

The results of the investigations are published as bulletins and circulars of the Engineering Experiment Station, which are sent free to any citizen of the state upon request. Besides issuing these bulletins, the Station answers yearly many hundreds of requests for information upon matters coming within its field.

Requests for bulletins and general correspondence should be addressed to Engineering Experiment Station, Manhattan, Kan. Requests for information in specific matters should be addressed, so far as it is possible, to the heads of departments in whose fields the particular matters lie.

* Sec. 5, ch. 64, Laws of 1917.

Special Courses

Short Courses in Agriculture

Farmers' Short Course

The Agricultural College offers in agriculture primarily a four-year curriculum, which gives the student fundamental training in the sciences relating to agriculture and their application to the production of crops and live stock, and to farming in general. Such a curriculum not only equips a man to become a successful farmer, but makes of him a better citizen, and a leader in the broader duties of life.

Many men who have chosen farming as their vocation, and who are alive to some of the advantages offered by this institution to the farmers of the state, are denied the opportunity of pursuing the College curriculum in agriculture, or even as much as one year's work in that curriculum. For such men the Agricultural College provides the Farmers' Short Course.

The course requires two years for completion, an eight-week term being given each year. For 1925 the session will begin Monday, January 5, and close Saturday, February 28. Besides the required subjects each student may take one or two elective subjects each year.

SUBJECTS IN FARMERS' SHORT COURSE

The Arabic numeral immediately following the name of a subject indicates the number of credits, while the numerals in parentheses indicate the number of hours a week of recitation and laboratory, respectively.

FIRST YEAR

REQUIRED

Soils and Fertilizers	4(4-0)
Live-stock Production I	5(3-4)
Dairying I	5(3-4)
Grain Crops	4(3-2)
Special Lectures	1(2-0)

ELECTIVE

Beekeeping	6(4-4)
Poultry Husbandry	3(3-0)
Fruit Growing	3(2-2)
Live-stock Sanitation	3(3-0)
Farm Management	3(3-0)
Farm Marketing	3(3-0)
Farm Insects	2(2-0)
Injurious Rodents	2(2-0)

It is also possible to elect a limited amount of work in carpentry, blacksmithing, or gas engines.

SECOND YEAR

REQUIRED

Forage Crops	4(3-2)
Live-stock Production II	5(3-4)
Farm Buildings and Equipment	4(4-0)
Farm Horticulture	3(2-2)
Special Lectures	1(2-0)

ELECTIVE

Dairying II	5(3-4)
Farm Accounts	3(2-2)

Any of the subjects listed in the elective work of the first year may also be taken as electives during the second year.

For each hour of recitation per week usually at least one hour of outside preparation is required. Laboratory or field work requires little or no outside

preparation. Each credit (standard for measuring the quantity of work done) represents not less than two hours' work per week for the entire eight weeks of the term. A regular, full-time assignment consists of not less than twenty credits, and students are usually not encouraged to take more than twenty-four credits.

Students desiring further work in farm engineering are referred to "Special Courses Related to Engineering," discussed elsewhere in this catalogue. For example, a man may take intensive work for the training of automechanics or tractor operators during part or all of the months of September, October, November and December, or during part or all of the months of March, April and May, and during the months of January and February devote himself almost exclusively to Farmers' Short-course work.

It must be noted that Farmers' Short-course work cannot be taken at any other time during the year than during this midwinter, eight-week term. Furthermore, students expecting credit must continue the work for the entire term.

CERTIFICATE. A certificate will be granted to each student completing satisfactorily the thirty-six credit hours of work required and not less than four credit hours of electives.

REQUIREMENTS FOR ADMISSION. This course is intended primarily for mature individuals. High-school work in the state is becoming so general and available to all communities that the demand for short-course work for boys of high-school age is being greatly reduced. Young farmers, not in school, are especially urged to consider the advantages of the Farmers' Short Course. Students over seventeen years of age are admitted without examination.

There is no charge for tuition, but each student is required to pay, on enrollment, an incidental fee of \$5, also a sick-benefit fee of \$1.50. This latter fee entitles him to free medical attendance by the College physician. In several of the laboratories, laboratory deposits or charges varying from 50 cents upward must be made to cover cost of materials used.

SELF-SUPPORT. The subjects of this course are primarily practical. They bring the student into actual contact with farm conditions and products. Besides the classroom work, many hours each week are spent in the stock-judging pavilion, laboratory, shop, and barn. This leaves the student but little time for outside labor, and students are therefore advised to come provided with as nearly all the necessary funds for the course as possible.

BRIEF DESCRIPTION OF THE WORK

SOILS AND FERTILIZERS. (Agron. 3.) In this class the various soil types common in Kansas are studied, especially with reference to their economical management for the production of profitable crops and the maintenance of fertility.

LIVE-STOCK PRODUCTION I. (An. Husb. 6.) The work of this class consists of a study of the principles and practices of feeding and management of live stock. Three-fourths of the time in the laboratory is devoted to judging live stock and the remainder to demonstrations in killing, cutting, curing, and storing of meat on the farm.

DAIRYING I. (Dairy Husb. 1.) This class considers the general subject of farm dairying, including the composition and properties of milk, the feeding of the dairy cow, the selecting and breeding of the dairy herd, and dairy sanitation. The laboratory provides practical work with the Babcock tester, in the use of the farm separator, and in butter making. Laboratory deposit, \$1.

GRAIN CROPS. (Agron. 1.) The work in this subject consists of a practical study of grain-crop production. In the laboratory exercises are given for the identification of different kinds of threshed grain and the determination of damage and market classes and grades. Laboratory charge, 50 cents.

SPECIAL LECTURES. One credit is given each year for attending these lectures. Among the speakers provided will be several members of the College

Faculty, including the president of the College, and some of the outside, well-known agricultural leaders.

FORAGE CROPS. (Agron. 2.) This class makes a study of the distribution and production of important forage crops, especially for Kansas conditions. Practical exercises in identification are given in the laboratory. Laboratory charge, 50 cents.

LIVE-STOCK PRODUCTION II. (An. Husb. 8.) The work of this class consists primarily of a study of the principles and practices in breeding, history of the development of the different breeds, and the pedigrees of noted individuals. Some time is given to the matter of fitting live stock for show and sale. The laboratory work consists of judging.

FARM BUILDINGS AND EQUIPMENT. (Ag. Engr. 2.) This class takes up the fundamental principles of farm building arrangement and construction, including barns, houses, hog houses, poultry houses, machine sheds, silos, cribs, and granaries. Particular attention is given to farm equipment, such as tillage, seeding, and harvesting machinery, both horse-drawn and power. Some time is devoted to concrete construction, farm water systems, sanitation, heating, lighting, and ventilation. Text: Ramsower's *Equipment for the Farm and the Farmstead*.

FARM HORTICULTURE. (Hort. 1.) The work in this class is designed to give the student an appreciation of the possibilities of the art of horticulture in creating better living conditions and better homes. Brief consideration is given to the planning of the farmstead; the planting of ornamentals, wind-breaks, and forest trees; and the care of garden, small fruits, and the home orchard. Incidentally an attempt is made to suggest the possibilities of commercial horticulture in localities adapted to special crops.

BEEKEEPING. (Ent. 10.) This subject considers the elements of practical beekeeping. The topics discussed include: Life history, behavior and instincts of the honeybee; products of the apiary; and relation of bees to crop production. A study is made of the various bee diseases, together with their treatment. The laboratory exercises consist of practice in constructing hives, supers, brood frames, comb-honey sections, extracting frames, and wiring frames; also of practice in putting in and embedding foundation. Demonstrations are given of various methods of transferring bees, manipulating colonies for swarm prevention and making increase, treatment of brood diseases, and wintering. The object of the work is to give such practical training as will prepare the student to engage successfully in beekeeping.

POULTRY HUSBANDRY. (Poult. Husb. 1.) The work in Poultry Husbandry covers the practical phases of poultry management, including feeding, breeding, housing, incubation, and brooding.

FRUIT GROWING. (Hort. 2.) This subject is intended to give young men who have the ambition and opportunity to engage in fruit growing the principles that underlie the success of the enterprise. The work includes a discussion of soils and soil conditions; the possibilities of irrigation; the fruit varieties adapted to various locations; plans for planting and care of young orchards; formative pruning and the problems of protecting trees from insects and diseases; and the storage and marketing of fruit.

LIVE-STOCK SANITATION. (Vet. Med. 1.) This subject deals with diseases that are communicable from animal to animal or from animal to man. The causes, symptoms and methods that are employed to prevent and to combat the spread of diseases, and the drugs that are commonly used as disinfectants, for washes, dips, etc., are given full consideration. The use of serums, vaccines, etc., for the prevention of disease is considered. Methods of disposal of sick and dead animals as well as the means employed to clean and to disinfect the premises so as to prevent a recurrence of diseases are considered.

FARM MANAGEMENT. (Ag. Ec. 1.) In this class the work in the various agricultural subjects is correlated and placed on a practical, workable basis. The principles of farm accounting, distribution of capital, laying out of fields, planning rotations, etc., are given first consideration. Laboratory charge, 50 cents.

FARM MARKETING. (Ag. Ec. 1.) The work in this course consists of a study of marketing functions and services, and a means of improving the methods of marketing farm products. Considerable attention is given to cooperation as a means of improving the marketing of farm products.

FARM INSECTS. (Ent. 1.) The serious insect pests of the farm, garden and orchard and those affecting domestic animals are discussed in this class. Methods of control are emphasized and the importance of clean culture and good farm methods is fully considered. Lantern slides are used in some of the presentations.

INJURIOUS RODENTS. (Zool. 1.) In this class a study is made of injurious rodents, especially gophers, prairie dogs, rats, mice, moles and rabbits, emphasizing their habits and the methods of poisoning, trapping, and otherwise destroying them.

DAIRYING II. (Dairy Husb. 3.) Among the subjects studied and discussed in this class are the following: Keeping records and accounts of dairy-farm business; building up the dairy herd; dairy buildings and equipment; silos and silage; the dairy business and soil fertility; cow-testing associations; cooperative ownership of dairy sires; and detailed plans for the management of the dairy farm. Laboratory work consists of judging dairy cattle from the standpoint of economical production and breed type. Score cards are used for the purpose of making the student systematic and accurate in the selection of dairy animals.

FARM ACCOUNTS. (Ag. Ec. 3.) This course deals with the methods of keeping farm records and accounts and analyzing them so that they are of use in the farm business. Necessary account books, accounting forms, and supplies for laboratory use are furnished the student. Laboratory charge, 50 cents.

Commercial Creamery Short Course

The Commercial Creamery Short Course, eight weeks in length, is designed to train young men in the manufacture of butter and ice cream and in the handling of market milk. Young men with no previous experience in dairy manufactures may obtain from this course practical and technical training which will give them a foundation on which to build, while those with some previous experience will find the work a great help toward more rapid advancement.

The new College creamery, which is operated on a commercial basis, provides unusual facilities for this training. The equipment is complete and of the latest design. The work is in direct charge of experienced well-trained creamerymen. The scope of the work, the nature of its various phases, and the comparative amount of time devoted to each are indicated by the following outline:

SUBJECTS IN COMMERCIAL CREAMERY SHORT COURSE

The Arabic numeral immediately following the name of a subject indicates the number of credits, while the numerals in parentheses indicate the number of hours a week of recitation and laboratory, respectively.

Creamery Management	2(2-0)
Creamery Butter Making	8(4-8)
Market Milk	3(2-2)
Dairy Bacteriology	2(2-0)
Ice Cream and Cheese Making	4(2-4)
Judging Dairy Products	1(0-2)
Dairying II	5(3-4)
Dairy Mechanics and Refrigeration.....	2(0-4)

There is no charge for tuition in this short course. Each student is required to pay on enrollment an incidental fee of \$5, a laboratory charge of \$2 and a sick-benefit fee of \$1.50. This latter fee entitles him to free medical attendance by the College physician.

A certificate will be issued to Commercial Creamery Short-course students who satisfactorily complete all of the required work outlined above, and who show satisfactory evidence of having spent at least six months successfully in actual work in a creamery. Students without this practical experience may acquire it after completing the course. They will then receive their certificates.

BRIEF DESCRIPTION OF THE WORK

CREAMERY MANAGEMENT. This class makes a study of the management of dairy manufacturing plants, dealing with manufacturing efficiency.

CREAMERY BUTTERMILKING. A practical study of buttermaking from the raw milk on the farm to the finished package is made by this class. The centralizing system is given special consideration in the light of Kansas conditions.

MARKET MILK. The problems concerned in the care and handling of milk from production to delivery by the most modern methods are studied in this class.

DAIRY BACTERIOLOGY. The work in this subject is chiefly laboratory work supplemented by brief lectures and explanations. The elementary fundamental problems of dairy bacteriology are considered, including the significance and control of bacteriological contamination in milk and its products.

ICE CREAM AND CHEESE MAKING. The work in this subject deals with the manufacture of ice cream as carried on in the most up-to-date plant. Some time is devoted to cheese making, with special emphasis on the package- and soft-cheese business.

JUDGING DAIRY PRODUCTS. The successful manufacturer must be able to recognize defects in his product. This ability is acquired rapidly in the practice in judging provided in this class.

DAIRYING II. The creamery man deals directly with the farmer. He should know something of the milk producers' problems in order to meet producers intelligently. The work in this class is designed with this idea in mind. (A brief description of the work given in this subject may be found in the "Farmers' Short Course" write-up.)

DAIRY MECHANICS AND REFRIGERATION. The work of this class covers the theory and practice of mechanical refrigeration, pipe fitting, belt lacing, and soldering.

Cream Station Operators' Short Course

The law of the state requires that all persons buying milk or cream by test must pass a satisfactory examination and secure a certificate from the state dairy commissioner. A four-day course for cream-station operators is offered each year at the College during Farm and Home Week to those who wish to gain, in a short time, skill and accuracy in the application of the various tests necessary in such work, and ability to pass the required examination.

Practice in sampling, testing, and grading cream is provided. Lectures are given on points which are necessary for the successful operation of a cream station. A written examination is given on the last day of the course.

Short Course in Wheat and Flour Testing

Many workers in the milling industry are anxious to take a few weeks in which to secure intense, practical training in their field. The College in endeavoring to meet the needs of this group of workers has provided a four-week course known as the Short Course in Wheat and Flour Testing. It begins the first Monday in April each year.

This course affords opportunity for making experimental milling tests and experimental baking tests as well as practice and demonstration in the following chemical determinations: absorption, gluten, ash, moisture, acidity, and protein. Special lectures are given on the meaning of these terms in relation to quality in wheat and flour.

The well-equipped mill and laboratories used for College courses are available to short-course students taking this work. An incidental fee of \$2.50 is charged and a laboratory fee of \$10 to cover the cost of materials used.

Short Course for Dairy Herdsmen

During recent years there has been a growing demand from men experienced in dairy cattle management for a state conference and intensive first-class instruction and demonstrations in the feeding, care, and management of dairy cattle. A two-week course, therefore, has been provided along these lines to be known as the Short Course for Dairy Herdsmen. It begins the first Monday in December each year.

The program consists of lectures, demonstrations, and laboratory work and is provided by the Department of Dairy Husbandry with the assistance of a few other outstanding leaders in the dairy industry. Any of the practical problems of dairy management may be considered. Some work in testing milk and its products is provided and some time devoted to the study of pedigrees.

Daily programs will be available each fall not later than November 20.

Short Course for Beef-cattle Herdsmen

In response to a demand from the cattle breeders of the state for intensive work in the study of their problems, this short course is being offered by the Department of Animal Husbandry. It is a two-week course beginning soon after Christmas each year. The next session of the course will open December 29, 1924, and close January 9, 1925.

The primary purpose of this course is to offer instruction that will help breeders of pure-bred beef cattle, particularly beginners, in raising and fitting cattle for the show ring. The work is practical and intensive. The program for each day of the session is as follows:

- 8 to 9 a. m.—Lecture: Feeds and Feeding Show Cattle.
- 9 to 10 a. m.—Lecture: Principles of Animal Breeding.
- 10 to 11 a. m.—Lecture: Cattle Management Problems.
- 11 to 12 a. m.—Lecture: History of Beef-cattle Breeds.
- 1 to 3 p. m.—Judging Beef Cattle.
- 3 to 5 p. m.—Practice in dressing horns, washing, curling, showing, etc.

Enrollment in this course must be made in advance. Application for work in the coming session must be in before December 15, 1924.

Short Courses Related to Engineering

Automobile Operation
Automobile Repair
Tractor Operation
Foundry Practice

Carpentry
Machine-shop
Blacksmithing
Electrical Repair

The following short courses are intended for those who have not the time or the means to take any of the regular engineering courses in the College, but who wish to obtain a practical working knowledge of one of the trades related to engineering.

Students may enroll in the special Short Course in Electrical Repair on the first Monday in January only. Students may enroll in any of the other seven special short courses on the last Monday of September and the first Monday after the fourth of January.

There is no charge for tuition, but an incidental fee of \$5 for the eight-week courses, or \$10 for the longer courses, not exceeding eighteen weeks in length, is charged at entrance. A sick-benefit fee of \$1.50 for the eight-week courses, or \$3 for the longer courses, is also charged, and entitles the student to free medical attendance from the College physician. The cost of books and tools for the various courses ranges from \$5 to \$20, depending on the course selected.

The College reserves the right to revise its schedule of laboratory charges at any time without notice.

A certificate will be issued to those students in the short courses related to engineering who satisfactorily complete the prescribed work.

AUTOMOBILE OPERATION. This course covers a period of eight weeks, and it is intended for those who wish to learn to operate and repair their own automobiles. Two weeks of the course is spent in studying the mechanism, adjustments and construction of the automobile, and includes such work as the grinding of valves, the fitting of bearings, the fitting of rings, lapping in pistons, valve timing, and other work of particular value to the automobile owner. Four weeks of the course are spent in studying the lighting, ignition, starting, and generating systems used on the various cars and the proper methods of caring for them, special emphasis being placed on the practical phase of this work. Two weeks are spent in the automobile repair section, giving special attention to the electrical and fuel systems used on the Ford, Dodge, Cadillac, Packard, Franklin, Paige, and other cars. Laboratory charge, \$3 per week.

AUTOMOBILE REPAIR. This course covers a period of twelve weeks and is designed for those who expect to enter commercial shops and work as garage mechanics. During the first eight weeks of this course the work is identical to that as described for the course in Automobile Operation. After the completion of the first eight weeks of work, one week is spent in soldering and babbiting and covers work of the most practical nature in making and soldering all types of electric-wire splices and the tinning of cast-iron and steel bearings for babbiting purposes. Two weeks are spent in the electrical section and covers the more advanced phases of the work. The electrical section includes a study of the construction and operation of storage batteries, magnetos, coils, cut-outs, relays, regulators, circuit breakers, and various electrical equipment found on standard cars. The final week is spent in repair work, going more into detail as to "trouble shooting," tire repair and other work of special value to the garage mechanic. Laboratory charge, \$3 per week.

TRACTOR OPERATION. This course covers a period of eight weeks, and treats of the construction, operation, and adjustment of modern farm tractors and their equipment. One week is spent in the study of each of the following subdivisions: tractor construction, carburetion, ignition, stationary gas engines, dead tractor engines, tractor operation, tractor repair, and power field machinery.

The College has ample laboratory facilities for carrying out the work successfully. Among the equipment used in giving this instruction will be found: complete tractors of the latest models; tractor motors unmounted; laboratory sets of clutches, gears, and differentials; sectional and working models of magnetos, coils, and carburetors as used on various types of tractors; stationary gas engines; various types and makes of tractor field tools; and a practical repair shop equipped with standard tools. Laboratory charge, \$3 per week.

CARPENTRY. A practical study lasting twelve weeks is made of general carpenter work, including the use of carpenters' tools, reading of drawings and blue prints, hand work and machine work, framing, building construction, and form building for concrete. Laboratory charge, \$1.50 per week.

MACHINE-SHOP. This course in machine-shop work covers a period of twelve weeks and is designed to meet the demands of those who must prepare themselves in a short time for this line of work. The work is adapted to the needs of the individual student. The entire machine shop of the College is available for this course, which includes a thorough training in the operation of lathes, planers, drill presses, boring mills, shapers, and grinding machines.

In order to enable the student to become familiar with both tools and shop processes, the construction of standard gasoline engines and wood lathes is followed from the machining of the rough castings to the assembly of finished parts. Students may in this way make their own engines and lathes. Laboratory charge, \$3 per week.

FOUNDRY PRACTICE. This course, which lasts twelve weeks, is intended to train practical molders, and includes bench molding with a great variety of patterns; work with different kinds of sands and facings; open sand work; sweep molding; machine molding; core making; setting of cores, gates, and risers; different methods of venting; and general foundry practice. Laboratory charge, \$1.50 per week.

BLACKSMITHING. A practical course of twelve weeks duration is given in forging operations, such as drawing, welding, bending, twisting, and punching iron and steel; the care of forge fire; the making of various tools, such as punches, chisels, drills, scrapers, and hammers; hardening, tempering, annealing, case and pack hardening; and oxyacetylene and thermit process of welding. Laboratory charge, \$3 per week.

ELECTRICAL REPAIR. This course is intended to train electricians, and includes electric wiring, and the operation of dynamos, motors, and other electrical equipment. Duration, one or two months. Laboratory charge, \$3 per week.

One- and Two-year Courses in Trades Related to Engineering

The following one-and two-year courses have been arranged for those who can spend more time in the study of their selected trade than is given in the eight- and twelve-week courses covering the same subjects, and who find it impossible, because of insufficient preliminary training or for other reasons, to take a more extended course leading to a degree. The purpose of these one- and two-year trade courses is to give the student a practical working knowledge of one of the trades and in addition to give him work in English, shop arithmetic, shop drawings and other studies which are essential to its successful application. Each of the several courses is intensely practical, well rounded, and should prove profitable to any who desire a complete training in a trade course. A certificate will be granted to each student satisfactorily completing the prescribed work. These courses begin on the same date as

that of the regular college work. The laboratory charges are prorated on the same basis as for the Special Short courses.

REQUIREMENTS FOR ADMISSION. Students entering any of the one- and two-year trade courses should have completed the eighth grade in common-school education, or its equivalent.

ONE-YEAR TRADE COURSE IN AUTOMECHANICS. This course requires two college semesters, each of eighteen weeks, and one summer session of nine weeks for its completion. The work as outlined covers, during the first semester, the mechanical section of automechanics, the electrical section of automechanics, the repair section of automechanics, electrical work, repair work, soldering and babbiting, machine-shop work, blacksmithing, tractor operation, and carpentry. During the second semester, work is taken in vocational English, practical arithmetic, vocational drawing, oxyacetylene welding, machine-shop work, and storage-battery repair. During the summer session the outline includes shop calculations, shop management, foundry, automobile painting, automobile trimming, automobile repair, automobile electrical work, carpentry work, and advanced machine-shop practice.

TWO-YEAR TRADE COURSE IN CARPENTRY. Two College years of thirty-six weeks each and two summer sessions of nine weeks each are required to complete this course. During the first year, carpentry, blacksmithing, machine-shop work, vocational English, practical arithmetic, vocational drawing are studied. The two summer sessions are devoted entirely to practical carpentry. During the second year advanced shop calculations, vocational English, vocational drawing, building details and practical carpentry are taken.

ONE-YEAR TRADE COURSE IN BLACKSMITHING. This course requires two semesters of eighteen weeks each and one summer session of nine weeks before completion. During the first semester, twelve weeks are devoted to blacksmithing, followed by machine-shop work, soldering and babbiting, and carpentry. During the second semester, vocational English, practical arithmetic, vocational drawing, oxyacetylene welding, machine shop and advanced blacksmithing are taken. During the summer session the work covers shop calculations, shop management, and advanced blacksmithing.

ONE-YEAR TRADE COURSE IN FOUNDRY PRACTICE. This course requires two semesters of eighteen weeks each and one summer session of nine weeks before completion. During the first semester, twelve weeks are devoted to foundry practice, followed by practice in blacksmithing and machine-shop work. During the second semester the following subjects are taken: Vocational English, practical arithmetic, vocational drawing, oxyacetylene welding, and advanced machine-shop practice. During the summer session the time is devoted to shop calculations, shop management, and advanced foundry practice.

TWO-YEAR TRADE COURSE FOR MACHINISTS. Two College years of thirty-six weeks each and two summer sessions of nine weeks each are necessary to complete this course. The first year's work is devoted to elementary machine-shop practice, soldering and babbiting, foundry, blacksmithing, vocational English, practical arithmetic, vocational drawing. During the summer session following the first year the entire time is devoted to machine-shop practice. During the second year advanced work is given in shop calculations, vocational English, vocational drawing, oxyacetylene welding, machine-shop practice, jig and fixture design, shop management, and trade electives. The final summer session at the end of the second semester is devoted to advanced machine-shop practice and trade electives.

Short Course in Home Economics

Housekeepers' Course in Home Economics

There are large numbers of young women who, from lack of time, are unable to take an extended course, but who recognize the need for special training in home making. The twentieth century demands of home managers an understanding of the sanitary requirements of the home, a knowledge of values, absolute and relative, of the articles used in the house, quick attention to details, good judgment in buying, and a ready adaptation of means to the end in view. The purpose of the Housekeepers' Course is to furnish this training. The teaching in this course is no less accurate than in the regular course, but is necessarily different. Given to students without scientific training, the instruction must be more largely a presentation of facts, without an elaboration of the underlying principles. The work is intensely practical, and the hundreds of young women who take this course go back to their homes with a broader view of life, and a knowledge and training that will enable them to meet their responsibilities. This course is given during the first fifteen weeks of each semester.

REQUIREMENTS FOR ADMISSION. Young women between the ages of eighteen and twenty-one are admitted upon presentation of common-school diploma, grammar-school certificate, or high-school diploma. Young women over twenty-one years of age may be admitted without presentation of credentials.

HOUSEKEEPERS' COURSE

Cookery
Sewing
Hygiene

Floriculture
Design in the Home and in Clothing
Housewifery

1. COOKERY. Both semesters. Laboratory, nine hours.

Stoves, stove construction, stove management, and fuels are the first topics considered. This discussion is followed by experiments illustrating the effect of heat upon starch and proteins. The necessary elementary principles involved are then applied to the cooking of cereals, vegetables, beverages, breads, meats, soups, simple cake mixtures, and puddings, and to the canning and preserving of fruits and vegetables. Special attention is given to the planning and serving of meals.

2. SEWING. Both semesters. Laboratory, ten hours.

This course includes practice in hand and machine sewing and dressmaking. The fundamental stitches are applied to simple articles and to the repairing of garments. Practice is given in the use of the sewing machine, and in the adaptation of commercial patterns. Suitable materials and trimmings are discussed. Undergarments, children's garments, and a dress are made. Notebook work is required.

3. HYGIENE. Both semesters. Class work, three hours.

This course deals with the principles of elementary hygiene and their application in the maintenance of personal health and of sanitary conditions in the home and community. A study is made of the prevention and control of disease through personal hygiene, the sanitary care of the house, and public-health work. Attention is also given to the recognition and reporting of symptoms, the practical care of the sick, and the giving of first-aid treatment in common emergencies in the home.

4. DESIGN IN THE HOME AND IN CLOTHING. Both semesters. Laboratory, six hours.

This course makes a study of the design principles used in dress and in the problems of the home. Suitable lines and colors for dress are discussed and

many practical problems are given. In home decoration the study involves the choice and arrangement of furniture, the choice of wall paper and of rugs, the use of color in the home, and the selection and arrangement of pictures.

5. FLORICULTURE. Both semesters. Class work, two hours.

Lectures in the class room are supplemented in the greenhouse by practical exercises dealing with the propagation and culture of flowers. Soil requirements, the planting of seeds, transplanting, cultivation, the making of cuttings, the selection of varieties adapted to the purpose of window gardening, and lawn planting and cutting are discussed in the lectures. An opportunity to become acquainted with the species recommended and with the operations necessary for their successful culture is afforded in the laboratory practice.

6. HOUSEWIFERY. Both semesters. Laboratory, three hours.

This is a course in practical housekeeping, emphasis being placed upon efficiency in the use of time, money, and strength. It includes a study of house plans, furnishings and equipment, the cleaning and care of rooms, laundering and care of clothing, the planning of expenditures, buying of supplies, and keeping of accounts.

Officers of Instruction and Administration

PRESIDENT

WILLIAM MARION JARDINE, B.S.A., LL.D., President of the College (1910, 1918).*

B. S. A., Utah Agricultural College, 1904; LL. D., Campbell College, 1916.
** A 30; College campus.

PROFESSORS

JOHN DANIEL WALTERS, M.S., A.D., Professor of Architecture, Emeritus (1876, 1917).

M. S., K. S. A. C., 1883; A. D., *ibid.*, 1908. E 214; 809 N. Eleventh.

JULIUS TERRASS WILLARD, M.S., Sc.D., Vice President of the College (1883, 1918); Dean of Division of General Science (1883, 1909); Professor of Chemistry (1883, 1901); Consulting Chemist, Agricultural Experiment Station 1888, 1918).

B. S., K. S. A. C., 1883; M. S., *ibid.*, 1886; Sc. D., *ibid.*, 1908. A 47; 1725 Poyntz.

BENJAMIN LUCÉ REMICK, Ph.M., Professor and Head of Department of Mathematics (1900).

Ph. B., Cornell College, 1889; Ph. M., *ibid.*, 1892. E 223; 613 Houston.

ALBERT DICKENS, M.S., Professor and Head of Department of Horticulture (1899, 1902); Horticulturist, Agricultural Experiment Station (1899, 1902).

B. S., K. S. A. C., 1893; M. S., *ibid.*, 1901. H 28; 1230 Fremont.

RALPH RAY PRICE, A.M., Professor and Head of Department of History and Civics (1903).

A. B., Baker University, 1896; A. M., University of Kansas, 1898.
F 57; 615 Humboldt.

JULIUS ERNEST KAMMEYER, A.M., LL.D., Professor and Head of Department of Economics (1903, 1904).

A. B., Central Wesleyan College, 1886; A. M., *ibid.*, 1889; LL. D., Kansas City University, 1912. A 52; 1441 Laramie.

JOHN VANZANDT CORTELYOU, Ph.D., Professor and Head of Department of Modern Languages (1904, 1916).

A. B., University of Nebraska, 1897; A. M., *ibid.*, 1901; Ph. D., University of Heidelberg, 1904. A 71; 325 N. Fourteenth.

JOHN ORR HAMILTON, B.S., Professor and Head of Department of Physics (1901, 1908); Physicist, Engineering Experiment Station (1913).

B. S., University of Chicago, 1900. C 33; 331 N. Fourteenth.

* One date standing after the title shows when the office was assumed. In the case of two dates separated by a comma or a semicolon, the first date indicates when services with the College began, the second when present office was assumed. Dates separated by a dash indicate time of assumption and termination, respectively, of the duties indicated in the title.

** The College buildings are designated by letters, as follows:

A—Anderson Hall (Administration).	K—Kedzie Hall (Printing).
Ag—Waters Hall (Agriculture).	L—Home Economics Hall.
Bks—Barracks.	M—Auditorium.
C—Denison Hall (Chemistry, Physics).	MA—Music Annex.
CH—College Hospital.	N—Nichols Gymnasium.
D—Chemistry Annex No. 2.	R—Farm Machinery Hall.
E—Engineering Hall.	S—Engineering Shops.
F—Fairchild Hall (Library).	T—Cafeteria.
G—Vocational School Hall.	V—Veterinary Hall.
H—Horticultural Hall.	W—Chemistry Annex No. 1.
I—Illustrations Hall.	X—Dairy Commission Building.

- MARY PIERCE VAN ZILE, Dean of Women (1908, 1918).
Diploma, Iowa State College, 1904. A 40; 800 Houston.
- LOWELL EDWIN CONRAD, M. S., Professor and Head of Department of Civil Engineering (1908, 1909); Civil Engineer, Engineering Experiment Station (1913).
B. S., Cornell College, 1904; C. E., *ibid.*, 1906; M. S., Lehigh University, 1908.
E 124; 317 N. Seventeenth.
- EDWIN LEE HOLTON, A. B., Professor and Head of Department of Education (1910, 1913); Dean of Summer School (1910, 1918).
A. B., Indiana University, 1904. A 32; 217 N. Fourteenth.
- ROY ANDREW SEATON, M. S., Dean of Division of Engineering (1904, 1920); Director of the Engineering Experiment Station (1904, 1920); Professor and Head of the Department of Applied Mechanics and Machine Design (1904, 1914).
B. S., K. S. A. C., 1904; M. S., *ibid.*, 1910; S. B., Massachusetts Institute of Technology, 1911.
E 115; 722 Humboldt.
- ARTHUR BOURNE SMITH, Ph. B., B. L. S. College Librarian (1911).
Ph. B., Wesleyan University, 1900; B. L. S., University of Illinois, 1902.
F 32; 810 S. Juliette.
- LELAND DAVID BUSHNELL, Ph. D., Professor and Head of Department of Bacteriology (1909, 1912); Bacteriologist, Agricultural Experiment Station (1909, 1912).
B. S., Michigan Agricultural College, 1905; M. S., University of Kansas, 1915; Ph. D., Harvard University, 1921.
V 54; 801 Osage.
- LELAND EVERETT CALL, M. S., Professor and Head of Department of Agronomy (1907, 1913); Agronomist, Agricultural Experiment Station (1907, 1913).
B. S. in Agr., Ohio State University, 1906; M. S., *ibid.*, 1912.
Ag 214; 223 N. Fourteenth.
- GEORGE ADAM DEAN,² M. S., Professor and Head of Department of Entomology (1902, 1913); Entomologist, Agricultural Experiment Station (1902, 1913).
B. S., K. S. A. C., 1895; M. S., *ibid.*, 1905. F 52; 1000 Leavenworth.
- ROBERT KIRKLAND NABOURS, Ph. D., Professor and Head of Department of Zoölogy (1910, 1913); Zoölogist, Agricultural Experiment Station (1910, 1913); Curator of the Natural History Museum (1910).
Ed. B., University of Chicago, 1905; Ph. D., *ibid.*, 1911. F 54; 1646 Laramie.
- RALPH RALPH DYKSTRA, D. V. M., Dean of Division of Veterinary Medicine (1911, 1919); Professor of Surgery and Head of Department of Surgery and Medicine (1911, 1913).
D. V. M., Iowa State College, 1905. V 29; 607 Houston.
- CLARENCE ERLE REID, B. S., Professor and Head of Department of Electrical Engineering (1914); Electrical Engineer, Engineering Experiment Station (1914).
B. S. in E. E., Purdue University, 1902. E 119; 421 N. Sixteenth.
- MICHAEL FRANCIS AHEARN, M. S., Professor and Head of Department of Physical Education, and Director of Athletics (1904, 1920).
B. S., Massachusetts Agricultural College, 1904; M. S., K. S. A. C., 1913.
N 35; 104 N. Juliette.
- NELSON ANTRIM CRAWFORD, A. M., Professor and Head of Department of Industrial Journalism and Printing (1910, 1915).
A. B., State University of Iowa, 1910; A. M., University of Kansas, 1914.
K 30; 1729 Fairchild.

² Absent on leave, year 1923-'24.

- CHARLES MOSES STEVER, Ph. G., M. D., College Physician (1916).
Ph. G., Trinity University, 1903; M. D., *ibid.*, 1903; M. D., University of Kansas, 1907.
A 65; 1719 Laramie.
- WALTER WILLIAM CARLSON, B. S., M. E., Professor and Head of Department of Shop Practice (1910, 1917); Superintendent of Shops (1910, 1912); Industrial Engineer, Engineering Experiment Station (1913).
B. S., K. S. A. C., 1908; M. E., *ibid.*, 1916. S 62; 1729 Laramie.
- SAMUEL CECIL SALMON, M. S., Professor of Farm Crops (1913, 1917).
B. S., South Dakota Agricultural and Mechanical College, 1907; M. S., K. S. A. C., 1923.
Ag 82; 1648 Leavenworth.
- WALTER HORACE BURR, B. S., Professor of Sociology (1914, 1921).
B. S., K. S. A. C., 1920. A 74; 1811 Humboldt.
- HARRY JOHN CHARLES UMBERGER,³ B. S., Dean of Division of College Extension (1911, 1919); Director of College Extension (1911, 1919).
B. S., K. S. A. C., 1905. A 33; 1412 Leavenworth.
- HERBERT HIRAM KING, Ph. D., Professor and Head of Department of Chemistry (1906, 1918); Chemist, Agricultural Experiment Station (1918); Chemist, Engineering Experiment Station (1909, 1918).
B. S., Ewing College, 1904; A. M., *ibid.*, 1906; M. S., K. S. A. C., 1915; Ph. D., University of Chicago, 1918. C 30; 916 Humboldt.
- CHARLES WILBUR MCCAMPBELL, D. V. M., Professor and Head of Department of Animal Husbandry (1910, 1918); Animal Husbandman, Agricultural Experiment Station (1910, 1918).
B. S., K. S. A. C., 1906; D. V. M., *ibid.*, 1910; B. S. in Agr., *ibid.*, 1913.
Ag 5; 343 N. Fourteenth.
- RAY IAMS THROCKMORTON, M. S., Professor of Soils (1911, 1918).
B. S. in Agr., Pennsylvania State College, 1911; M. S., K. S. A. C., 1922.
Ag 216; 825 Houston.
- JAMES EDWARD ACKERT, Ph. D., Professor of Zoölogy (1913, 1918); Parasitologist, Agricultural Experiment Station (1913).
A. B., University of Illinois, 1909; A. M., *ibid.*, 1911; Ph. D., *ibid.*, 1913.
F 58; 1923 Leavenworth.
- ALFRED EVERETT WHITE, M. S., Professor of Mathematics (1909, 1918).
B. S., Purdue University, 1904; M. S., *ibid.*, 1909. A 72; 1743 Fairchild.
- JAMES BURGESS FITCH, B. S., Professor and Head of Department of Dairy Husbandry (1910, 1918); Dairy Husbandman, Agricultural Experiment Station (1910, 1918).
B. S., Purdue University, 1910. Ag 151; 321 N. Sixteenth.
- HALLAM WALKER DAVIS, A. M., Professor of English (1913, 1918); Head of Department of English (1913, 1921).
A. B., Indiana University, 1909; A. M., Columbia University, 1913.
K 52; 1727 Fairview.
- ARAMINTA HOLMAN, B. S., Professor and Head of Department of Applied Art (1913, 1918).
Graduate, New York School of Fine and Applied Art, 1912; B. S., Columbia University, 1922.
A 67; 327 N. Fifteenth.
- FRANCIS DAVID FARRELL, B. S., Dean of Division of Agriculture (1918); Director of Agricultural Experiment Station (1918).
B. S., Utah Agricultural College, 1907. Ag 34; 1515 Leavenworth.
- VIVAN LEWIS STRICKLAND, A. M., Professor of Education (1917, 1922).
A. B., University of Nebraska, 1906; A. M., *ibid.*, 1915. A 55; 1512 Leavenworth.

3. In coöperation with the U. S. Department of Agriculture.

- JAMES PARK CALDERWOOD, M. E., M. S., Professor and Head of Department of Mechanical Engineering (1918, 1922); Mechanical Engineer, Engineering Experiment Station (1918).
M. E., Ohio State University, 1908; M. S., Pennsylvania State College, 1916.
E 106; 321 N. Fourteenth.
- JAMES HENRY BURT, D. V. M., Professor and Head of Department of Anatomy and Physiology (1909, 1919).
V. S., Ontario Veterinary College, 1895; D. V. M., Ohio State University, 1905.
V 32; 800 Poyntz.
- LEO EDWARD MELCHERS, M. S., Professor and Head of Department of Botany and Plant Pathology (1914, 1919); Plant Pathologist, Agricultural Experiment Station (1914).
B. S., Ohio State University, 1912; M. S., *ibid.*, 1913. H 58; 1801 Leavenworth.
- EDWIN CYRUS MILLER, Ph. D., Professor of Plant Physiology (1910, 1919).
A. B., Lebanon College, 1906; A. B., Yale University, 1907; Ph. D., *ibid.*, 1910.
H 56; 211 N. Eighteenth.
- CYRUS VANCE WILLIAMS, B. S. (in Agr.), A. M., Professor of Vocational Education (1920).
B. Ed., (Peru) Nebraska State Normal School, 1909; A. M., University of Nebraska, 1910; B. S. in Agr., College of Agriculture, *ibid.*, 1919. A 62A; 611 Humboldt.
- WILLIAM HIDDLESON ANDREWS, Ph. D., LL. D., Professor of Education (1906, 1920).
A. B., University of Chicago, 1900; M. S., K. S. A. C., 1919; Ph. D., University of Chicago, 1923; LL. D., College of Emporia, 1921. A 61; 630 Moro.
- CHARLES OSCAR SWANSON, M. Agr., Ph. D., Professor and Head of Department of Milling Industry (1906; July 1, 1923).
A. B., Carleton College, 1899; M. Agr., University of Minnesota, 1905; Ph. D., Cornell University, 1922. Ag 37; 1640 Fairview.
- IVOR VICTOR ILES, A. M., Professor of History and Civics (1911, 1920).
A. B., University of Kansas, 1905; A. M., *ibid.*, 1905. F 4; 1725 Fairchild.
- JOSIAH SIMSON HUGHES Ph. D., Professor of Chemistry (1910, 1920).
B. S., Ohio Wesleyan University 1908; M. S., *ibid.*, 1910; A. M., Ohio State University, 1910; Ph. D., *ibid.*, 1917. C 41; 344 N. Fifteenth.
- ROBERT WARREN CONOVER, A. M., Professor of English (1915, 1920).
A. B., Wesleyan University, 1911; A. M., *ibid.*, 1914. K 52; 1409 Anderson.
- JOHN CHRISTIAN PETERSON, Ph. D., Professor of Education (1917, 1920).
A. B., University of Utah, 1913; Ph. D., University of Chicago, 1917. A 56; 1330 Laramie.
- FREDERICK ERVING COLBURN, Professor and Head of Department of Illustrations (1919, 1920).
I; 322 N. Seventeenth.
- HERBERT FREDERICK LIENHARDT, V. M. D., Professor and Head of Department of Pathology (1917, 1920).
V. M. D., University of Pennsylvania, 1916. V 58; 210 S. Tenth.
- GEORGE ELLSWORTH RABURN, M. S., Professor of Physics (1910, 1920).
A. B., University of Michigan, 1907; M. S., *ibid.*, 1913. C 34; College Heights.
- LOUISE PHILLIPS GLANTON, A. M., Professor and Head of Department of Clothing and Textiles (1920).
B. S., Columbia University, 1905; A. M., *ibid.*, 1917. L 56; 1212 Fremont.
- ROBERT JOHN BARNETT, M. S., Professor of Horticultur  (1920).
B. S., K. S. A. C., 1895; M. S., *ibid.*, 1911. H 33; 512 N. Ninth.

- HARRY BRUCE WALKER, C.E., Professor of Agricultural Engineering (1914, 1921); Agricultural Engineer, Engineering Experiment Station (1921).
B. S. in C. E., Iowa State College, 1910; C. E., *ibid.*, 1920. B 216; 1728 Fairchild.
- MARY THERESA HARMAN, Ph.D., Professor of Zoölogy (1912, 1921))
A. B., Indiana University, 1907; A. M., *ibid.*, 1909; Ph. D., *ibid.*, 1912.
F 76C; 1430 Poyntz.
- FLOYD WAYNE BELL, B.S.A., Professor of Animal Husbandry, in Charge of
Advanced Judging (1918, 1921).
B. S. A., Cornell University, 1911. Ag 5; 906 Osage.
- EUSTACE VIVIAN FLOYD, B.S., Professor of Physics (1911, 1921).
B. S., Earlham College, 1903. C 34; 1451 Laramie.
- WALDO ERNEST GRIMES, Ph.D., Professor and Head of Department of Agri-
cultural Economics (1913, 1921).
B. S., K. S. A. C., 1913; Ph. D., University of Wisconsin, 1923.
Ag 350; 1821 Leavenworth.
- JOHN HUNTINGTON PARKER,³ M.S., Professor of Crop Improvement (1917,
1921).
B. S. in Agr., University of Minnesota, 1913; M. S. in Agr., Cornell University, 1916.
Ag 76; 1809 Leavenworth.
- HOWARD TEMPLETON HILL, J.D., Professor and Head of Department of Public
Speaking (1920, 1922).
B. S., Iowa State College, 1910; J. D., University of Chicago, 1917.
G 56; 607 N. Juliette.
- IRA PRATT, Professor and Head of Department of Music (1921).
M 30; 1320 Fremont.
- ERIC ENGLUND, M.S., Professor of Agricultural Economics (1921, 1922).
B. S., Oregon Agricultural College, 1918; A. B., University of Oregon, 1919; M. S., Uni-
versity of Wisconsin, 1920. Ag 51A; 615 Humboldt.
- MARK HAVENHILL, B.S., Agr. Engr., Professor of Engineering, in Charge of
Department of Rural Engineering, Division of College Extension (1921).
B. S., Ag., Iowa State College, 1904; B. S., Agr. Engr., *ibid.*, 1918.
E 130; 1331 Poyntz.
- NOBLE WARREN ROCKEY, A.M., Professor of English (1921).
A. B., Ohio State University, 1905; A. M., *ibid.*, 1916. K 52; 514 N. Manhattan.
- EDWARD GUERRANT KELLEY, M.S., Professor of Entomology, Division of College
Extension (1918, 1922).
B. S., University of Kentucky, 1903; M. S., *ibid.*, 1904. F 52; 1621 Humboldt.
- HOWARD W. BRUBAKER, Ph.D., Professor of Chemistry (1913, 1922).
B. S., Carleton College, 1899; Ph. D., University of Pennsylvania, 1904.
C 64; 1929 Leavenworth.
- PERCY LEIGH GAINNEY, A.M., M.S., Professor of Bacteriology (1914, 1922);
Soil Bacteriologist, Agricultural Experiment Station (1914).
B. Agr., North Carolina A. and M. College, 1908; M. S., *ibid.*, 1910; A. M., Washington
University, 1911. V 26; 1123 Houston.
- FORREST FAYE FRAZIER, C.E., Professor of Civil Engineering (1911, 1922).
C. E., Ohio State University, 1910. E 123; 1815 Leavenworth.
- ROYCE GERALD KLOEFFLER, B.S., Professor of Electrical Engineering (1916, 1922).
B. S. in E. E., University of Michigan, 1913. E 120; 1218 Kearney.

3. In coöperation with the U. S. Department of Agriculture.

- CLINTON ELLICOTT PEARCE, S.B., Professor and Head of Department of Machine Design (1917; Sept. 1, 1923).
S. B., Massachusetts Institute of Technology, 1913. E 210; 615 N. Eleventh.
- CHARLES HENRY SCHOLER, B. S., Professor and Head of Department of Applied Mechanics (1920; Sept. 1, 1923); Engineer of Tests in the Roads Materials Laboratory (1920).
B. S., K. S. A. C., 1914. E 11; 806 Bluemont.
- LOYAL FREDERICK PAYNE, B. S., Professor and Head of Department of Poultry Husbandry (1921; Aug. 1, 1923); Poultry Husbandman, Agricultural Experiment Station (1921; Aug. 1, 1923).
B. S., Oklahoma A. and M. College, 1912. Ag. 245; 4 College Heights.
- MARTHA S. PITTMAN, A. M., Professor of Food Economics and Nutrition (1919, 1922).
B. S., K. S. A. C., 1906; B. S., Columbia University, 1916; M. S., *ibid.*, 1918.
L 43; 112 S. Twelfth.
- GEORGE GEMMELL, M. S., Professor of Education, in charge of Department of Home Study Service, Division of College Extension (1918, 1922).
B. S., Kansas State Teachers College, Pittsburg, 1917; B. S., K. S. A. C., 1920; M. S., *ibid.*, 1922. A 5; 411 N. Sixteenth.
- CHARLES WILLIAM BACHMAN, LL. B., Professor of Physical Education (1920, 1922); Head Coach of Athletics (1920).
LL. B., Notre Dame University, 1917. N 30; R. R. 1.
- WILLIAM TIMOTHY STRATTON, A. M., Professor of Mathematics (1910; July 1, 1923).
A. B., Indiana University, 1906; A. M., *ibid.*, 1913. E 223; R. F. D. 1.
- ROY MONROE GREEN, M. S., Professor of Agricultural Economics (1920; July 1, 1923).
B. S. in Agr., University of Missouri, 1914; M. S., K. S. A. C., 1922.
Ag 345; 110 S. Seventeenth.
- CHARLES A. CHAPMAN, Major C. A. C., U. S. A., Professor and Head of Department of Military Science and Tactics (1920; July 1, 1923).
B. S., United States Military Academy, 1910. N 26; 1529 Humboldt.
- MARGARET M. JUSTIN, Ph. D., Dean of Division of Home Economics (July 1, 1923).
B. S. in H. E., K. S. A. C., 1909; B. S. in Educ., Teachers' College, Columbia University, 1915; Ph. D., Yale University, 1923. L 29; 531 N. Manhattan Ave.
- AMY JANE LEAZENBY, A. M., Professor and Head of Department of Household Economics (1920; Sept. 1, 1923).
B. S., University of Missouri, 1917; A. M., University of Chicago, 1920.
L 42; 1605 Leavenworth.
- AMY KELLY, B. S., State Home Demonstration Leader, Division of College Extension (Nov. 17, 1923).
B. S., South Dakota State College, 1908. A 36; 1334 Fremont.

ASSOCIATE PROFESSORS

- GRACE EMILY DERBY, A. B., Associate Librarian (1911, 1918).
A. B., Western College for Women, 1905. F 32; 1825 Leavenworth.
- JAMES WALKER MCCOLLOCH, M. S., Associate Professor of Entomology (1910, 1921), in Charge (1923-'24); Associate Entomologist, Agricultural Experiment Station (1910, 1918).
B. S., K. S. A. C., 1912; M. S., K. S. A. C., 1923. F 52; 1626 Leavenworth.

- INA FOOTE COWLES, B.S., Associate Professor of Clothing and Textiles (1902, 1918).
B. S., K. S. A. C., 1901. L 55; 1520 Leavenworth.
- HAROLD MORTON JONES,¹ B.S., State Dairy Commissioner (1913, 1919-Apr. 1, 1924).
B. S., Purdue University, 1908. X; 918 Bertrand.
- CHARLES ELKINS ROGERS, A.B., Associate Professor of Industrial Journalism (1919).
A. B., University of Oklahoma, 1914. K 26; 532 N. Fourteenth.
- ELDEN VALORIOUS JAMES, A.M., Associate Professor of History and Civics (1912, 1919).
A. B., Marietta College, 1901; A. B., University of Michigan, 1905; A. M., Marietta College, 1908. G 51A; 621 Humboldt.
- WALTER GILLING WARD, B.S., Arch., Associate Professor of Rural Engineering, Division of College Extension (1920).
B. S. in Arch., K. S. A. C., 1912; Architect, *ibid.*, 1922. E 130; 519 N. Manhattan.
- WILMER ESLA DAVIS, A.B., Associate Professor of Botany (1909, 1920).
Graduate, Ohio Normal University, 1894; A. B., University of Illinois, 1903. H 76; 1014 Vattier.
- ADA RICE, M.S., Associate Professor of English (1899, 1920).
B. S., K. S. A. C., 1895; M. S., *ibid.*, 1912. G 28; 917 Osage.
- JOSEPH HENRY MERRILL, Ph.D., Associate Professor of Apiculture (1912, 1920); Assistant Entomologist, Agricultural Experiment Station (1912); State Apiarist (1915).
B. S., Dartmouth College, 1905; Ph. D., Massachusetts Agricultural College, 1914. F 52; 626 Moro.
- MALCOLM CAMERON SEWELL, Ph.D., Associate Professor of Soils (1914, 1920).
B. S., K. S. A. C., 1912; M. S., Ohio State University, 1914; Ph. D., University of Chicago, 1922. Ag 56; 315 N. Fifteenth.
- WILLIAM HENRY SANDERS, M. E., Associate Professor of Agricultural Engineering (1914, 1920).
B. S., K. S. A. C., 1890; M. S., *ibid.*, 1916. R 28; 1208 Kearney.
- HARRY WINFIELD CAVE, M.S., Associate Professor of Dairy Husbandry (1918, 1920).
B. S. A., Iowa State College, 1914; M. S., K. S. A. C., 1916. Ag 151; 1638 Osage.
- EDGAR TALBERT KEITH, B.S., Associate Professor of Printing (1912, 1920).
B. S., K. S. A. C., 1912. K 30; 1421 Poyntz.
- CHARLES WILLIAM COLVER, Ph.D., Associate Professor of Organic Chemistry (1919, 1920).
B. S., University of Idaho, 1909; M. S., *ibid.*, 1911; Ph. D., University of Illinois, 1919. C 64; 1635 Fairchild.
- RALPH W. MORRISH, B.S.A., Associate Professor of Junior Extension, in charge of Boys' and Girls' Club Work, Division of College Extension (1920).
B. S. A., Purdue University, 1920. A 37; 1430 Humboldt.
- CARL G. ELLING,³ B.S., Associate Professor of Animal Husbandry, Division of College Extension (1918, 1921).
B. S., K. S. A. C., 1904. A 33; R. F. D. 1.

1. Resigned.

3. In coöperation with the U. S. Department of Agriculture.

- ALONZO FRANKLIN TURNER,³ B.S., Associate Professor of Agricultural Extension (1917, 1921); Assistant County Agent Leader, Division of College Extension (1917, 1920).
B. S., K. S. A. C., 1905. A 2; 810 Moro.
- JAMES WALTER ZAHNLEY, B.S., Associate Professor of Farm Crops (1915, 1921).
B. S., K. S. A. C., 1909; B. S. in Agr., *ibid.*, 1918. Ag 314; 1131 Laramie.
- HEMAN LAURITZ IBSEN, Ph.D., Associate Professor of Genetics (1919, 1921).
B. S., University of Wisconsin, 1912; M. S., *ibid.*, 1913; Ph. D., *ibid.*, 1916.
Ag 15A; 926 Vattier.
- LOUIS HENRY LIMPER, A. M., Associate Professor of Modern Languages (1914, 1921).
A. B., Baldwin Wallace College, 1907; A. M., University of Wisconsin, 1914.
A 70; 1324 Laramie.
- LOUIS COLEMAN WILLIAMS, B.S., Associate Professor of Horticulture, Division of College Extension (1915, 1921).
B. S., K. S. A. C., 1912; B. S., *ibid.*, 1922. H 26; 1115 Kearney.
- ROGER CLETUS SMITH, Ph.D., Associate Professor of Entomology (1920).
A. B., Miami University, 1911; A. M., Ohio State University, 1914; Ph. D., Cornell University, 1917.
F 64; 1605 Leavenworth.
- HILMER HENRY LAUDE, M.S., Associate Professor of Agronomy (1920, 1921).
B. S., K. S. A. C., 1911; M. S., Texas A. and M. College, 1918.
Ag 202; 326 N. Sixteenth.
- JOSEPH PRESTWICH SCOTT, D.V.M., Associate Professor of Pathology (1916, 1921).
B. S., Scientific Gymnasium, Lausanne, Switzerland, 1910; D. V. M., Ohio State University, 1914.
V 2; 821 Fremont.
- WILLIAM MAX McLEOD, D.V.M., Associate Professor of Anatomy (1919, 1921).
D. V. M., Iowa State College, 1917. V 32; 413 Houston.
- EDWIN JACOB FRICK, D.V.M., Associate Professor of Medicine (1919, 1921).
D. V. M., Cornell University, 1917. V 32; 522 N. Fourteenth.
- CHARLES WALTON MATTHEWS, A. M., Associate Professor of English (1920, 1921).
B. S., Kansas State Teachers College of Pittsburg, 1918; A. M., University of Chicago, 1923.
K 51B; 1409 Anderson.
- HAROLD PARKER WHEELER, Associate Professor of Orchestral and Band Instruments (1919, 1921); Band Leader (1919).
M 29; 327 N. Fifteenth.
- NORMAN EVERETT OLSON, B.S., Associate Professor of Dairy Husbandry (1921).
B. S., Iowa State College, 1915. Ag 151; 1601 Leavenworth.
- FRANK CALEB GATES, Ph.D., Associate Professor of Botany (1919, 1922).
A. B., University of Illinois, 1910; Ph. D., University of Michigan, 1912.
H 57; 1515 Humboldt.
- FLOYD PATTISON, B.S., Associate Professor of Steam and Gas Engineering, Division of College Extension (1919, 1922).
B. S., K. S. A. C., 1912. A 5; 805 Kearney.
- MANFORD W. FURR, B.S., Associate Professor of Civil Engineering (1917, 1922).
B. S. in C. E., Purdue University, 1918. E 122; 1426 Humboldt.
- ELSIE HARRIET SMITH, Associate Professor of Music (1917, 1922).
Graduate, Certificate Course, Chicago Musical College, 1909; Postgraduate Diploma, Institute of Musical Art, New York City, 1914.
M 58; 535 N. Manhattan.

3. In coöperation with the U. S. Department of Agriculture.

- ALBERT JOHN MACK, M. E., Associate Professor of Mechanical Engineering (1917, 1922).
B. S., K. S. A. C., 1912; M. E., *ibid.*, 1921. E 109; 1512 Poyntz.
- JULES HENRY ROBERT, B. S., Associate Professor of Applied Mechanics (1916, 1922).
B. S., University of Illinois, 1914. E 112; 1409 Anderson.
- ELLIS ADOLPH STOKDYK, B. S., Associate Professor of Plant Pathology, Division of College Extension (1921, 1922).
B. S., University of Wisconsin, 1920. H 56; 1516 Humboldt.
- EFFIE MAY CARP, A. M., Associate Professor of Household Economics and Director of Cafeteria (1921, 1922).
B. S., K. S. A. C., 1915; A. M., University of Chicago, 1921. T 105; 1483 Anderson.
- JACOB OLIN FAULKNER, A. M., Associate Professor of English (1922).
A. B., Washington and Lee University, 1907; A. M., Pennsylvania State College, 1920.
K 52; 426 N. Seventeenth.
- MARTHA MORRISON KRAMER, Ph. D., Associate Professor of Food Economics and Nutrition (1922).
B. S., University of Chicago, 1916; A. M., Columbia University, 1920; Ph. D., *ibid.*, 1922.
L 43; 900 Leavenworth.
- EDGAR LEMUEL TAGUE, A. M., Associate Professor of Chemistry (1914; July 1, 1923); Assistant in Protein Chemistry, Agricultural Experiment Station (1914).
A. B., University of Kansas, 1908; A. M., *ibid.*, 1909. C 3; 321 N. Delaware.
- ROY WILLIAM KISER,³ Associate Professor of Animal Husbandry, Division of College Extension (1918; July 1, 1923).
B. S., K. S. A. C., 1914. A 34; 1715 Laramie.
- BERNARD MARTIN ANDERSON, B. S., Associate Professor of Animal Husbandry (1920; July 1, 1923).
B. S., K. S. A. C., 1916. Ag 9; 323 Yuma.
- HARRY ERNEST REED, B. S. Agr., Associate Professor of Animal Husbandry (July 1, 1923).
B. S. Agri., University of Missouri, 1914. Ag 17; 1119 Laramie.
- ARTHUR FREDERICK PEINE, A. M., Associate Professor of History and Civics (1916; Sept. 1, 1923).
A. B., Illinois Wesleyan University, 1911; A. M., University of Illinois, 1913.
Ag 253; 319 N. Fifteenth.
- WILLIAM RAYMOND BRACKETT, A. B., Associate Professor of Physics (1919; Sept. 1, 1923).
A. B., University of Colorado, 1905. C 38; 1824 Humboldt.
- EDWARD CHAPMAN CONVERSE, A. M., Associate Professor of Physics (1919; Sept. 1, 1923).
A. B., University of Illinois, 1904; A. M., *ibid.*, 1909. C 57; College Hill.
- MARGARET RUSSEL, Ph. D., Associate Professor of English (1917; Sept. 1, 1923).
A. B., Washburn College, 1913; A. M., Columbia University, 1915; Ph. D., Yale University, 1923.
K 52; 917 Osage.
- HERBERT HENLEY HAYMAKER, M. S., Associate Professor of Botany (1917; Sept. 1, 1923).
B. S., K. S. A. C., 1915; M. S., University of Wisconsin, 1916.
H 54; 315 N. Sixteenth.

3. In coöperation with the U. S. Department of Agriculture.

- GABE ALFRED SELLERS, B.S., Associate Professor of Shop Practice (1919; Sept. 1, 1923).
B. S., K. S. A. C., 1917. S 62; 1001 Kearney.
- PEARLE ETHEL RUBY, M.S., Associate Professor of Food Economics and Nutrition (1921; Sept. 1, 1923).
A. B., Drake University, 1915; M. S., University of Chicago, 1920.
L 35; 426 N. Seventeenth.
- PAUL WEIGEL, B. Arch., R. A., Associate Professor and Acting Head of Department of Architecture (1921; Sept. 1, 1923).
B. Arch., Cornell University, 1912; Architect, University of State of New York, 1920; Graduate, Buffalo Normal School, 1921. E 302; 1204 Fremont.
- HENRY ARTHUR SHINN, A. B., Associate Professor of Public Speaking (Sept. 1, 1923).
A. B., University of Kansas, 1916. G 55; 1024 Laramie.
- RICHARD CARLTON STICKNEY, Capt. Inf., U. S. A., Associate Professor of Military Science and Tactics (Sept. 1, 1923).
Graduate, U. S. Military Academy, 1915. N 26; 113 S. Eighth.
- HARRISON BOYD SUMMERS, A. M., Associate Professor of Public Speaking (Sept. 1, 1923).
A. B., Fairmont College, 1917; A. M., University of Oklahoma, 1921.
G 55; 1011 Kearney.
- DON CAMERON WARREN, Ph.D., Associate Professor of Poultry Husbandry (Sept. 1, 1923).
A. B., Indiana University, 1914; A. M., *ibid.*, 1917; Ph. D., Columbia University, 1923.
Ag 249; 1208 Bluemont.
- MAUDE WILLIAMSON, A. M., Associate Professor of Education (Sept. 1, 1923).
A. B., University of Illinois, 1909; A. M., Columbia University, 1920.
L 28; 1212 Fremont.
- EARL BOOTH WORKING, Ph. D., Associate Professor of Milling Industry (Sept. 1, 1923).
A. B., University of Denver, 1917; A. M., *ibid.*, 1919; Ph. D., University of Arizona, 1922.
Ag 38A; 1819 Leavenworth.
- ERNEST BLAINE WELLS, M. S., Associate Professor of Soils, Division of College Extension (1920; Jan. 1, 1924).
B. S. A., West Virginia University, 1917; M. S., K. S. A. C., 1922.
Ag 59; 1615 Leavenworth.

ASSISTANT PROFESSORS

- PAUL PORTER BRAINARD, A. M., Assistant Professor of Psychology (1919; Sept. 1, 1923).
B. L., Whitman College, 1909; A. M., Columbia University, 1913.
A 58; 1224 Thurston.
- WALTER LEROY LATSHAW, M. S., Assistant Professor of Chemistry (1914, 1918).
B. S., Pennsylvania State College, 1912; M. S., K. S. A. C., 1922. C 3; 927 Fremont.
- FREDERICK LEE HISAW,² A. M., Assistant Professor of Zoölogy (1919); Mammalogist, Agricultural Experiment Station (1919).
A. B., University of Missouri, 1914; B. S., *ibid.*, 1915; A. M., *ibid.*, 1916.
F 54A; 1622 Osage.
- ALLAN PARK DAVIDSON, B. S., Assistant Professor of Education (1919); Principal, Vocational School (1919, 1920).
B. S., K. S. A. C., 1914. G 29; 1221 Laramie.

2. Absent on leave, year 1923-'24.

- DANIEL EMMETT LYNCH, Assistant Professor of Forging (1914, 1920); Foreman of Blacksmith Shop (1914).
S 38; R. R. 1.
- EDWARD C. JONES, M. E., Assistant Professor of Shop Practice (1916, 1920).
B. M. E., Iowa State College, 1905; M. E., *ibid.*, 1922. S 32; 2001 Houston.
- LEON VINCENT WHITE, C. E., Assistant Professor of Civil Engineering (1918, 1920).
B. S., K. S. A. C., 1908; C. E., *ibid.*, 1918. E 122; R. R. 1.
- CLIFF ERRETT AUBEL, M. S., Assistant Professor of Animal Husbandry (1919, 1920).
B. S., Pennsylvania State College, 1915; M. S., K. S. A. C., 1917.
Ag 13; 530 N. Fourteenth.
- ALFRED LESTER CLAPP, B. S., Assistant Professor of Agricultural Extension; Assistant County Agent Leader, Division of College Extension (1920, 1921).
B. S., K. S. A. C., 1914. A 2; 930 Kearney.
- ELIZABETH HAMILTON DAVIS, A. B., B. L. S., Reference Librarian (1920).
A. B., Illinois Woman's College, 1909; B. L. S., University of Illinois, 1914.
F 35; 421 N. Sixteenth.
- LAWRENCE WILLIAM HARTEL, B. S., Assistant Professor of Physics (1920).
A. B., Central Wesleyan College, 1911; B. S., *ibid.*, 1912; B. S. in Ed., University of Missouri, 1915. C 34; 1026 Vattier.
- ERVIN ARTHUR KNOTH, G. G., Assistant Professor of Physical Education (1920).
Graduate Gymnast, Normal College of American Gymnastic Union, 1917.
N 36; 1505 Humboldt.
- IGNATIUS ALBERT WOJTASZAK, B. S., Assistant Professor of Applied Mechanics (1920).
B. S., University of Michigan, 1920. E 113; 1115 Bluemont.
- JESSE LAMAR BRENNEMAN, E. E., Assistant Professor of Electrical Engineering (1920).
B. S., University of Chicago, 1908; E. E., University of Wisconsin, 1913.
E 120; College Heights.
- EARLE REED DAWLEY, B. S., Assistant Professor of Applied Mechanics, and Assistant Engineer of Tests (1920).
B. S., University of Illinois, 1919. E 16; 1200 Kearney.
- MINNIE SEQUIST, A. B., Assistant Professor of Clothing and Textiles, Division of College Extension (1916, 1921).
A. B., Kansas State Normal School; Graduate, Stout Institute, 1916.
A 36; 1020 Leavenworth.
- GEORGE W. SALISBURY, B. S., Assistant Professor of Agricultural Extension; Assistant County Agent Leader, Division of College Extension (1919, 1921).
B. S., University of Illinois, 1915. A 2; 312 N. Sixteenth.
- WILLIAM FRANCIS PICKETT, M. S., Assistant Professor of Horticulture (1917, 1921).
B. S., K. S. A. C., 1917; M. S., *ibid.*, 1923. H 30; 923 Laramie.
- FLOYD ALONZO SMUTZ, B. S., Assistant Professor of Machine Design (1918, 1921).
B. S. in Arch., K. S. A. C., 1914. S 51; 1520 Humboldt.
- MERRILL AUGUSTUS DURLAND, M. S., M. E., Assistant Professor of Mechanical Drawing (1919, 1921).
B. S., K. S. A. C., 1918; M. E., *ibid.*, 1922; M. S., *ibid.*, 1923. E 209; Shafer Apts.

- CHARLES HOWARD KITSSELMAN, V.M.D., Assistant Professor of Pathology (1919, 1921).
V. M. D., University of Pennsylvania, 1918. V 28; 612 Osage.
- RUDOLPH H. DRIFTMIER, B. S., Assistant Professor of Agricultural Engineering (1920, 1921).
B. S. in A. E., Iowa State College, 1920. E 216; 611 Kearney.
- HELEN ELIZABETH ELCOCK, A. M., Assistant Professor of English (1920, 1921).
A. B., College of Emporia, 1907; A. M., University of Chicago, 1921. A 55; 1641 Fairchild.
- EMMA HYDE, A. M., Assistant Professor of Mathematics (1920, 1921).
A. B., University of Kansas, 1912; A. M., University of Chicago, 1916. G 32; 320 N. Fifteenth.
- CLARENCE FLAVIUS LEWIS, A. B., Assistant Professor of Mathematics (1920, 1921).
A. B., University of Denver, 1913. E 223; R. R. 1.
- BOYD RILEY RINGO, Assistant Professor of Piano (1920, 1921).
Graduate, Cincinnati Conservatory of Music, 1918. MA 7; 1203 Moro.
- VENA MARIE STURMER, A. M., Assistant Professor of English (1920, 1921).
A. B., University of Nebraska, 1917; A. M., *ibid.*, 1920. A 53; 1725 Poyntz.
- WILLIAM SHAFFRATH WIEDORN, M. L. D., Assistant Professor of Landscape Gardening (1920, 1921).
B. S., Cornell University, 1919; M. L. D., *ibid.*, 1921. H 33; 1215 Vattier.
- ROBERT GORDON, Assistant Professor of Music (1921).
Diploma in Theory and Band Instruments, School of Music, University of Michigan, 1920. MA 5; 227 Houston.
- WILLIAM PATRICK HAYES, Ph. D., Assistant Professor of Entomology (1913, 1921).
B. S., K. S. A. C., 1913; M. S., *ibid.*, 1918; Ph. D., Cornell University, 1923. F 76C; 1725 Anderson.
- NATHAN DANIEL HARWOOD, D. V. M., Assistant Professor, Department of Vaccine Laboratories (1918, 1921).
D. V. M., K. S. A. C., 1918. V 32; 910 Humboldt.
- GUY SHIRMER COOK, A. M., Assistant Professor of Physics (1921).
A. B., University of Missouri, 1912; A. M., University of Wisconsin, 1919. C 57; 1506 Poyntz.
- CHARLES DEFOREST DAVIS, B. S., Assistant Professor of Farm Crops (1921).
B. S., K. S. A. C., 1921. Ag 79; 609 N. Ninth.
- DON RICHMAN NORRIS, Capt., C. A. C., U. S. A., Assistant Professor of Military Science and Tactics (1921).
N 26; 1529 Humboldt.
- GEORGE WILLIAM BROWER, Capt., U. S. A., Assistant Professor of Military Science and Tactics (1920, 1922).
D. V. M., Kansas City Veterinary College, 1913. V 27; 1207 Houston.
- EUGENE SIDNEY LYONS, B. S., Assistant Professor of Soils (1920, 1922).
B. S., K. S. A. C., 1921. Ag 216; 415 N. Sixteenth.
- WALTER LEONARD DEHNER, B. S., Assistant Professor of Architecture (1920, 1922).
B. S., University of Illinois, 1919. E 308; 1324 Laramie.

- GLADYS ETHELWYNNE WARREN, Mus.B., Assistant Professor of Piano (1920, 1922).
Mus. B., Lake Erie College, 1919; Graduate, New England Conservatory of Music, 1918.
M 51; 1725 Fairchild.
- DAVID LESLIE MACKINTOSH, B.S., Assistant Professor of Animal Husbandry (1921, 1922).
B. S., University of Minnesota, 1920. Ag 13; 1019 Osage.
- LUTHER EARL WILLOUGHBY, B.S., Assistant Professor of Farm Crops, Division of College Extension (1917, 1922).
B. S., K. S. A. C., 1912; B. S. in Agr., *ibid.*, 1916. Ag 59; 918 Thurston.
- EDNA M. ELLIS, Assistant Professor of Voice (1921, 1922).
Certificate, Public-school Music Methods, DePauw University, 1919.
MA 3; 1320 Fremont.
- RAY FLAGG, Assistant Professor of Shop Practice (1921, 1922).
B. S. in E. E., Purdue University, 1905. S 62; 820 Fremont.
- JAMES VERNE COLE, Second Lieut. Inf., U. S. A., Assistant Professor of Military Science and Tactics (1921, 1922).
N 27; 829 Fremont.
- RAY EDWARD HOLCOMBE, A.B., Assistant Professor of Public Speaking (1921, 1922).
A. B., University of Wisconsin, 1920. G 56; 918 N. Tenth.
- HELEN ADELIA BISHOP, A.M., Assistant Professor of Household Economics (1922).
B. S., James Millikin University, 1909; A. M., Columbia University, 1922.
T 202; 1641 Laramie.
- CHARLES MECLAIN CORRELL, Ph. M., Assistant Professor of History and Civics (1922).
B. S., K. S. A. C., 1900; Ph. B., University of Chicago, 1907; Ph. M., *ibid.*, 1908.
Ag 253; 1230 Vattier.
- BESSIE BELLE LITTLE, M. S., M.D., Assistant Physician, Department of Student Health (1922).
B. S., K. S. A. C., 1891; M. S., *ibid.*, 1905; M. D., Woman's Medical College of Pennsylvania, 1906.
A 59; 318 N. Fifth.
- JAMES HENDRIX McADAMS, B.S., Assistant Professor of Poultry Husbandry, Division of College Extension (1922).
B. S., K. S. A. C., 1916. A 38; 1126 Pierre.
- DELBERT JACOB TAYLOR, B.S., Assistant Professor of Poultry Husbandry, Division of College Extension (1922).
B. S. in Agri., Purdue University, 1914. Ag 38A; 919 Humboldt.
- IRA NICHOLS CHAPMAN, B.S., Assistant Professor of Agricultural Economics, Division of College Extension (1922).
B. S., K. S. A. C., 1916. Ag 345; 1210 Thurston.
- HARLAN RANDOLPH SUMNER, A.M., Assistant Professor of Crops, Division of College Extension (1923).
B. S., K. S. A. C., 1916; A. M., University of Missouri, 1917. Ag 59; Paddleford Apts.
- IZIL ISABEL POLSON,² Assistant Professor of Industrial Journalism (1918; July 1, 1923).
B. S., K. S. A. C., 1914. K 59; 904 Bluemont.
- MORRIS EVANS, B.S., Assistant Professor of Agricultural Economics (1920; July 1, 1923).
B. S. in Agri., K. S. A. C., 1920. Ag 348; 1601 Poyntz.

2. Absent on leave, year 1923-'24.

- CHAUNCEY ELLAS SAWYER, D. V. M., Assistant Professor of Pathology (1921; July 1, 1923).
D. V. M., K. S. A. C., 1921. V 55A; 628 Fremont.
- ARTHUR C. FAY, M. S., Assistant Professor of Bacteriology (1921; July 1, 1923).
B. S., University of Missouri, 1920; M. S., University of Wisconsin, 1921.
V 28; 1621 Leavenworth.
- DAVID EVERETT DAVIS,¹ D. V. M., Assistant Professor of Veterinary Medicine, Division of College Extension (1922; Oct. 22, 1923).
D. V. M., K. S. A. C., 1922.
- WILLIAM ALEXANDER VAN WINKLE, Ph.D., Assistant Professor of Chemistry (1922; July 1, 1923).
B. S., University of Michigan, 1911; M. S., University of Illinois, 1917; Ph. D., *ibid.*, 1920.
D 30; 812 Laramie.
- VERNON MAURICE WILLIAMS, M. S., Assistant Professor of Dairy Husbandry, Division of College Extension (1922; July 1, 1923).
B. S., University of Minnesota, 1920; M. S., *ibid.*, 1922. A 34; 1115 Bluemont.
- LILLIAN MAUDE FINLAY, B. S., Assistant Professor of Millinery, Division of College Extension (1921; July 1, 1923).
B. S., Kansas State Teachers College, Pittsburg, 1912; B. S., Columbia University, 1922.
A 36; 1641 Fairchild.
- JOSEPH LOWE HALL, Ph.D., Assistant Professor of Chemistry (1922; July 1, 1923).
B. S., University of Illinois, 1919; M. S., *ibid.*, 1921; Ph. D., *ibid.*, 1922.
C 10; 1409 Anderson.
- NORA ELIZABETH DALBEY, A. M., Assistant Professor of Botany (1918; Sept. 1, 1923).
A. B., University of Kansas, 1913; A. M., *ibid.*, 1914. H 54; 1424 Fairchild.
- GRACE ROBERTA HESSE,² A. B., Assistant Professor of Modern Languages (1917; Sept. 1, 1923).
A. B., University of Michigan, 1917. A 70; ———.
- KATHERINE HUDSON, M. S., Assistant Professor of Food Economics and Nutrition (1920; Sept. 1, 1923).
B. S., University of Wisconsin, 1918; M. S., Teachers College, Columbia University, 1923.
L 67; 426 N. Seventeenth.
- THOMAS JOEL ANDERSON, Jr., A. M., Assistant Professor of Economics (1922; Sept. 1, 1923).
B. S., University of Missouri, 1922; A. M., *ibid.*, 1923. A 74; 514 N. Seventeenth.
- GRACE LOUISE ELIZABETH BISCHOFF, B. L. S., Head of Circulation Department, College Library (Sept. 1, 1923).
A. B., Colorado College, 1920; B. L. S., University of State of New York, 1922.
F 27; 326 N. Sixteenth.
- FRANK JACOBS CHEEK, Jr., C. E., Assistant Professor of Architecture (Sept. 1, 1923).
A. B., Centre College, 1923; C. E., Rensselaer Polytechnic Institute, 1919.
E 304; 1514 Humboldt.
- CHARLES WILLIAM CORSAUT, Assistant Professor of Physical Education (Sept. 1, 1923).
Graduate, Y. M. C. A. College, 1917. N 36; 1601 Humboldt.

1. Resigned.

2. Absent on leave, year 1923-'24.

- BEATTY HOPE FLEENOR, M. S., Assistant Professor of Education, Department of Home Study Service, Division of College Extension (Sept. 1, 1923).
B. S., K. S. A. C., 1919; M. S., *ibid.*, 1923. A 5; 1612 Osage.
- VERNE RUSSELL HILLMAN, B. S., A. B., Assistant Professor of Agricultural Engineering (Sept. 1, 1923).
B. S. A. E., Iowa State College, 1920. E 216; 1204 Pierre.
- FLORIAN ARTHUR KLEINSCHMIDT, M. Arch., Assistant Professor of Architecture (Sept. 1, 1923).
B. S. in Arch., University of Minnesota, 1920; M. Arch., Harvard University, 1922. E 304; 722 Humboldt.
- IRA KAULL LANDON, B. S. in Agr., Assistant Professor of Agronomy (Sept. 1, 1923).
B. S. in Agr., K. S. A. C., 1921. Ag 201; 615 N. Ninth.
- WALTER HARRISON MORAN, Ph. D., Assistant Professor of Chemistry (Sept. 1, 1923).
A. B., University of West Virginia, 1920; M. S., Ohio State University, 1921; Ph. D., *ibid.*, 1921. C 8; 905 Kearney.
- RUTH MORRIS, A. M., Assistant Professor of Physical Education for Women (Sept. 1, 1923).
A. B., University of Wisconsin, 1915; A. M., Columbia University, 1920. N 3; 1212 Fremont.
- LESLIE RAY PUTNAM, B. M., Assistant Professor of Voice (Sept. 1, 1923).
B. S., Cornell College, 1910; Mus. G., Northwestern University, 1914; B. M., Cornell College, 1922. MA 7; 826 Houston.
- GEORGE HELMICK ROSS, M. D., Assistant Physician, Department of Student Health (Sept. 1, 1923).
M. D., Kansas City University Medical College, 1913. A 64; 624 Poyntz.
- BERNICE WHEELER,¹ Assistant Professor of Music (Sept. 1, 1923-Dec. 19, 1923).
- CHARLES WINSHIP JONES, Capt. Inf., U. S. A., Assistant Professor of Military Science and Tactics (Sept. 10, 1923).
B. S., Purdue University, 1915; Graduate, U. S. Infantry School, 1921. N 26; 617 Houston.
- ARTHUR WILLIAM KNOTT, B. S. in Agr., Assistant Professor of Dairy Husbandry, Division of College Extension (Sept. 17, 1923).
B. S. in Agr., University of Wisconsin, 1918. Ag 147; 512 N. Eighteenth.
- LESSLEY EUGENE SPENCER, Capt., C. A. C., U. S. A., Assistant Professor of Military Science and Tactics (Oct. 29, 1923).
Graduate, Coast Artillery School, 1922. N 26; 1108 Laramie.
- WELCOME PORTER WALTZ, Capt. Inf., U. S. A., Assistant Professor of Military Science and Tactics (Nov. 10, 1923).
Graduate, Infantry School, 1922. N 26; 910 Pierre.
- MELVIA LYNCH DANIELSON, Assistant Professor of Music (Jan. 1, 1923).
Graduate, City Training School, Omaha, 1906; Graduate, Dept. of Public School Music, University of Nebraska School of Music, 1909; Graduate, Dept. of Public School Music, Columbia School of Music, Chicago, 1914. M 53; 417 N. Seventeenth.
- FRANK OTTO BLECHA, B. S., Assistant Professor of Agricultural Extension; District Agricultural Agent, Division of College Extension (1919; Dec. 1, 1923); Shawnee County Agricultural Agent, Division of College Extension (1919; Nov. 30, 1923).
B. S., K. S. A. C., 1918. A 2; —.

1. Resigned.

ASSOCIATES

- HOWARD ROBERT DEROSE, Associate in Food Analysis (1919).
W 26; 1409 Anderson.
- ROLLA WILLIAMS TITUS, A. M., Associate in Feed-stuffs Analysis (July 23, 1923).
A. B., Washburn College, 1906; A. M., University of Kansas, 1914.
C 3; 1230 Pierre.
- ARTHUR MAXWELL BRUNSON,³ Associate in Plant Breeding, Agricultural Experiment Station (April 1, 1923).
B. S., University of Illinois, 1913; M. S., *ibid.*, 1919; Ph. D., Cornell University, 1923.
Ag 82; 1725 Leavenworth.

INSTRUCTORS

- EDWARD GRANT, Instructor in Molding (1913); Foreman of Foundry (1913).
S 42; 1733 Laramie.
- INA EMMA HOLROYD, B. S., Instructor in Mathematics (1900, 1904).
B. S., K. S. A. C., 1897; B. S., Kansas State Teachers College, Emporia, 1916.
G 32; 1001 Moro.
- EMMA FLORA FECHT, Instructor in Clothing and Textiles (1913, 1914).
Graduate, Bradley Polytechnic Institute, 1912. L 55; 315 N. Sixteenth.
- STELLA MAUDE HARRIS, M. S., Instructor in Chemistry (1917, 1918).
B. S., K. S. A. C., 1917; Graduate, (Peru) Nebraska State Normal School, 1908; M. S.,
K. S. A. C.; 1919. W 26; 1637 Osage.
- ERNEST BAKER KEITH,² B. S., Instructor in Chemistry (1918).
B. S., K. S. A. C., 1913. C 19; 1215 Vattier.
- KATHERINE MAXWELL BOWER, B. S., Instructor in English (1918, 1919).
B. S., K. S. A. C., 1915. A 54; 1409 Anderson.
- HERBERT C. STROM, Instructor in Automobiles (1918, 1919).
S 62; 1209 Poyntz.
- W. PEARL MARTIN, R. N., Instructor in Home Nursing, Division of College Extension (1919).
Graduate, Christ's Hospital, Topeka. A 36; 1231 Clay st., Topeka.
- HARRY WORKMAN AIMAN, A. B., Instructor⁵ in Woodwork (1918, 1919); Foreman of Wood Shops (1918, 1919).
A. B., Oskaloosa College, 1921. S 29B; 1001 Leavenworth.
- S. FRED PRINCE, Biological Artist (1918, 1919).
F 55; 925 Thurston.
- MARY FIDELIA TAYLOR, B. S., Instructor in Physics (1919).
B. S., K. S. A. C., 1919. C 36; 350 N. Sixteenth.
- ANDREW WINTER, Instructor in Automobiles (1919).
E 52A; 1200 Bertrand.
- MARY ABBIE WORCESTER, B. S., Instructor in Clothing and Textiles (1919, 1920).
B. S., New Hampshire College, 1917. L 64; 535 N. Manhattan.
- STANLEY PAUL HUNT, B. S., Instructor in Machine Design (1920).
B. S., K. S. A. C., 1919. E 209; 522 Vattier.
- LOUISE HELEN EVERHARDY, Instructor in Applied Art (1919, 1920).
Graduate, New York School of Fine and Applied Art, 1923. A 67B; 1109 Kearney.

2. Absent on leave, year 1923-'24.

3. In coöperation with the U. S. Department of Agriculture.

- HUBERT BINGHAM BECKWITH,¹ B.S. in E. E., Instructor in Electrical Engineering (1920; Dec. 31, 1923).
B. S. in E. E., Georgia Institute of Technology, 1912.
- ANNABEL ALEXANDER GARVEY, A. M., Instructor in English (1920).
A. B., Wellesley College, 1912; A. M., University of Kansas, 1914.
A 54; 343 N. Fourteenth.
- HELEN DOROTHY RUSHFELDT, A. M., Instructor in English (1920).
A. B., University of Minnesota, 1915; A. M., Columbia University, 1920.
G 28B; 1641 Fairchild.
- MARION COFFEE, First Sergt., U. S. A., Instructor in Military Training (1920).
N 26; R. R. 8.
- HAROLD REED GUILBERT, B.S., Instructor in Agriculture (1920).
B. S., K. S. A. C., 1920. G 29; 412 Fremont.
- ESTHER BRUNER, M.S., Instructor in Chemistry (1920).
B. S., K. S. A. C., 1920; M. S., *ibid.*, 1921. W 26; 1638 Osage.
- HARRIET WRIGHT ALLARD, Instructor in Household Economics, Division of College Extension (1917, 1921).
A 36; 1115 Laramie.
- EDWARD GRANELL, Instructor in Shop Practice (1919, 1921).
S 38; 809 Vattier.
- DOROTHY JOSEPHINE CASHEN, M. S., Instructor in Botany (1919, 1921).
B. S., Carthage College, 1917; M. S., K. S. A. C., 1920. H 57; 1605 Leavenworth.
- PAUL CAMPBELL MCGILLIARD, B.S., Instructor in Dairy Husbandry (1920, 1921).
B. S., K. S. A. C., 1916. Ag 165; 915 Kearney.
- WALTER BUSWELL BALCH, B.S., Instructor in Horticulture, and Greenhouse Foreman (1921).
B. S., Cornell University, 1919. H 33; 532 N. Fourteenth.
- HENRY WHITE MARSTON, M.S., Instructor in Animal Husbandry (1919, 1921).
B. S. A., Delaware State College, 1919; M. S., K. S. A. C., 1921.
Ag 13; 1638 Laramie.
- EDGAR MCCALL AMOS, B.S., Instructor in Industrial Journalism and Printing (1920, 1921).
B. S., K. S. A. C., 1902. K 31; 1015 Leavenworth.
- ALBERT JOSEPH SCHOETH, B.S., Instructor in Junior Extension, Boys' and Girls' Club Work (1921).
B. S., Oregon Agricultural College, 1918. A 35; 1115 Bluemont.
- NELLIE ABERLE, M. S., Instructor in English (1921).
B. S., K. S. A. C., 1912; M. S., *ibid.*, 1914. I; 1442 Fairchild.
- HAROLD ALLEN, B.S., Instructor in Applied Mechanics (1921).
B. S. in C. E., University of Colorado, 1920. E 113; 112 S. Eleventh.
- ADA GRACE BILLINGS, B.S., Instructor in History and Civics, Home-study Service (1921).
B. S., K. S. A. C., 1916. A 5; 714 Moro.
- CLARA BOGUE, A. M., Instructor in English (1921).
B. S. in Ed., Kansas State Normal School, 1919; A. M., University of Chicago, 1921.
I; 830 Leavenworth.
- OTIS IRVIN GRUBER, Instructor in Voice (1921).
Graduate, Knox Conservatory of Music, 1918. MA 8; 1115 Bluemont.

1. Resigned.

- CECIL AGUILA GUNNS, Instructor in Zoölogy (1921).
F 76A; 926 Vattier.
- ERIC ROSS LYON, M. S., Instructor in Physics (1921).
A. B., Phillips University, 1911; M. S., *ibid.*, 1923. C 61; 1026 Bertrand.
- ARTHUR BRADLEY SPERRY, B. S., Instructor in Geology (1921, 1923).
B. S., University of Chicago, 1919. F 62; 1115 Bluemont.
- CHARLES NITCHER, B. S., Instructor in Animal Husbandry, Home-study Service (1921).
B. S., K. S. A. C., 1921. A 5; 415 N. Sixteenth.
- JESSIE EARL SELLERS, B. S. in Ch. E., Instructor in Chemistry (1921).
B. S. in Ch. E., University of Colorado, 1921. W 27; 1115 Bluemont.
- GEORGE BENSON WATKINS, B. S., Instructor in Chemistry (1921).
B. S. in Ch. E., University of Michigan, 1921. W 26; 1115 Bluemont.
- ELLEN MARGARET BATCHELOR, B. S., Assistant Home Demonstration Leader (1921).
B. S., K. S. A. C., 1911. A 36; 817 Poyntz.
- HOWARD HAROLD STEUP, B. S., Vocational Instructor in Poultry Husbandry (1922).
B. S., Purdue University, 1919. Ag 252; 1115 Bluemont.
- MAYNARD HENRY COE, B. S., Instructor in Junior Extension, Division of College Extension (1922).
B. S., University of Minnesota, 1917. A 35; 836 N. Sixteenth.
- COMMODORE FOOTE COOL, A. B., Instructor in Carpentry (1922).
A. B., Kansas Normal College, 1897; B. C., *ibid.*, 1897. S 28; 1006 Bluemont.
- LUELLA PEARL SHEERMAN, B. S., Instructor in Foods and Nutrition, Division of College Extension (1923).
B. S., K. S. A. C., 1922. A 35; 841 N. Fifteenth.
- MARY ELIZABETH POLSON,* B. S., Instructor in Clothing and Textiles (1920; July 1, 1922).
B. S., K. S. A. C., 1916. L 65; 904 Bluemont.
- MATTHEW JOSEPH CONNOLLY, Sergt. Inf., U. S. A., Instructor in Military Science and Tactics (1921, 1922).
N 26; 826 Osage.
- WILLIAM ILLINGWORTH, Master Sergt., U. S. A., Band Leader (1921, 1922).
N 54; 510 Kearney.
- RICHARD PEREGRINE WHITE, B. S., Instructor in Botany (1921, 1922); Assistant Plant Pathologist, Agricultural Experiment Station (1921).
B. S., Dartmouth College, 1918. H 56; 1819 Leavenworth.
- ROY DE WITT PAQUETTE, Sergt., C. A. C., U. S. A., Instructor in Military Science and Tactics (1922).
N 26; 913 Vattier.
- MARGARET DUBBS, B. S., Instructor in Household Economics, Home-study Service, Division of College Extension (1922).
B. S., K. S. A. C., 1922. A 5; 912 N. Tenth.
- MARCIA HALL, A. B., Instructor in English, Home-study Service, Division of College Extension (1923).
A. B., University of Wisconsin, 1914. A 5; 1423 Fairchild.

* Absent on leave, second semester, 1924.

- HOWARD PINKERTON, Instructor in Shop Practice (1922).
1819 Anderson.
- WILHELMINA BATES, A. M., Instructor in Food Economics and Nutrition (1922).
Ph. B., Stetson University, 1919; A. M., *ibid.*, 1921. L 34; 818 Bluemont.
- FLORENCE ROBERTA CLARKE, A. B., Instructor in Clothing and Textiles (1922).
A. B., University of Washington, 1916. L 64; 1412 Leavenworth.
- EUGENE CLAYTON GRAHAM, B. S., Instructor in Shop Practice (1922).
B. S., Carleton College, 1898; B. S. in M. E., University of Minnesota, 1902.
E 207; 1100 Moro.
- WILLIAM CHARLES JANES, A. M., Instructor in Mathematics (1922).
B. S., Northwestern University, 1919; A. M., University of Nebraska, 1922.
S 55; 1115 Bluemont.
- MINNA ERNESTINE JEWELL, Ph. D., Instructor in Zoölogy (1922).
A. B., Colorado College, 1914; A. M., University of Illinois, 1915; Ph. D., *ibid.*, 1918.
F 62; 830 Laramie.
- CHARLES NEAL JORDAN, M. S., Instructor in Organic Chemistry (1922).
B. S., Oklahoma A. and M. College, 1914; M. S., Washington University, 1922.
C 64; 1222 Bluemont.
- RUSSELL MARION KERCHNER, B. S., Instructor in Electrical Engineering (1922).
B. S., University of Illinois, 1922. E 24; 351 N. Fifteenth.
- HARRY KING LAMONT, Instructor in Violin (1922).
M 52; 624 Houston.
- MENDEL ELMER LASH, M. S., Instructor in General Chemistry (1922).
A. B., Ohio State University, 1920; M. S., *ibid.*, 1922. W 26; 1011 Kearney.
- LOIS LEONE MANNING, B. M., Instructor in Voice (1922).
B. M., Simpson College, 1920. M 54; 900 Leavenworth.
- THIRZA ADALINE MOSSMAN, A. M., Instructor in Mathematics (1922).
A. B., University of Nebraska, 1916; A. M., University of Chicago, 1922
G 32; 1641 Fairchild.
- GERTRUDE ROSEMOND, Instructor in Piano (1922).
Graduate, Chicago Musical College, 1919; Postgraduate, *ibid.*, 1920.
M 56; 1605 Humboldt.
- WILLIAM HOBSON ROWE, A. B., Instructor in Mathematics (1922).
A. B., University of Michigan, 1922. S 56; 1212 Fremont.
- MABLE SPERRY SMITH, A. B., Instructor in Piano (1922).
A. B., Lake Erie College, 1922. MA 12; 900 Leavenworth.
- NAOMI BERTHA ZIMMERMAN, M. S., Instructor in Zoölogy (1922).
B. S., University of Nebraska, 1919; M. S., *ibid.*, 1922. F 62; 1433 Anderson.
- ROY WILSON WAMPLER, M. S., Instructor in Chemistry (1921, 1922).
A. B., McPherson College, 1920; M. S., K. S. A. C., 1921. C 10; 619 Thurston.
- JESSE COLLINS WINFIELD, B. S., Instructor in Horticulture, Home-study Service, Division of College Extension (1922).
B. S., K. S. A. C., 1922. A 5; 331 N. Seventeenth.
- LUCILLE MINERVA DEAN, A. M., Instructor in English (1923).
A. B., University of Kentucky, 1920; A. M., *ibid.*, 1921. A 53; 610 N. Eleventh.
- WILLIAM RUSSELL HINSHAW, D. V. M., Instructor in Bacteriology (July 1, 1923).
D. V. M., Michigan Agricultural College, 1923. V 53; 1416 Humboldt.

- ELIZABETH AUSTIN, B.S., Assistant Reference Librarian (July 15, 1923).
B. S., Simmons College, 1923. F 27; 1641 Fairchild.
- JOHN FLOWER BULLARD, D.V.M., Instructor in Surgery and Medicine (July 15, 1923).
D. V. M., Cornell University, 1922. Vet. Hospital.
- JULIAN ADAIR HODGES, M.S., Instructor in Agricultural Economics (July 15, 1923).
B. S. Agr., University of Kentucky, 1917; M. S. in Agr. Ec., *ibid.*, 1923. Ag 348; 615 Humboldt.
- ELEANOR HOWE, B.S., Assistant State Club Leader and Instructor in Junior Extension, Division of College Extension (1922; Aug. 1, 1923).
B. S., University of Illinois, 1922. A 35; 1212 Fremont.
- JESSIE GULICK, Acting Head Cataloguer in Library (1907; Sept. 1, 1923).
F 27; 421 N. Sixteenth.
- ETHEL MAY ARNOLD, B.S., Instructor in Applied Art (1922; Sept. 1, 1923).
B. S., K. S. A. C., 1918; Graduate, French-American School of Costume Designing, Los Angeles, 1921. A 68; College Hill.
- FRANK DAVENPORT, B.S., Instructor in Bacteriology (1922; Sept. 1, 1923).
B. S., Massachusetts Agricultural College, 1921. V 52; 1621 Leavenworth.
- EDITH TITUS TOLLE, A.B., Instructor in Modern Languages (1922; Sept. 1, 1923).
A. B., Washburn College, 1915. A 71; 1610 Laramie.
- INEZ GERTRUDE ALSOP, M.S., Instructor in History and Civics (Sept. 1, 1923).
B. S., Kansas State Teachers College, Emporia, 1916; M. S., University of Kansas, 1920. F 1; 312 N. Sixteenth.
- BOYD BERTRAND BRAINARD, B.S., Instructor in Mechanical Engineering (Sept. 1, 1923).
B. S. in M. E., University of Colorado, 1922. E 109; 1115 Bluemont.
- DOROTHY BROOKS, A. M., Loan Assistant in Library (Sept. 1, 1923).
A. B., Smith College, 1920; A. M., University of Oklahoma, 1922. F 32; 1212 Fremont.
- DOROTHY CREGIER BROWN, Instructor in Piano (Sept. 1, 1923).
Teacher's Certificate, Caruther's School of Piano, 1921. M 55; 1605 Leavenworth.
- ERNEST KNIGHT CHAPIN, M.S., Instructor in Physics (Sept. 1, 1923).
A. B., University of Michigan, 1918; M. S., *ibid.*, 1923. C 57; 426 Houston.
- LUELLA CORY, B.L.S., General Assistant in Library (Sept. 1, 1923).
A. B., University of Kansas, 1916; B. L. S., University of Illinois, 1923. F 32; 1517 Leavenworth.
- WILLIAM WESLEY CRAWFORD, M. Di., Instructor in Civil Engineering (Sept. 1, 1923).
A. B., Southern University of Iowa, 1912; B. S. in C. E., Iowa State College, 1917; M. Di., Iowa State Teachers College, 1905. E 220; 715 Poyntz.
- JEAN SWIFT DOBBS, B. S., Instructor in Household Economics (Sept. 1, 1923).
B. S., Northwestern University, 1923; R. N., Evanston Hospital, 1922. L 28; 318 N. Fifth.
- RANDOLPH FORNEY GINGRICH, B.S.C.E., Instructor in Machine Design (Sept. 1, 1923).
B. S. C. E., University of Nebraska, 1923. S 51; 711 N. Juliette.

- NOLLIE BURNAM GUERRANT,¹ Instructor in General Chemistry and Qualitative Analyses (Sept. 1, 1923 - Sept. 28, 1923).
- STERLING BROWN HENDRICKS, B. Ch. E., Instructor in Chemistry (Sept. 1, 1923).
B. Ch. E., University of Arkansas, 1922. C 10; 1115 Bluemont.
- ORVILLE DON HUNT, B. S., Instructor in Electrical Engineering (Sept. 1, 1923).
B. S., Washington State College, 1923. E 24; 400 Humboldt.
- JUDITH ELEANOR HYDE, A. B., Instructor in Modern Languages (Sept. 1, 1923).
A. B., Agnes Scott College, 1923. A 70; 320 N. Fifteenth.
- GLENN HOWE JOSEPH, M. S., Instructor in Chemistry (Sept. 1, 1923).
B. S., University of Illinois, 1922; M. S., *ibid.*, 1923. D 30; 827 Leavenworth.
- CARL HERMAN KNEPPER, B. S., Instructor in Mathematics (Sept. 1, 1923).
B. S. in Commerce, University of Iowa, 1922. S 55; 615 Humboldt.
- GEORGE WILLIAM KUERNER, M. S., Instructor in General Chemistry and Qualitative Analyses (Sept. 1, 1923).
B. S., Pennsylvania State College, 1922; M. S., University of Utah, 1923. D 30; 1115 Bluemont.
- ROBERT HENRY LUSH, M. S., Instructor in Dairy Husbandry (Sept. 1, 1923).
B. S., K. S. A. C., 1921; M. S., University of Minnesota, 1923. Ag 165; 1326 Fremont.
- REED FRANKLIN MORSE, B. S., Instructor in Civil Engineering (Sept. 1, 1923).
A. B., Cornell College, 1921; B. S., Iowa State College, 1923. E 220; 1115 Bluemont.
- WALTER CARL VOLL, Instructor in Machine Design (Sept. 1, 1923).
Mechanical Engineering Diploma, Rochester Athenæum and Mechanics Institute, 1922; Industrial Normal Certificate, *ibid.*, 1923. S 51; 724 Laramie.
- FRED ERIE WHITEHEAD,⁴ Instructor in Zoölogy (Sept. 1, 1923).
A. B., Baker University, 1919. F 54A; 415 N. Sixteenth.
- EDNA MARIE WILLMANN, A. B., Instructor in Modern Languages (Sept. 1, 1923).
A. B., University of Kansas, 1917. A 70; 900 Leavenworth.
- PHILIP ANTON WILLIS, B. S., Instructor in Mechanical Engineering (Sept. 1, 1923).
B. S. in M. E., Montana State College, 1922. E 109; 1115 Bluemont.
- HENRY RUGGLES MATHIAS,¹ Instructor in General Chemistry (Oct. 1, 1923; Jan. 26, 1924).
B. S. in Ch. E., University of Illinois, 1923.
- ARTHUR WEBER, B. S., Instructor in Animal Husbandry (Oct. 15, 1923).
B. S., K. S. A. C., 1922. Ag 13; 1130 Bluemont.
- WILLIAM FURBER SMITH, Ch. E., Instructor in Applied Mechanics (Nov. 15, 1923).
E 16; 901 Bluemont.
- WALTER BACKUS WILSON, Instructor in Electrical Engineering (Nov. 19, 1923).
Graduate, Lowell Institute, Massachusetts Institute of Technology, 1921; Graduate, General Electric Training School, 1922. E 19; 1204 Fremont.
- WILLIAM REDMOND MARTIN, JR.,⁵ B. S., Instructor in Horticulture, Division of College Extension (Jan. 1, 1924).
B. S., K. S. A. C., 1917. Wellington, Kan.

1. Resigned.

4. Appointed for the year 1923-'24.

5. Temporary appointment.

- JAMES JOSHUA BLACK, D. V. M., Instructor in Veterinary Medicine, Division of College Extension (Jan. 1, 1924).
D. V. M., K. S. A. C., 1923. V 31; 1416 Humboldt.
- LEONARD HUGHES CHURCH, B. S. E. E., Instructor in Electrical Engineering (Jan. 1, 1924).
B. S. E. E., Purdue University, 1923. E 24; 1115 Bluemont.
- HARRIET M. PAUL,⁵ Instructor in Clothing and Textiles (Feb. 1, 1924).
- CHARLOTTE BIESTER, Instructor in Junior Extension, Division of College Extension (Mar. 1, 1924).

ASSISTANTS

- FRANK ANDREW DAWLEY, B. S., Field Supervisor of Federal Vocational Trainees, Division of College Extension (1917; Aug. 16, 1923).
B. S., K. S. A. C., 1895. A 2; 803 N. Fourteenth.
- ALANSON LOLA HALLSTED, B. S., Assistant in Dry Farming, Fort Hays Branch Agricultural Experiment Station (1910).
B. S., K. S. A. C., 1903. Hays, Kan.
- NELLIE MAY, Postmistress (1911).
A 44; R. F. D. 2.
- HATTIE HELEN WHITE, Secretary, Business Office (1912).
A 27; 717 Laramie.
- ROBERT GETTY,³ B. S. A., Assistant in Forage Crops, Fort Hays Branch Agricultural Experiment Station (1913).
B. S. A., University of Nebraska, 1913. Hays, Kan.
- OTIS EVERETT STRODTMAN,³ D. V. S., Deputy Inspector and College Representative, Marshall County Cholera Eradication Project (1914).
D. V. S., Kansas City Veterinary College, 1911. Marysville, Kan.
- HUGH DURHAM, A. M., Assistant to the Dean, Division of Agriculture (1915); Assistant to the Director, Agricultural Experiment Station (1915, 1918).
Graduate, Kansas State Normal School, 1901; A. B., University of Kansas, 1909; A. M., ibid., 1915. Ag 30; 730 Osage.
- MABEL GERTRUDE BAXTER, Assistant in Charge of Continuations, College Library (1916, 1918).
F 31; 1624 Fairchild.
- LESTER HENRY DRAYER, Assistant in Heat and Power (1916).
E 3; 1785 Laramie.
- ELIZABETH PERRY HARLING, Seed Analyst (1912, 1917).
Ag 77; 628 Fremont.
- HENRY JAMES ALLEN, Assistant in Heat and Power (1914, 1917).
E 27; 330 Vattier.
- GEORGE HERBERT PHINNEY, Assistant in Agronomy (1917); Foreman of Agronomy Farm (1917).
Graduate, Topeka Business College, 1908. Agronomy Farm.
- MARY KIMBALL, B. S., Assistant to the Registrar (1918).
B. S., K. S. A. C., 1907. A 29; 1311 Laramie.
- MYRTLE EVELYN ZENER, Secretary to the Vice President (1918).
A 49; 1423 Fairchild.

3. In cooperation with the U. S. Department of Agriculture.

5. Temporary appointment.

- CHESTER WILLIS OAKES, Miller, Department of Milling Industry (1918).
Ag 26C; 1326 Houston.
- LOUISE SCHWENSEN, Secretary to the Dean, Division of Engineering (1915, 1918).
E 115; 1800 Fairchild.
- BRUCE BUNYAN SMITH, Assistant in Agricultural Engineering (1918).
Bks. 2; 830 Laramie.
- ALICE MAUDE MELTON, B.S., Secretary to the Dean, Division of General Science (1900, 1919).
B. S., K. S. A. C., 1898. A 49; 1637 Osage.
- JOHN VICTOR ROLANDER, Assistant in Heat and Power (1919).
E 27; 517 Kearney.
- EDWARD L. CLAEREN, Major, U. S. R., Supply Officer, Department of Military Science and Tactics (1910, 1919).
N 27; 900 Pierre.
- MARY ELVA CROCKETT, Secretary to the Dean, Division of Home Economics (1919).
L 29; 1418 Colorado.
- GRACE ELLEN UMBERGER, B.S., R. N., Head Nurse, Department of Student Health (1919).
B. S., K. S. A. C., 1905; R. N., Illinois Training School for Nurses, 1909.
A 65; 1109 Kearney.
- ALBERT HARRISON KEARNS, Assistant to the Superintendent, Fort Hays Branch Agricultural Experiment Station (1919).
Hays, Kan.
- OTIS JAY GOULD, Sr.,¹ Deputy Dairy Commissioner (1920-Apr. 1, 1924).
X 26; 900 Bluemont.
- DELFA MARY HAZELTINE, Secretary to the Dean, Division of College Extension (1920).
Graduate, Lawrence Business College. A 33; 817 Poyntz.
- CHARLES OTIS JOHNSTON,³ B.S., Assistant Plant Pathologist, Agricultural Experiment Station (1920).
B. S., K. S. A. C., 1918. H 53; 1323 Laramie.
- RUTH COOLEY, B.S., Secretary to Dean of the Summer School (1918, 1920).
B. S., K. S. A. C., 1906. A 27; Eighteenth and Fairchild.
- CLARENCE OSBORN PRICE, Assistant to the President (1920).
A 32; 412 Moro.
- RALPH DALE NICHOLS, B.S., Research Assistant in Agricultural Economics (1920).
B. S., K. S. A. C., 1920. McPherson, Kan.
- CAROLINE MAY PERKINS, A. B., Assistant in Genetics (1920).
A. B., New Hampshire College, 1919. Insectary; 1648 Fairchild.
- DONALD DEWITT WILSON, Nurseryman, Fort Hays Branch Agricultural Experiment Station (1921).
Hays, Kan.

1. Resigned.

3. In coöperation with the U. S. Department of Agriculture.

- HOMER HENNEY,³ Research Assistant in Agricultural Economics (1921).
B. S., K. S. A. C., 1921. Cottonwood Falls, Kan.
- KENNETH MILLER RENNER, B.S., Assistant in Dairy Husbandry (1921).
B. S., Iowa State College, 1921. Ag 155; 1127 Kearney.
- JOHN CLIFFORD JENKINS, B.S., Assistant Chemist, Agricultural Experiment Station (1921).
B. S., Pennsylvania State College, 1921; M. S., K. S. A. C., 1923. C 3; 920 Kearney.
- JOSEPH FARRINGTON MERRILL, B.S., Assistant Chemist, Agricultural Experiment Station (1921).
B. S., University of Maine, 1907. C 3; 318 N. Sixteenth.
- JAMES HERBERT MOYER,³ B.S., Assistant in Agricultural Economics (1921).
B. S., K. S. A. C., 1921. Courthouse, Holton, Kan.
- SARAH ELIZABETH TRACY, Secretary to the President (June 1, 1922).
A 30; 328 Leavenworth.
- FLOYD JOSEPH HANNA, Assistant in Department of Illustrations (1922).
I; 1612 Leavenworth.
- GEORGE HUITT, Dry-land Project Assistant, Fort Hays Branch Agricultural Experiment Station (1922).
Hays, Kan.
- EMBERT HARVEY COLES,³ B.S., Assistant in Dry-land Agriculture Investigations, Garden City Branch Agricultural Experiment Station (1922).
B. S., K. S. A. C., 1922. Garden City, Kan.
- KATHERINE FAULCONER, Assistant to Registrar (1922).
A 29; 1016 Pierre.
- CLARA LISSETTE OTT, Assistant to Registrar (1922).
A 29; 114 S. Eighth.
- MARGARET RUTH RAMSOUR, Secretary to the Principal of the Vocational School (1922).
G 29; 813 Moro.
- MINNIE SCOTT, R. N., Nurse, Department of Student Health (1922).
R. N., University Hospital, Kansas City, Mo., 1906. College Hospital.
- CARRIE JANE BAYER, Dietitian and Matron, College Hospital (1922).
College Hospital; 318 Bluemont.
- FRANCES EVELYN LENTZ, R. N., Nurse, Department of Student Health (1922).
Graduate Nurse, Mercy Hospital, Kansas City, Mo., 1921. A 65; 805 Houston.
- MYRA ISABELLA WADE, A. B., Assistant in Physical Education for Women (1922).
A. B., Oberlin College, 1917. N 1; 1425 Laramie.
- JOHN ALEXANDER MUNRO,⁵ B. S. A., Assistant in Apiculture (April 10, 1923).
B. S. A., Ontario Agricultural College, 1922. AB; 1409 Anderson.
- ROSS JACOB SILKETT, B.S., Assistant in Coöperative Experiments, Department of Agronomy (1922; May 15, 1923).
B. S., K. S. A. C., 1922. Ag 51A; 513 N. Sixteenth.
- SAMUEL PICKARD, B.S., Extension Editor (May 16, 1923).
B. S., K. S. A. C., 1923. A 33; 621 N. Juliette.

3. In coöperation with the U. S. Department of Agriculture.

5. Temporary appointment.

- FREDERICK EARL EMERY, D.V.M., Assistant Mammalogist, Agricultural Experiment Station (July 1, 1923).
D. V. M., K. S. A. C., 1923. F 54A; 1001 Vattier.
- ANDREW EDWARD OMAN,³ M. F., Specialist in Rodent Control, Division of College Extension (Aug. 16, 1923).
B. S., K. S. A. C., 1900; M. F., Yale University, 1906. A 34; 215 N. Juliette.
- BERTHA LEWIS DANHEIM, M.S., Assistant in Parasitology (1921; Sept. 1, 1923).
B. S., K. S. A. C., 1920; M. S., *ibid.*, 1923. F 59; 830 Laramie.
- EMILY MAY BENNETT, A.B., Assistant in Food Economics and Nutrition (1922; Sept. 1, 1923).
A. B., University of Illinois, 1921. L 34; 318 N. Sixteenth.
- FLORENCE LILLIAN DIAL, B.S., Class Reserves Assistant in Library (Sept. 1, 1923).
B. S., K. S. A. C., 1919. F 3; 1030 Moro.
- FRED FOSTER GREELEY, Assistant in Shop Practice (Sept. 1, 1923).
S 30; 1010 Fremont.
- WILLIAM HENRY IRWIN, Assistant in Shop Practice (Sept. 1, 1923).
S 29; R. R. 2.
- REBECCA SALOME MEYER, R. N., Nurse in College Hospital (Sept. 1, 1923).
Graduate, Mary Thompson Hospital, Chicago, 1900. College Hospital.
- RUTH EMILIE SCOTT, B. M., Assistant in Voice (Sept. 1, 1923).
B. M., K. S. A. C., 1923. MA 10; 900 Leavenworth.
- MILDRED HAZEL THORNBURG, B. M., Assistant in Piano (Sept. 1, 1923).
B. M., K. S. A. C., 1923. MA 2; 1745 Laramie.
- HARRIET WALTERS,¹ Matron and Dietitian in College Hospital (Sept. 1, 1923 - Dec. 19, 1923).
- GENEVA GRACE WATSON, B.S., Assistant in Physical Education for Women (Sept. 1, 1923).
B. S., University of Chicago, 1921. N 3; 1517 Leavenworth.
- GRACE MAY JORDAN, R. N., Nurse, Department of Student Health (Sept. 10, 1923).
R. N., Stormont Hospital, Topeka, 1922. A 65; College Hospital.
- NELLIE LENORA BROCK,¹ R. N., Nurse, Department of Student Health (Sept. 22, 1923 - Jan. 23, 1924).
R. N., St. John's Training School for Nurses, 1921. College Hospital.
- ORVILLE BROWN BURTIS,¹ B. S., Field Supervisor of Vocational Trainees (Sept. 24, 1923 - Mar. 31, 1924).
B. S., K. S. A. C., 1916. A 2; R. R. 1.
- MILTON STOVER EISENHOWER,⁵ B. S., Assistant in Industrial Journalism (Oct. 1, 1923).
B. S., K. S. A. C., 1924. K 30; 513 N. Sixteenth.
- MABLE CELESTA GINTER,⁵ B. S., Assistant in Household Economics (Oct. 8, 1923); Assistant Director of Cafeteria (Oct. 8, 1923).
B. S., K. S. A. C., 1921. T 107; 1116 Laramie.
- ROY MOORE,⁵ Specialist in Rodent Control Work (Oct. 1, 1923 - Dec. 31, 1923).
A 34A; 601 Humboldt.

1. Resigned.

3. In cooperation with the U. S. Department of Agriculture.

5. Temporary appointment.

- GERTRUDE MYRTLE COLLIER, Matron and Dietitian in College Hospital (Feb. 1, 1924).
College Hospital.
- RUTH ROOT, R. N., Nurse, Department of Student Health (Feb. 1, 1924).
R. N., Stormont Training School, 1923. College Hospital.
- JAY WEBSTER STRATTON, B. S., Field Supervisor of Vocational Trainees (Feb. 22, 1924).
B. S., K. S. A. C., 1916. A 2; 604 N. Manhattan.
- MURRAY A. WILSON,³ Research Assistant in Coöperative Investigations on Atmospheric Resistance to Movement of Motor Vehicles (Mar. 1, 1924).
- CLARA MAGDALENE SIEM, Financial Secretary, Division of College Extension (Feb. 16, 1920; July 1, 1924).
A 33; 730 Osage.

SUPERINTENDENTS

- LOUIS C. AICHER, B. S., Superintendent, Fort Hays Branch Agricultural Experiment Station (1921).
B. S. in Agr., K. S. A. C., 1910. Hays, Kan.
- JACOB LUND, M. S., Superintendent of Heat and Power (1893, 1901); Custodian of Buildings and Grounds (1893, 1917).
B. S., K. S. A. C., 1883; M. S., *ibid.*, 1886. E 26B; 1414 Fairchild.
- HAROLD BAYLISS MUGGLESTONE, Superintendent of Poultry Farm (1918).
Poultry Farm.
- CHARLES WESLEY HOBBS, D. V. S., Superintendent of Vaccine Laboratories (1913, 1919).
D. V. S., Western Veterinary College, 1901. V 31; 810 Humboldt.
- GEORGE RICHARD PAULING, Superintendent of Building and Repair (1916, 1919).
S 34; 1030 Humboldt.
- FAY ARTHUR WAGNER, B. S., Superintendent, Garden City Branch Agricultural Experiment Station (1919).
B. S. in Agr., New Mexico Agricultural College, 1916. Garden City, Kan.
- GUY ELLIOTT LOWREY, Superintendent, Tribune Branch Agricultural Experiment Station (1920).
Tribune, Kan.
- BENJAMIN FRANCIS BARNES, B. S., Superintendent, Colby Branch Agricultural Experiment Station (1921).
Colby, Kan.

AGRICULTURAL AGENTS

- EVEREST JOHN MACY, B. S., Sedgwick County Agricultural Agent, Division of College Extension (1913, 1918).
B. S., Earlham College, 1904. Wichita, Kan.
- FLOYD JOE ROBBINS, B. S., Franklin County Agricultural Agent, Division of College Extension (1917).
B. S., K. S. A. C., 1913. Ottawa, Kan.
- CHARLES D. THOMPSON, B. S. D., Neosho County Agricultural Agent, Division of College Extension (1918).
B. S. D., Warrensburg (Mo.) State Normal School, 1895. Erie, Kan.

3. In coöperation with the U. S. Department of Agriculture.

- AVERY CLEVELAND MALONEY,¹ B.S., Bourbon County Agricultural Agent, Division of College Extension (1918 - Oct. 31, 1923).
 B. S., K. S. A. C., 1918. Fort Scott, Kan.
- EDWARD H. LEKER, B. S. A., Leavenworth County Agricultural Agent, Division of College Extension (1918, 1922).
 B. S. A., University of Missouri, 1917. Leavenworth, Kan.
- HERBERT LYNNE HILDWEIN, B.S., Kingman County Agricultural Agent, Division of College Extension (1917, 1918).
 B. S., K. S. A. C., 1914. Kingman, Kan.
- HAYS MARION COE, Montgomery County Agricultural Agent, Division of College Extension (1918).
 Independence, Kan.
- JOW MYRON GOODWIN, Atchison County Agricultural Agent, Division of College Extension (1919, 1923).
 Effingham, Kan.
- CHARLES ELMER CASSEL, B.S., Butler County Agricultural Agent, Division of College Extension (1912, 1923).
 B. S., K. S. A. C., 1910. Lyndon, Kan.
- ALBERT BARNEY KIMBALL, B.S., Harvey County Agricultural Agent, Division of College Extension (1918, 1920).
 B. S., K. S. A. C., 1889. Newton, Kan.
- ROBERT ELLIOTT CURTIS, B.S., Ottawa County Agricultural Agent, Division of College Extension (1919; Jan. 15, 1924); Clay County Agricultural Agent, Division of College Extension (1919 - Dec. 31, 1923).
 B. S., K. S. A. C., 1916. Minneapolis, Kan.
- HERMAN FREDERICK TAGGE, B.S., Jackson County Agricultural Agent, Division of College Extension (1920, 1923).
 B. S., K. S. A. C., 1914. Holton, Kan.
- JOHN ALBERT HENDRIKS, B. S. A., Chase County Agricultural Agent, Division of College Extension (1920).
 B. S. A., Iowa State College, 1913. Cottonwood Falls, Kan.
- ERNEST LEE MCINTOSH, B.S., Osage County Agricultural Agent, Division of College Extension (1920; Aug. 7, 1923).
 B. S., K. S. A. C., 1920. Lyndon, Kan.
- HARRY CHARLES BAIRD, B.S., Ford County Agricultural Agent, Division of College Extension (1920).
 B. S., K. S. A. C., 1914. Dodge City, Kan.
- CLARENCE OWEN GRANDFIELD, B.S., Bourbon County Agricultural Agent, Division of College Extension (1920; Nov. 1, 1923); Wilson County Agricultural Agent, Division of College Extension (1920 - Oct. 31, 1923).
 B. S., K. S. A. C., 1917. Fort Scott, Kan.
- ARTHUR I. GILKISON, Rice County Agricultural Agent, Division of College Extension (1920, 1923).
 Lyons, Kan.
- CARL CARLSON, A.B., Rawlins County Agricultural Agent, Division of College Extension (1920, 1922).
 A. B., Southwestern College, 1914. Atwood, Kan.
- CARL LEWIS HOWARD, B.S., Pawnee County Agricultural Agent, Division of College Extension (1920, 1922).
 B. S., K. S. A. C., 1920. Larned, Kan.

1. Resigned.

- VERNON SIMPSON CRIPPEN, B. S., Reno County Agricultural Agent, Division of College Extension (1920, 1923).
B. S., K. S. A. C., 1920. Hutchinson, Kan.
- KYLE DAVID THOMPSON, B. S., Jewell County Agricultural Agent, Division of College Extension (1920, 1922).
B. S., K. S. A. C., 1920. Mankato, Kan.
- THEODORE FRANKLIN YOST,¹ B. S., Cloud County Agricultural Agent, Division of College Extension (1922 - Oct. 1, 1923).
B. S., K. S. A. C., 1920. Jetmore, Kan.
- CHARLES ARTHUR PATTERSON,¹ B. S., Wyandotte County Agricultural Agent, Division of College Extension (1920 - Sept. 30, 1923).
B. S., K. S. A. C., 1914. Kansas City, Kan.
- ARTHUR LEROY MYERS, B. S., Marion County Agricultural Agent, Division of College Extension (1920).
B. S., K. S. A. C., 1920. Marion, Kan.
- JAMES ARTHUR MILHAM, B. S., Allen County Agricultural Agent, Division of College Extension (1920).
B. S., K. S. A. C., 1907. Iola, Kan.
- CECIL LYMAN McFADDEN, B. S., Lyon County Agricultural Agent, Division of College Extension (1920).
B. S., K. S. A. C., 1918. Emporia, Kan.
- ROY ELMER GWIN, B. S., Cherokee County Agricultural Agent, Division of College Extension (1921).
B. S., K. S. A. C., 1914. Columbus, Kan.
- JOHN VERN HEPLER, B. S., Washington County Agricultural Agent, Division of College Extension (1921).
B. S., K. S. A. C., 1916. Washington, Kan.
- PAUL BERNARD GWIN, B. S., Morris County Agricultural Agent, Division of College Extension (1921).
B. S., K. S. A. C., 1916. Council Grove, Kan.
- CHESTER EUGENE GRAVES, B. S., Wyandotte County Agricultural Agent, Division of College Extension (1921; Oct. 1, 1923); Johnson County Agricultural Agent, Division of College Extension (1921 - Sept. 30, 1923).
B. S., K. S. A. C., 1920. Kansas City, Kan.
- WILLIAM LOUIS TAYLOR, B. S. A., Crawford County Agricultural Agent, Division of College Extension (1921).
B. S. A., University of Missouri, 1917. Council Grove, Kan.
- JOHN JERRY INSKEEP, B. S., Sumner County Agricultural Agent, Division of College Extension (1921, 1923).
B. S., Purdue University, 1921. Wellington, Kan.
- ROLLA WADE McCALL, B. S., Clark County Agricultural Agent, Division of College Extension (1921).
B. S., K. S. A. C., 1921. Ashland, Kan.
- CHARLES HAROLD STINSON, B. S., Pratt County Agricultural Agent, Division of College Extension (1921, 1923).
B. S., K. S. A. C., 1921. Pratt, Kan.
- CLARENCE SMITH MERYDITH, B. S., Meade County Agricultural Agent, Division of College Extension (1921).
B. S., Oklahoma A. and M. College, 1912. Meade, Kan.

1. Resigned.

- CLARENCE ROY JACCARD, B.S., Coffey County Agricultural Agent, Division of College Extension (1922).
B. S., K. S. A. C., 1914. Burlington, Kan.
- ROBERT E. WILLIAMS, B.S., Barton County Agricultural Agent, Division of College Extension (1922).
B. S., K. S. A. C., 1907. Great Bend, Kan.
- JOHN B. PETERSON, Comanche County Agricultural Agent, Division of College Extension (July 10, 1922).
Coldwater, Kan.
- EUGENE HALEY WALKER, B.S., Miami County Agricultural Agent, Division of College Extension (1922).
B. S., K. S. A. C., 1922. Paola, Kan.
- ETHAN ALLEN HERR,¹ B.S., Ellis County Agricultural Agent, Division of College Extension (1922-Sept. 25, 1923).
B. S., K. S. A. C., 1921. Hays, Kan.
- HARRY CLIFFORD COLGLAZIER, B.S., Douglas County Agricultural Agent, Division of College Extension (1922).
B. S., K. S. A. C., 1918. Lawrence, Kan.
- WILLIAM HERBERT ROBISON, B.S., Jefferson County Agricultural Agent, Division of College Extension (1923).
B. S., K. S. A. C., 1916. Oskaloosa, Kan.
- CLARENCE EUGENE AGNEW, B.S., Wilson County Agricultural Agent, Division of College Extension (1923; Mar. 3, 1924); Anderson County Agricultural Agent, Division of College Extension (1923-Feb. 5, 1924).
B. S., K. S. A. C., 1923. Fredonia, Kan.
- LOUIS MEYERS KNIGHT, B.S., Gray County Agricultural Agent, Division of College Extension (1923).
B. S., K. S. A. C., 1923. Cimarron, Kan.
- EVERETT HOOVER WILLIS,¹ B.S., Greenwood County Agricultural Agent, Division of College Extension (Feb. 1, 1923-Oct. 1, 1923).
B. S., K. S. A. C., 1922. Eureka, Kan.
- CHARLES ENOCH LYNESS, B.S., Doniphan County Agricultural Agent, Division of College Extension (1923).
B. S., K. S. A. C., 1912. Troy, Kan.
- FRED WALLACE CALDWELL, D. V. M., Finney County Agricultural Agent, Division of College Extension (1923).
D. V. M., K. S. A. C., 1907. Garden City, Kan.
- O. L. McMURRAY,¹ B.S., Marshall County Agricultural Agent, Division of College Extension (1923-Feb. 15, 1924).
B. S., Alabama Polytechnic Institute, 1917. Blue Rapids, Kan.
- E. BRUCE BRUNSON, B.S., Cheyenne County Agricultural Agent, Division of College Extension (Mar. 16, 1923).
B. S., Cornell University, 1914. St. Francis, Kan.
- RAY LEIGHTON GRAVES, B.S., Hodgeman County Agricultural Agent, Division of College Extension (June 1, 1923).
B. S., K. S. A. C., 1912. Jetmore, Kan.
- GEORGE W. SIDWELL, A. B., Ness County Agricultural Agent, Division of College Extension (1918; June 1, 1923).
A. B., Fairmount College, 1915. Ness City, Kan.

1. Resigned.

- WILLIAM HAROLD METZGER, B.S., Labette County Agricultural Agent, Division of College Extension (June 5, 1923).
B. S., Purdue University, 1922. Altamont, Kan.
- SAMUEL DAVID CAPPER, B.S., Lincoln County Agricultural Agent, Division of College Extension (June 16, 1923).
B. S., K. S. A. C., 1921. Lincoln, Kan.
- DONALD BRYAN IBACH, B.S., Rush County Agricultural Agent, Division of College Extension (July 1, 1923).
B. S., K. S. A. C., 1923. La Crosse, Kan.
- MOTT LUTHER ROBINSON, B.S., McPherson County Agricultural Agent, Division of College Extension (Aug. 1, 1923).
B. S., K. S. A. C., 1923. McPherson, Kan.
- HERMAN ALBERT BISKIE, B.S., Nemaha County Agricultural Agent, Division of College Extension (Sept. 1, 1923).
B. S., University of Nebraska, 1917. Seneca, Kan.
- JAMES SCOTT STEWART,¹ B.S., Ellis County Agricultural Agent, Division of College Extension (Oct. 10, 1923 - Jan. 8, 1924).
B. S., K. S. A. C., 1922. Hays, Kan.
- JUNIUS WARREN FARMER, B.S., Greenwood County Agricultural Agent, Division of College Extension (Oct. 17, 1923).
B. S., K. S. A. C., 1923. Eureka, Kan.
- GILBERT LYNN CLELAND, B.S., Sherman County Agricultural Agent, Division of College Extension (Oct. 20, 1923).
B. S., K. S. A. C., 1914. Goodland, Kan.
- SAMUEL JOSEPH SMITH, B.S., Cloud County Agricultural Agent, Division of College Extension (Oct. 22, 1923).
B. S., K. S. A. C., 1920. Concordia, Kan.
- CASPER ALFRED WOOD, M.S., Johnson County Agricultural Agent, Division of College Extension (Oct. 22, 1923).
B. S., K. S. A. C., 1911; M. S., Texas A. and M. College. Olathe, Kan.
- THOMAS CROSS,¹ B.S., Wilson County Agricultural Agent, Division of College Extension (Dec. 1, 1923 - Feb. 2, 1924).
B. S., K. S. A. C., 1923. Fredonia, Kan.
- WILBUR WILLIAM WRIGHT,¹ B.S., Shawnee County Agricultural Agent, Division of College Extension (Jan. 1, 1924 - Mar. 18, 1924).
B. S., K. S. A. C., 1917. Topeka, Kan.
- WILLIAM O'CONNELL, B.S., Marshall County Agricultural Agent, Division of College Extension (Mar. 15, 1924).
B. S., K. S. A. C., 1916. Marysville, Kan.

HOME DEMONSTRATION AGENTS ³

- SARA JANE PATTON, B.S., Cherokee County Home Demonstration Agent, Division of College Extension (1918, 1919).
B. S., K. S. A. C., 1915. Columbus, Kan.
- ETHEL McDONALD, B.S., Sedgwick County Home Demonstration Agent, Division of College Extension (1919, 1922).
B. S., K. S. A. C., 1907. Wichita, Kan.

1. Resigned.

3. In cooperation with the U. S. Department of Agriculture.

- JULIA WALCOTT KIENE, Shawnee County Home Demonstration Agent, Division of College Extension (1920).
Graduate, Stout Institute. Topeka, Kan.
- MAUDE MILDRED COE, B.S., Wyandotte County Home Demonstration Agent, Division of College Extension (1922).
B. S., K. S. A. C., 1902. Kansas City, Kan.
- EDITH ANTONETTE HOLMBERG, B.S., Reno County Home Demonstration Agent, Division of College Extension (1922; Mar. 1, 1924); Pratt County Home Demonstration Agent, Division of College Extension (1922 - Feb. 29, 1924).
B. S., K. S. A. C., 1908. Hutchinson, Kan.
- MAUD ELIZABETH DEELY, B.S., Clay County Home Demonstration Agent, Division of College Extension (1923).
B. S., K. S. A. C., 1923. Clay Center, Kan.
- LILA SPENCER-COE, Montgomery County Home Demonstration Agent, Division of College Extension (May 1, 1923).
Independence, Kan.
- NINA ELOISE HURLBERT, Franklin County Home Demonstration Agent, Division of College Extension (Feb. 1, 1924).
Ottawa, Kan.
- CAROLINE RASINA KESLER, A.B., Meade County Home Demonstration Agent, Division of College Extension (Feb. 1, 1924).
A. B., Friends University, 1920. Meade, Kan.

COUNTY LEADERS IN BOYS' AND GIRLS' CLUB WORK

- ELDORA MANN,⁵ Brown County Club Agent, Division of College Extension (Mar. 20, 1923 - Oct. 20, 1923).
Hiawatha, Kan.
- MILDRED WOODCOCK-LEKER,¹ B.S., Leavenworth County Club Agent, Division of College Extension (June 16, 1923 - Dec. 31, 1923).
B. S., Des Moines College, 1914. Leavenworth, Kan.
- HELEN DUNLAP, B.S., Leavenworth County Club Agent, Division of College Extension (Feb. 11, 1924).
B. S., K. S. A. C., 1924. Leavenworth, Kan.

GRADUATE ASSISTANTS

- PAUL WALLACE GREGORY, B.S., Graduate Assistant in Animal Husbandry (1922).
B. S., University of Kentucky, 1922. Ag 15A; 513 N. Sixteenth.
- ERNEST HARTMAN, B.S., Graduate Assistant in Zoölogy (1922).
B. S., K. S. A. C., 1922. F 59; R. R. 1.
- MARY ALETHA MASON, B.S., Graduate Assistant in Household Economics (1922).
B. S., K. S. A. C., 1919. T 202; 335 N. Fifteenth.
- BERTHA SNYDER,⁵ A.B., Graduate Assistant in Zoölogy (Sept. 1, 1923 - Jan. 26, 1924).
A. B., Southwestern College, 1923.
- MARGARET AHLBORN, A.B., Graduate Assistant in Food Economics and Nutrition (Sept. 1, 1923).
A. B., University of Kansas, 1906. L 47; 1109 Kearney.

1. Resigned.

5. Temporary appointment.

- EDNA FLORENCE BANGS, B.S., Graduate Assistant in Bacteriology (Sept. 1, 1923).
B. S., K. S. A. C., 1923. V 53B; 1408 Fairchild.
- OSCEOLA HALL BURR, B.S., Graduate Assistant in Public Speaking (Sept. 1, 1923).
B. S., K. S. A. C., 1923. G 55; 1811 Humboldt.
- FRANK DANIELS RUPPERT, B.S., Graduate Assistant in Agronomy (Sept. 1, 1923).
B. S., Washington State College, 1923. Ag 306; 1326 Fremont.
- EVERETT MORRILL SCHRECK, B.S., Graduate Assistant in Botany (Sept. 1, 1923).
B. S., Kansas Wesleyan University, 1923. H 77; 814 Leavenworth.
- LEWIS WALTER TAYLOR, B.S., Graduate Assistant in Poultry Husbandry (Sept. 1, 1923).
B. S., University of Wisconsin, 1922. Ag 249; 823 Laramie.
- ROLLAND HAYS WATERS, A.B., Graduate Assistant in Psychology (Sept. 1, 1923).
A. B., Baker University, 1920. A 58; 802 Leavenworth.
- FLOYD MAXWELL WRIGHT, B.S., Graduate Assistant in Dairy Husbandry (Sept. 1, 1923).
B. S., South Dakota State College, 1923. Ag 155; 518 Vattier.
- GEORGE ALBERT FILINGER, B.S., Graduate Assistant in Horticulture (Feb. 1, 1924).
B. S., K. S. A. C., 1923. H 30; 1010 Laramie.
- PAUL BALDWIN SAWIN, B.S., Graduate Assistant in Animal Husbandry (Feb. 1, 1924).
B. S., Cornell University, 1924. Ag 15A; 1737 Laramie.
- AUSTIN WILLIAM STOVER, B.S., Graduate Assistant in Zoölogy (Feb. 1, 1924).
B. S., K. S. A. C., 1924. Insectary; 1206 Laramie.

OTHER OFFICERS

- JESSIE McDOWELL MACHIR, College Registrar (1913).
A 29; 1641 Fairchild.
- OLEY WILLIS WEAVER,¹ B.S., Alumni Secretary (1922 - Feb. 29, 1924).
B. S., K. S. A. C., 1911.
- RALPH LEON FOSTER, B.S., Alumni Secretary (May 15, 1924).
B. S., K. S. A. C., 1922. I; _____.
- ADRIAN AUGUSTUS HOLTZ, Ph. D., Men's Adviser and Secretary of Young Men's Christian Association (1919).
A. B., Colgate University, 1909; Ph. M., University of Chicago, 1910; B. D., *ibid.*, 1911; Ph. D., *ibid.*, 1914. A; 520 N. Manhattan.
- LOIS WILDY, A.B., Secretary of the Young Women's Christian Association (Sept. 1, 1923).
A. B., University of Colorado, 1923. L 39; 326 N. Sixteenth.
- FRANK HAROLD GULICK, B.S., Coördinator, U.S. Veterans' Bureau (1922).
B. S., K. S. A. C., 1920. G 28; 1426 Poyntz.
- STEPHAN ARNOLD GRAUQUE, Assistant Custodian (1918, 1919).
G 38; 1014 Laramie.

1. Resigned.

Standing Committees of the Faculty

ADMISSION: Jessie McD. Machir, John V. Cortelyou, B. L. Remick, Ina Holroyd, J. O. Hamilton, W. H. Andrews, H. L. Ibsen, J. H. Robert.

ADVANCED CREDIT: R. R. Price, L. E. Call, H. H. King, J. T. Willard, H. W. Davis, R. R. Dykstra, Martha Pittman.

ASSIGNMENT: Jessie McD. Machir, A. E. White, Araminta Holman, C. V. Williams, C. H. Scholer, W. E. Grimes.

ATHLETICS: Wm. M. Jardine, H. H. King, M. F. Ahearn, E. L. Holton, R. A. Seaton, R. I. Throckmorton.

CATALOGUE: J. V. Cortelyou, J. T. Willard, H. W. Davis.

COUNCIL ON STUDENT AFFAIRS: Mary P. Van Zile, H. W. Davis, Albert Dickens, A. P. Davidson, A. A. Holtz, Grace E. Derby, H. T. Hill, H. H. King, Eric Englund, M. F. Ahearn, Lois Wildy, Myra Wade, Emma Hyde; H. A. Shinn, Mary Polson.

DEBATE: J. E. Kammeyer.

FACULTY LOAN FUND: J. V. Cortelyou, Mary P. Van Zile, R. R. Dykstra, L. E. Call, R. A. Seaton, Jessie McD. Machir.

GRADUATE STUDY: J. E. Ackert, L. E. Conrad, L. E. Call, H. H. King, R. K. Nabours, J. H. Burt, Margaret M. Justin.

PUBLIC EXERCISES: J. E. Kammeyer, J. V. Cortelyou, Ira Pratt, H. W. Davis, E. L. Holton, W. H. Andrews.

SCHEDULE OF CLASSES: A. E. White, J. T. Willard, W. T. Stratton, L. E. Conrad, W. E. Grimes, Martha Pittman.

STUDENT DIRECTORY: Jessie McD. Machir, E. T. Keith, J. T. Willard.

STUDENT HEALTH: L. E. Conrad, L. D. Bushnell, Mary P. Van Zile, C. M. Siever, M. F. Ahearn.

STUDENT HONORS: J. O. Hamilton, C. E. Reid, R. W. Conover.

VOCATIONAL GUIDANCE: F. D. Farrell, Mary P. Van Zile, J. T. Willard, R. A. Seaton, R. R. Dykstra, E. L. Holton, Margaret M. Justin.

Agricultural Experiment Station

OFFICERS OF THE STATION

W. M. JARDINE, President of the College

ADMINISTRATION—

F. D. FARRELL, Director
A. A. DOERR, Business Manager
HUGH DURHAM, Assistant to Director

AGRICULTURAL ECONOMICS—

W. E. GRIMES, Farm Organization, in Charge
ERIC ENGLUND, Land Economics
R. M. GREEN, Marketing
J. H. MOYER, Cost of Production
H. J. HENNEY, Cost of Production
R. D. NICHOLS, Cost of Production
MORRIS EVANS, Farm Organization

AGRONOMY—

L. E. CALL, in Charge
S. C. SALMON, Crops
R. I. THEROCKMORTON, Soils
J. H. PARKER, Plant Breeding
M. C. SEWELL, Soils
J. W. ZAENLEY, Crops
H. H. LAUDE, Coöperative Experiments
R. J. SILKETT, Coöperative Experiments
G. H. PHINNEY, Farm Foreman
ELISABETH HARLING, Seed Analyst

ANIMAL HUSBANDRY—

C. W. McCAMPBELL, in Charge
H. L. IBSEN, Animal Genetics
B. M. ANDERSON, Cattle Investigations
H. E. REED, Sheep Investigations
D. L. MACKINTOSH, Horse Investigations
A. D. WEBER, Swine Investigations
H. W. MARSTON, Animal Nutrition
C. E. AUBEL, Pasturing Experiments

BACTERIOLOGY—

L. D. BUSHNELL, in Charge
A. C. FAY, Dairy Bacteriology
P. L. GAINY, Soil Bacteriology
W. R. HINSHAW, Poultry Disease Investigations

BOTANY—

L. E. MELCHERS, Plant Pathology, in Charge
E. C. MILLER, Plant Physiology
R. P. WHITE, Plant Pathology

CHEMISTRY—

H. H. KING, in Charge
J. T. WILLARD, Consulting Chemist
W. L. LATSHAW, in Charge Analytical Laboratory
E. L. TAGUE, Protein Investigations
J. S. HUGHES, Animal Nutrition
R. W. TITUS, Feeding Stuffs Analysis
J. C. JENKINS, Animal Nutrition
J. F. MERRILL, Fertilizer Analysis

DAIRY HUSBANDRY—

J. B. FITCH, in Charge
H. W. CAVE, Dairy Production
N. E. OLSON, Dairy Manufactures
P. C. MCGILLIARD, in Charge of Official Tests
H. M. JONES, State Dairy Commissioner

ENTOMOLOGY—

G. A. DEAN, in Charge ²
J. H. MERRILL, Apiculture, Fruit Insects
J. W. MCCOLLOCH, Staple Crop Insect Investigations
W. P. HAYES, Staple Crop Insect Investigations
ROGER C. SMITH, Staple Crop Insect Investigations

HORTICULTURE—

ALBERT DICKENS, in Charge
R. J. BARNETT, Pomology
W. F. PICKETT, Orchard Investigations

MILLING INDUSTRY—

C. O. SWANSON, in Charge
EARL B. WORKING, Wheat and Flour Investigations
C. W. OAKES, Milling

POULTRY HUSBANDRY—

L. F. PAYNE, in Charge
D. C. WARREN, Genetics
H. B. MUGGLESTONE, Superintendent of Poultry Plant

VETERINARY MEDICINE—

R. R. DYKSTRA, in Charge
C. W. HOBBS, Field Veterinarian
H. F. LIENHARDT, Pathology
J. P. SCOTT, Blackleg Investigations
N. D. HARWOOD, Vaccine Production
C. A. KITSSELMAN, Abortion Disease Investigations

ZOOLOGY—

R. K. NABOURS, in Charge
J. E. ACKERT, Parasitology
CAROLINE PERKINS, Genetics
F. L. HISAW, Injurious Mammals ²

BRANCH EXPERIMENT STATIONS

FORT HAYS—

L. C. ARCHER, Superintendent
A. L. HALLSTED, Dry-farming Investigations ¹
R. E. GETTY, Forage Crop Investigations ¹
A. F. SWANSON, Cereal Crops ¹
D. D. WILSON, Forest Nurseryman

GARDEN CITY—

F. A. WAGNER, Superintendent
E. H. COLES, Dry-land Agriculture Investigations ¹

COLBY—

B. F. BARNES, Superintendent ¹

TRIBUNE—

G. E. LOWREY, Superintendent

1. In cooperation with the U. S. Department of Agriculture.
2. Absent on leave, year 1923-'24.

Bureau of Research in Home Economics

OFFICERS OF THE BUREAU

W. M. JARDINE, President of the College
MARGARET M. JUSTIN, Director
HELEN A. BISHOP, Household Economics
EFFIE M. CARP, Institutional Administration
LOUISE P. GLANTON, Clothing and Textiles
MARGARET M. JUSTIN, Sanitation and Public Health
MARTHA M. KRAMEB, Food Economics and Nutrition
AMY JANE LEAZENBY, Child Welfare
MARTHA S. PITTMAN, Food Economics

Engineering Experiment Station

OFFICERS OF THE STATION

W. M. JARDINE, President of the College

ADMINISTRATION—

R. A. SEATON, Director
LOUISE SCHWENSON, Secretary

APPLIED MECHANICS—

C. H. SCHOLER, in Charge
J. H. ROBERT, Hydraulic Machinery
E. R. DAWLEY, Materials of Construction
HAROLD ALLEN, Road Materials
W. F. SMITH, Road Materials

AGRICULTURAL ENGINEERING—

H. B. WALKER, in Charge
W. H. SANDERS, Tractors
R. H. DRIFTMIER, Farm Machinery

ARCHITECTURE—

————, in Charge
J. D. WALTERS, General Investigations
PAUL WEIGEL, General Investigations
————, Rural Architecture

CHEMISTRY—

H. H. KING, in Charge
E. B. KEITH, General Investigations

CIVIL ENGINEERING—

L. E. CONRAD, in Charge
F. F. FRAZIER, General Investigations
M. W. FURR, Highway Engineering

ELECTRICAL ENGINEERING—

C. E. REID, in Charge
R. G. KLOEFFLER, General Investigations
J. L. BRENNEMAN, General Investigations
R. M. KERCHNER, General Investigations
L. H. CHURCH, General Investigations

MACHINE DESIGN—

C. E. PEARCE, in Charge
M. A. DURLAND, General Investigations

MECHANICAL ENGINEERING—

J. P. CALDERWOOD, in Charge
A. J. MACK, General Investigations
B. B. BRAINARD, Assistant

PHYSICS—

J. O. HAMILTON, in Charge
G. E. RABURN, General Investigations
E. C. CONVERSE, General Investigations

SHOP PRACTICE—

W. W. CARLSON, in Charge
G. A. SELLERS, General Investigations
E. C. JONES, Machine Tools
D. E. LYNCH, Forging Practice
RAY FLAGG, Automotive Engineering

Degrees and Certificates Conferred

In the Year 1923

FIRST DIVISION, MAY 31

DEGREES CONFERRED

HONORARY DEGREES

DOCTOR OF SCIENCE

Karl Frederic Kellerman, S. B., Cornell University, 1900

GRADUATE COURSES

MASTER OF SCIENCE

Jessie Gertrude Adee, B. S., Kansas State Agricultural College, 1922
Ethel Loleta Bales, B. S., Kansas State Agricultural College, 1912
Leslie Everett Blackman, A. B., McPherson College, 1922
Oscar Clayton Bruce, B. S., University of Missouri, 1913
Floy Thompson Burgess, B. S., University of Missouri, 1917
Bertha Lewis Danheim, B. S., Kansas State Agricultural College, 1920
Percy Leroy DePuy, B. S., Kansas State Agricultural College, 1918
James Robert Dougiass, B. S., Clemson College, 1918
Merrill Augustus Duriand, B. S., Kansas State Agricultural College, 1918
Beatty Hope Fleenor, B. S., Kansas State Agricultural College, 1919
Roy Monroe Green, B. S., University of Missouri, 1914
Chester Albern Herrick, B. S., Kansas State Agricultural College, 1921
William Vincent Lambert, B. S., University of Nebraska, 1921
Lewis Edward Long, B. S., Louisiana State University, 1919
Russell Newton Loomis, B. S., University of Colorado, 1917
James Walker McColloch, B. S., Kansas State Agricultural College, 1912
William Francis Pickett, B. S., Kansas State Agricultural College, 1917
Samuel Cecil Salmon, B. S., South Dakota State College, 1907
Luella Schaumburg, B. S., Kansas State Agricultural College, 1920
Edna Isabel St. John, B. S., Kansas State Agricultural College, 1915
Everett Alonzo Tunncliff, D. V. M., Kansas State Agricultural College, 1921
Sheppard Arthur Watson, B. S., Kansas State Agricultural College, 1920

CIVIL ENGINEER

John Francis Grady, B. S., Kansas State Agricultural College, 1920

ELECTRICAL ENGINEER

Arthur Edward Hopkins, B. S., Kansas State Agricultural College, 1916
Elmer Jones, B. S., Kansas State Agricultural College, 1909

MECHANICAL ENGINEER

William Klooz, B. S., Kansas State Agricultural College, 1917
George Aaron Miller, B. S., Kansas State Agricultural College, 1919

UNDERGRADUATE CURRICULA

Division of Agriculture

BACHELOR OF SCIENCE IN AGRICULTURE

†Jasper Dorman Adams
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Albert Howard Ames
Elmer Rex Auseumus
Fred Albert Bangs

Elmer Eugene Bates
†Douglas Clifford Beeler
Albert Lorraine Bridenstine
Carroll Clarence Button
Elgin Roy Button
Ray Samuel Circle
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Hubert Lee Collins	Johannes Frederick Theobald Mostert
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†Loyall Virgil Hunt	Warren Edward Stone
Donald Bryan Ibach	†Frank Arvid Swanson
Earl Harmon Jackson	George Ellis Taylor
Frank Willard Kerns	James Lowell Van Gilder
Russell Stanley Kifer	†Iro Nelson Vowel
Louis Myers Knight	Robert Lee Welton
Lysle Douglas Leach	Albert Parken Wertman
†Reuben Carl Lind	Marion Daniel Woodworth

Division of Veterinary Medicine

DOCTOR OF VETERINARY MEDICINE

James Frederick Adee	Lloyd George Grandfield
Russell Spencer Beaver	John Albert Howarth
James Joshua Black	Glenn Benson Kirkwood
Carl Alfred Brandy	Elden Emanuel Leasure
Frank Wright Crawford	Ching Sheng Lo
Kent Ruggles Dudley	Andrew James McKee
Frederick Earl Emery	Dorsey Addren Sanders
Timothy Joseph Foley, jr.	Rush Urban Taylor
William Darius Foss	Donald Albert Yandell

Division of Engineering

BACHELOR OF SCIENCE IN AGRICULTURAL ENGINEERING

Harold Theodore Baker	Merl Stanley Cook
William Wayne Blackhall	Carl David Gross
Kay Iverson Church	Frank Charles Kingsley

BACHELOR OF SCIENCE IN ARCHITECTURE

Lawrence William Byers	Merl Lee Padgett
Theodore Reed Griest	Gordon Sam Redman

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

Delmar Collins Anderson	Harry Nelson
William Harold Burgwin	Lestle Wilbur Newcomer
Victor John Englund	Thomas Bernard Reed
Terrence Otis Hedrick	Rollin James Smith
George Snear Holland	Robert Cleveland Spratt
Jacob Acll Kibler	Orval Welton Tripp
Frank Larner	Donald Maxwell Wilson
Glen McCrea Longley	

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

Oscar Hugh Aydelotte	†Joseph Patrick Flynn
Chester Leon Bradshaw	Hugh Enos Hartman
William John Bucklee	Orval Everett Holzer
Fred Cocherell	George Arthur Jennings
Merriam Elmer Cook	Charles Louis Jobe
Hubert James Counsell	Ray Stanley Kibler
Earle Henry Crall	Lester Honnell Means
Paul Clarence Cross	Lloyd Earl Means
Lloyd Harold Downing	Leland Otis Sinderson

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

Frank Minton Angus	William Werner Leeper
Delmar Dudley Chase	Lawrence Dewey McDonald
Clarence Raymond Gottschall	Gerald Clay Marrs
Augustus Wilkes Gudge	Norman Vincent Platner
Robb Augustus Hake	Carl Robert Stout
Herbert Fred Hemker	Rees Conway Warren
Harry Clayton Jennings	Webster James White
Louis George Johnson	

† Fulfilled requirements for state life teachers' certificate.

Division of Home Economics

BACHELOR OF SCIENCE IN HOME ECONOMICS

†Lucille Eugenia Anderson	Marjorie Melchert
†Leola Elnore Ash	†Susau Esther Millier
†Marjorie Ault	†Helen Margaret Mitchell
Agnes Mary Ayers	†Esther Ann Moore
†Nina Myrtle Browning	†Nellie Dale Moore
Hazel Effie Burdette	†Louisa Saloma Moyer
†Alberta Belle Bush	Edith Berenice Nonken
Marian Elsie Chaffee	†Alpha Irene O'Neil
†Dorothy Zella Churchward	†Cecile Beatrice Paine
†Inez Alice Coleman	Nettie Josephine Pfaff
†Nellie Jane Coleman	Bernice Shane Prescott
Irene Margaret Conroy	†Ruby Elizabeth Pruitt
†Rose Matilda Cunningham	†Elsie Inez Puckey
†Rebekah Deal	Helen Louise Rabe
†Maude Elizabeth Deely	†Leona Maxine Reed
†Irene Dora Drake	Louise Eliene Reed
Myrtle Sadie Dubbs	†Sarah Hazel Richards
Mabel Claire Foster	†Ruby Anna Rieklefs
Hazel Irene Gardner	†Renna Regina Rosenthal
†Margaret Gillett	Gretchen Rugh
†Florence Antoinette Haack	†Edna Blanche Russell
†Florence Anna Henney	Lois Lucia Sargent
†Bernice Avis Hoke	†Grace Aurora Schwandt
†Arlie Alfreda Honeywell	†Margaret Evelyn Schrader
Sarah Belle Hyde	Edna Marie Smith
Mattie Christine Jackson	Mildred Emily Smith
†Anna May Johnson	†Sarah Frances Smith
†Ethel Augusta Johnson	†Verna Elizabeth Smith
Mamie Bertina Johnson	†Mary Mercedes Sullivan
Nellie Rose Jorns	Wilma Sutton
†Annette Helen Kauzer	Leona Esther Thurow
†Mary Frances Kelly	Eleanor Emily Watson
†Rose Aline Lewis	†Marion Welch
Laura Elizabeth McAdams	Zoe Dorothy Wertman
†Ruth Eleanor McCandless	†Ruth Ida Whearty
Mary Ellen Maroney	†Ella Inez Wilson
Sarah Margaret Mason	†Hazel May Wilson
†Annabel Irene Maughlin	

Division of General Science

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†Chester Benjamin Chambers	Raymond Hubert Moran
Penn Samuel Chambers	†Alice Martha Mueldener
†Orville Robinson Cragun	†Mildred Lorene Pence
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†Earl Gilbert Darby	†Shirley Nugent Rogers
†Alice Louise DeWitt	†Lillian Foster Rommel
Marjorie Fisher	†Opal Sarah Seeber
John Edward Franz	†Stephen Ray Smith
†Roy Preston Garrett	†Thelma Enid Smith
Harry Herbert Halbower	†Florence Margaret Stebbins
†Helen Evelyn Hanes	Giles Sullivan
John Elbridge Harner	William Fuller Taylor
†Elfrieda Hemker	†Mable Irene Vincent
†Paul Frederick Hoffman	†Myrtle Irene Waits
Ihla Geraldine Hull	Wiley Whitney
†Henrietta Antoinette Jones	John Cathcart Wilson
†Vera Kathleen Knittle	†John Leod Wilson
†Helen Pauline Larson	

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James Clyde McKay	Frank Joseph Worster
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Edith Dorothy Abbott	†Margaret Reich
Perry Betz	Charles Randolph Smith
Victor Raymond Blackledge	Stanley Carl Swenson
Edith Margaret Haines	Alden Baker Woody
Frances Allegra Johnstone	

†Fulfilled requirements for state life teachers' certificate.

BACHELOR OF SCIENCE IN MUSIC

Glen Marvin Case
Helen Mabel Hannen
Mabel Ardis Murphy

Ruth Emilie Scott
Frances Geraldine Shane
Mildred Hazel Thornburg

BACHELOR OF SCIENCE IN RURAL COMMERCE

Faval Loranzo Foval
Joseph Edward Haag
Clyde Morton Rust
Harold Leon Sebring

William Donald Smith
Charles Lee Turley
George Huey Winters

COMMISSIONS AWARDED

SECOND LIEUTENANT OF COAST ARTILLERY, OFFICERS' RESERVE CORPS

Delmar Collins Anderson
Galen Andrew Barber
Volney Alan Chase
Orville Everett Holzer
George Arthur Jennings
Lester Eugene Jennings
Louis George Johnson
Ira David Sankey Kelly

Jacob Acil Kibler
Ray Stanley Kibler
Lester Honnell Means
Raymond Covert Pyley
Ivan Harris Riley
Clarence Martin Spencer
Owen Chester Wood
Carl Robert Stout

SECOND LIEUTENANT OF INFANTRY, OFFICERS' RESERVE CORPS

Leonard Rhys Allott
Marvin Bahl
Lawrence Floyd Barth
Elgin Roy Button
Orville Robinson Cragun
Lester Edgar Erwin
Junius Warren Farmer
Howard Daniel Finch
Paul Frederick Hoffman
Francis Benjamin Houlton
Harry Elijah Ratchiff

Roger Eli Regnier
Mott Luther Robinson
Shirley Nugent Rogers
Raymond Luther Stover
George Edward Stutz
Joseph Eugene Thackrey
James Lowell Van Gilder
Emery Newton Watkins
Harold Barrows Riley
Wiley Whitney

SECOND LIEUTENANT, VETERINARY OFFICERS' RESERVE CORPS

Carl Alfred Brandly
Frank Wright Crawford
James Joshua Black
Glenn Benson Kirkwood

George Thomas Bronson
Frederick Earl Emery
Edward Raymond Frank
Andrew James McKee

CERTIFICATES AWARDED

CERTIFICATES IN FARMERS' SHORT COURSE

Raymond Ballard
Glenn Lonker Bloom
Howard Duncan
Paul Freeman Evans
George Clyde Greve
Ralph Collinwood Grubb
Lawrence Langvardt

Fred John Larson
John Wallace Larson
Ludwig Leander Larson
William Lester Meyers
John Raaf
Claud Wane Towne

CERTIFICATE IN COMMERCIAL CREAMERY SHORT COURSE

Elden Morten Aves
Smythe Batchelor

Marven Jack Curteman
Ernest Teaford

CERTIFICATE IN AUTO MECHANICS' SHORT COURSE

Edward Bellinger
Walter C. Boller
Warren Albert Faidley
Carl K. Fengel
Lee Roy Gregg
Henry Leo Haas
Arthur Todd Kennedy

Allen D. Lampheer
Albin Levi Larson
Clyde Raymond Lloyd
Gerald Anthony Smith
Myron C. Wells
Clarence Boyd White

CERTIFICATE IN CARPENTERS' SHORT COURSE

Arthur Edgar Barlow

John E. Boyle

Degrees and Certificates Conferred

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CERTIFICATE IN ELECTRICIANS' SHORT COURSE

Everett Allen	Troy Rushing
Dayrel Elijah Dove	Herbert Morris Salsbury
Anton Felix Fleming	Norbert Joseph Schecker
Eugene Lawrence Mullinder	Richard Clinton Wells

CERTIFICATE IN MACHINISTS' SHORT COURSE

Guy D. Cornwell

CERTIFICATE IN TRACTOR OPERATORS' SHORT COURSE

Fred August Braun	Bernard Pitts
Earl H. Hayes	Dale Everett Spradling
James Wylie Logan	Stuart John Wilber
Claud McKenzie	James Patrick Woods

CERTIFICATE IN HOUSEKEEPERS' SHORT COURSE

Leone Bower	Helen Marjorie Lough
Helen Cecelia Getchell	Mrs. D. W. Sheetz
Anna Ellen Getty	Frances Velva Striegel
Amelia Marie Hartmann	Bertha Margaret Stamm
Eunice Koelliker	Hazel Dorothy Wendt

CERTIFICATE IN PUBLIC SCHOOL MUSIC

Helen Lucile Adams	Marjorie Hubner
Vera Marguerite Brooks	Dorothy Maude Knittle
Georgia May Daniels	Alta Rae Patterson
Ruth Houston	Ernestine Pinkerton
Clara Luella Howard	Margaret Teresa Rochford

SECOND DIVISION

DEGREES CONFERRED*

GRADUATE COURSES

MASTER OF SCIENCE

Justus Wheeler Barger, B. S., Kansas State Agricultural College, 1922
 John Clifford Jenkins, B. S., Pennsylvania State College, 1921
 Orpha Maust, B. S., Kansas State Agricultural College, 1922

UNDERGRADUATE CURRICULA

Division of Agriculture

BACHELOR OF SCIENCE IN AGRICULTURE

Bernard Marten Anderson	James Hendrix McAdams
Marvin Bahl	Winfred Owen McCarty
Herbert Bales	†Alfred Robb Paden
Carroll Miller Barringer	Harry Elijah Ratcliff
William Elijah Brown	†Fred Carl Stockbrand
†Sylvester Ulric Case	Jesse Collins Wingfield
†Harold Paul Gaston	†Milton Shipman Winter
George Ferguson Humphrey	Chester Stanley Wood

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

Jesse Conrad Geiger	Emil Oscar Hokanson
John Henry Hofmann	Glenn Henry Hollister

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

Clifford Leland Antle	Cyrus Calvin Davidson
Charles Otto Dailey	Paul Kovar

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

†Herman Vincent Fleming	Don Homer Pickrell
Wilbur Samuel Magill	

Division of Home Economics

BACHELOR OF SCIENCE IN HOME ECONOMICS

†Harriett Wright Allard	May Agnes Hunter
†Margaret Pearl Ansdell	Alice Marie Jennings
Mildred Mae Baer	†Beulah Keiffer
†Margaret Roberta Bane	Sara Blanche Kershaw
†Winfred Margaret Bell	Madeline Locke
Mary Betz	Grace Beatrice Long
Marguerite Mildred Bondurant	†Helen Margaret McDonald
Fannie Harriet Gorton	Hazel Marie Sweet
Lucille Alma Gramse	†Ruby Alice Thomas
Ella Sevala Hathaway	Florence Potter Watson
Edna Letha Hoke	

Division of General Science

BACHELOR OF SCIENCE

†William Joseph Barber	†John Arthur Glaze
†Florence Mima Carey	Lola Leeontine Gudge
†Charles Haynes Cloud	Edward Winebright Merrill
†Leonard Paul Elliott	†Sylvia Irene Petrie
Herbert Otis Garth	Joseph Eugene Thackrey

* August 1, 1923, unless otherwise stated.

† September 1, 1923.

Degrees and Certificates Conferred

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BACHELOR OF MUSIC

Leola Wallace

BACHELOR OF SCIENCE IN INDUSTRIAL CHEMISTRY

Harris Loree Burnett

BACHELOR OF SCIENCE IN INDUSTRIAL JOURNALISM

Paul Tupper

Margaret Jane Watson

BACHELOR OF SCIENCE IN RURAL COMMERCE

George Arthur Holloway
Keith Walter Miller

Joseph William Skinner

HONORS**PHI KAPPA PHI****CANDIDATES FOR THE MASTER'S DEGREE, 1923**

Lesslie Everett Blackman	William V. Lambert
Oscar C. Bruce	Lewis Edward Long
Roy Monroe Green	Edna Isabel St. John

GRADUATES, CLASS OF 1923**Division of Agriculture**

Warner Adams	Walter Patrick Raleigh
Elmer Rex Ausemus	Abraham Rabie Saunders
Junius Warren Farmer	Glenn Dale Stockwell
Loyall Virgil Hunt	Austin William Stover
Fred Franklin Lampton	

Division of Veterinary Medicine

Carl Alfred Bradley	Frederick Earl Emery
---------------------	----------------------

DIVISION OF ENGINEERING

Delmar Collins Anderson	Frank Larner
Chester Leon Bradshaw	Leland Otis Sinderson
Carl David Gross	Carl Robert Stout
Orval Everett Holzer	

Division of Home Economics

Margaret Ahlborn	Gretchen Rugh
Mary Betz	Edna Blanche Russell
Rose Matilda Cunningham	Sarah Frances Smith
Nellie Rose Jorns	Leona Esther Thurow
Grace Beatrice Long	Elenor Emily Watson

Division of General Science

Edna Florence Bangs	Lillian Foster Rommel
Leone Cheever Bower	Ruth Emilie Scott
Harry Herbert Halbower	Geraldine Frances Shane
Fred C. Lewis	Stephen Ray Smith
Edward Winebright Merrill	Stanley Swenson
Mildred Lorene Pence	

SENIOR HONORS

(1923)

Division of Agriculture

Warner Adams	Elmer Rex Ausemus
Abraham Rabie Saunders	Loyall Virgil Hunt

Division of Veterinary Medicine

Frederick Earl Emery

Division of Engineering

Chester Leon Bradshaw	Orval Everett Holzer
Carl Robert Stout	Frank Larner

Division of Home Economics

Margaret Ahlborn	Leona Esther Thurow
Nellie Rose Jorns	Gretchen Rugh
Grace Beatrice Long	

Division of General Science

Mildred Lorene Pence	Edward Winebright Merrill
Harry Herbert Halbower	Ruth Emilie Scott
Stephen Ray Smith	

JUNIOR HONORS

(1923)

Division of Agriculture

Marvel Leon Baker
Max Manley Hoover
Ralph William Sherman

Earl Milo Litwiller
Daniel Matthew Braum

Division of Veterinary Medicine

Edward Raymond Frank

Division of Engineering

La Motte Grover
Thelbert Leroy Weybrew
John Carey Wilkins

Elwyn Scheel
Frank Miller

Division of Home Economics

Louise Morse
Bernice May Flemming

Jessie Adelaide Newcomb
Zoe O'Leary

Division of General Science

Marie Correll
Mary Grace Gerkin
Floyd Charles Butel

Eunice Miriam Anderson
Dahy Baskett Barnett

List of Students

Students Pursuing Graduate Work

I. Graduate Students

- †Margaret Ahlborn, A. B. 1906 (University of Kansas), *Food Economics and Nutrition*
Manhattan
- †Harold Allen, B. S. 1920 (University of Colorado), *Applied Mechanics*
Manhattan
- †Bernard Martin Anderson, B. S. 1923 (Kansas State Agricultural College), *Animal Husbandry*
Manhattan
- †Ethel May Arnold, B. S. 1918 (Kansas State Agricultural College), *Applied Art*
Manhattan
- †Walter Buswell Balch, B. S. 1919 (Cornell University), *Horticulture*
Manhattan
- †Edna Florence Bangs, B. S. 1923 (Kansas State Agricultural College), *Bacteriology*
Manhattan
- †Emily May Bennett, A. B. 1921 (University of Illinois), *Food Economics and Nutrition*
Manhattan
- William Bergh, B. S. 1921 (University of Illinois), *Education*
Newton
- Anna Lillian Best, B. S. 1922 (Kansas State Agricultural College), *English*
Manhattan
- †Ada Grace Billings, B. S. 1916 (Kansas State Agricultural College), *History*
Manhattan
- Ferdinand Hugo Bosman, B. S. 1924 (Transvaal University-College), *Agronomy*
Moemfontein, South Africa
- †Esther Bruner, B. S. 1920, M. S. 1921 (Kansas State Agricultural College), *Chemistry*
Manhattan
- Florence Bruner, B. S. 1923 (Hays, Kansas State Teachers College), *Education*
Manhattan
- Gladys Musser Bryson, M. A. 1918 (Beloit College), *English*
Jewell
- Harry Ray Bryson, B. S. 1917 (Kansas State Agricultural College), *Entomology*
Leon
- †Osceola Hall Burr, B. S. 1923 (Kansas State Agricultural College), *Education*
Manhattan
- †Walter Horace Burr, B. S. 1920 (Kansas State Agricultural College), *Economics and Sociology*
Manhattan
- †James Henry Burt, D. V. M. 1905 (Ohio State University), *Anatomy and Physiology*
Manhattan
- Mary Loretta Callahan, B. S. 1921 (Hays, Kansas State Teachers College), *Education*
Hays
- Ruth Aileen Campbell, A. B. 1923 (Drury College), *Food Economics and Nutrition*
Springfield, Mo.
- †Dorothy Josephine Cashen, B. S. 1917 (Carthage College), M. S. 1920 (Kansas State Agricultural College), *Botany and Plant Pathology*
Manhattan
- †Ira Nichols Chapman, B. S. 1916 (Kansas State Agricultural College), *Agricultural Economics*
Manhattan
- †Leonard Hughes Church, B. S. 1923 (Purdue University), *Electrical Engineering*
Manhattan
- †Florence Roberta Clarke, A. B. 1916 (University of Washington), *Clothing and Textiles*
Manhattan
- Frances Conklin, A. B. 1922 (Wisconsin University), *English*
Hutchinson
- Ruth Alice Cramer, B. S. 1921 (Kansas Wesleyan University), *Food Economics and Nutrition*
Oberlin
- †William Wesley Crawford, A. B. 1912 (Iowa State University), B. S. 1917 (Iowa State College), *Mechanical Engineering*
Manhattan

† Member of K. S. A. C. faculty.

- †Bertha Lewis Danheim, B. S. 1920, M. S. 1923 (Kansas State Agricultural College), *Zoölogy*
Manhattan
- †Frank Seymour Davenport, B. S. 1921 (Massachusetts Agricultural College), *Bacteriology*
Manhattan
- †Allan Park Davidson, B. S. 1921 (Kansas State Agricultural College), *Education*
Manhattan
- †Charles Deforest Davis, B. S. 1921 (Kansas State Agricultural College), *Agronomy*
Manhattan
- †Earle Reed Dawley, B. S. 1919 (University of Illinois), *Applied Mechanics*
Manhattan
- †Lucille Minerva Dean, A. B. 1920 (University of Kentucky), *English*
Manhattan
- †Howard Robert DeRose, A. B. 1918 (University of Colorado), *Chemistry*
Manhattan
- †Jean Swift Dobbs, B. S. and R. N. 1923 (Northwestern University), *Household Economics*
Manhattan
- †Rudolph Henry Driftmier, B. S. 1920 (Iowa State College), *Agricultural Engineering*
Manhattan
- †Margaret Dubbs, B. S. 1922 (Kansas State Agricultural College), *Food Economics and Nu-
trition*
Manhattan
- †Merrill Augustus Durland, B. S. 1918, M. S. 1923 (Kansas State Agricultural College), *Ma-
chine Design*
Manhattan
- †Frederick Earl Emery, D. V. M. 1923 (Kansas State Agricultural College), *Zoölogy*
Manhattan
- †Eric Englund, B. S. 1918 (Oregon Agricultural College), A. B. 1919 (University of Oregon),
M. S. 1920 (University of Wisconsin), *Agricultural Economics*
Manhattan
- †Morris Evans, B. S. 1920 (Kansas State Agricultural College), *Agricultural Economics*
Manhattan
- †Arthur Cecil Fay, B. S. 1920 (University of Missouri), M. S. 1921 (University of Wiscon-
sin), *Bacteriology*
Manhattan
- †James Burgess Fitch, B. S. 1910 (Purdue University), *Dairy Husbandry*
Manhattan
- †Ray Flagg, B. S. 1905 (Purdue University), *Shop Practice*
Manhattan
- †Beatty Hope Fleenor, B. S. 1919, M. S. 1923 (Kansas State Agricultural College), *Education*
Manhattan
- Nelle Flinn, B. S. 1916 (Kansas State Agricultural College), *Clothing and Textiles*
Admire
- †Manford Furr, B. S. 1913 (Purdue University), *Civil Engineering*
Manhattan
- †Beatrice Gates, A. B. 1923 (University of Iowa), *Education*
Manhattan
- †George Albert Gemmell, B. S. 1920, M. S. 1922 (Kansas State Agricultural College),
Education
Manhattan
- †Ralph Forney Gingrich, B. S. 1923 (University of Nebraska), *Machine Design*
Manhattan
- †Mable Celesta Ginter, B. S. 1921 (Kansas State Agricultural College), *Household Economics*
Manhattan
- †Louise Phillips Glanton, B. S. 1905, M. S. 1913 (Columbia University),
Clothing and Textiles
Manhattan
- John Arthur Glaze, B. S. 1923 (Kansas State Agricultural College), *Education*
Manhattan
- †Elvira Lilly Grabow, Graduate Nurse 1921, *Household Economics*
Manhattan
- †Eugene Clayton Graham, B. S. 1898 (Carleton College), B. S. 1902 (University of Minne-
sota), *Shop Practice*
Manhattan
- †Paul Wallace Gregory, B. S. 1922 (University of Kentucky), *Animal Husbandry*
Manhattan
- Arthur Jerome Groesbeck, A. B. 1909 (University of Kansas), *Mechanical Engineering*
Manhattan

† Member of K. S. A. C. faculty.

- Edith Gabriella Grundmeier, B. S. 1922 (Kansas State Agricultural College),
Food Economics and Nutrition
Barnard
- †Harold Reed Guilbert, B. S. 1920 (Kansas State Agricultural College), *Animal Husbandry*
Manhattan
- Mildred Josephine Halstead, B. S. 1922 (Kansas State Agricultural College),
Food Economics and Nutrition
Manhattan
- †Stella Maude Harriss, B. S. 1917, M. S. 1919 (Kansas State Agricultural College), *Chemistry*
Manhattan
- †Lawrence William Hartel, A. B. 1911 (Central Wesleyan College), B. S. 1915 (University of
Missouri), *Physics*
Manhattan
- †Ernest Hartman, B. S. 1922 (Kansas State Agricultural College), *Zoölogy*
Manhattan
- †Nathan Daniel Harwood, D. V. M. 1918 (Kansas State Agricultural College), *Pathology*
Manhattan
- †Sterling Brown Hendricks, B. Ch. E. 1922 (University of Arkansas) *Chemistry*
Manhattan
- †Verne Hillman, B. S. 1920 (Iowa State College), *Agricultural Engineering*
Manhattan
- †William Russell Hinsbaw, B. S. 1923 (Michigan Agricultural College), *Bacteriology*
Manhattan
- †Julian Adair Hodges, B. S. 1917, M. S. 1923 (University of Kentucky),
Agricultural Economics
Manhattan
- †Ray Edward Holcombe, A. B. 1920 (University of Wisconsin), *Education*
Manhattan
- Charles Harold Howe, B. S. 1922 (Kansas State Agricultural College),
Agricultural Economics
Chapman
- †Orville Don Hunt, B. S. 1923 (Washington State College), *Mechanical Engineering*
Manhattan
- †Stanley Paul Hunt, B. S. 1919 (Kansas State Agricultural College), *Applied Mechanics*
Manhattan
- †Emma Hyde, A. B. 1912 (University of Kansas), A. M. 1916 (University of Chicago),
Mathematics
Manhattan
- Gilford John Ikenberry, B. S. 1920 (Kansas State Agricultural College), *Agronomy*
Quinter
- †Elden Valorius James, A. B. 1905 (University of Michigan), *History*
Manhattan
- †John Clifford Jenkins, B. S. 1921 (Pennsylvania State College), *Chemistry*
Manhattan
- †Charles Otis Johnston, B. S. 1918 (Kansas State Agricultural College),
Botany and Plant Pathology
Manhattan
- †Charles Neal Jordan, B. S. 1914 (Oklahoma Agricultural and Mechanical College),
M. S. 1922 (University of Washington), *Chemistry*
Manhattan
- †Glenn Howe Joseph, B. S. 1922, M. S. 1923 (University of Illinois), *Chemistry*
Manhattan
- †Amy Kelly, B. S. 1908 (South Dakota State College), *Agronomy*
Manhattan
- †Edward Guerrant Kelly, M. S. 1903 (University of Kentucky), *Entomology*
Manhattan
- †Russell Marion Kerchner, B. S. 1922 (University of Illinois), *Electrical Engineering*
Manhattan
- Caroline Rosina Kesler, A. B. 1920 (Friends University), *Household Economics*
Valley Center
- †George William Kuerner, B. S. 1922 (Pennsylvania State College), M. S. 1923 (University
of Utah), *Chemistry*
Manhattan
- Herbert Henry Krehbiel, B. S. 1922 (Kansas State Agricultural College), *Entomology*
Moundridge
- †Mendel Elmer Lash, B. S. 1920, M. S. 1922 (Ohio State University), *Physics*
Manhattan

† Member of K. S. A. C. faculty.

- †Walter Leroy Latshaw, B. S. 1912 (Pennsylvania State College), M. S. 1922 (Kansas State Agricultural College), *Chemistry*
Manhattan
- †Hilmer Henry Laude, P. S. 1911 (Kansas State Agricultural College), M. S. 1918 (Agricultural and Mechanical College of Texas), *Agronomy*
Manhattan
- †Clarence Flavius Lewis, A. B. 1913 (University of Denver), *Mathematics*
Manhattan
- †Robert Henry Lush, B. S. 1921 (Kansas State Agricultural College), *Dairy Husbandry*
Manhattan
- †Eugene Sidney Lyons, B. S. 1921 (Kansas State Agricultural College), *Agronomy*
Manhattan
- †James Hendrix McAdams, B. S. 1923 (Kansas State Agricultural College),
Poultry Husbandry
Manhattan
- †Paul Campbell McGilliard, B. S. 1916 (Kansas State Agricultural College),
Dairy Husbandry
Manhattan
- †William Max McLeod, D. V. M. 1917 (Iowa State College), *Anatomy and Physiology*
Manhattan
- †David Leslie Mackintosh, B. S. 1920 (University of Minnesota), *Animal Husbandry*
Manhattan
- George Edwin Manzer, B. S. 1918 (Kansas State Agricultural College),
Agricultural Engineering
Manhattan
- †Mary Aletha Mason, B. S. 1919 (Kansas State Agricultural College), *Household Economics*
Manhattan
- †Henry Ruggles Mathias, B. S. 1923 (University of Illinois), *Chemistry*
Manhattan
- †Joseph Farrington Merrill, B. S. 1907 (University of Maine), *Chemistry*
Manhattan
- †Ralph Morrish, B. S., 1920 (Purdue University), *Agricultural Economics*
Manhattan
- †Reed Morse, B. S. 1923 (Iowa State College), *Civil Engineering*
Manhattan
- Dudley Bertie David Mosses, B. S. 1923 (University of Illinois), *Agronomy*
Johannesburg, South Africa
- †Thirsa Adaline Mossman, A. B. 1916 (University of Nebraska), A. M. 1922 (University of Chicago), *Mathematics*
Manhattan
- †Jonathan Alexander Munro, B. S. 1922 (Ontario Agricultural College), *Entomology*
Manhattan
- †Charles Nitcher, B. S. 1921 (Kansas State Agricultural College), *Agricultural Economics*
Manhattan
- John Wesley Patton, D. V. M. 1921 (Agricultural and Mechanical College of Texas),
Bacteriology
Manhattan
- †Loyal Frederick Payne, B. S. 1912 (Oklahoma Agricultural and Mechanical College),
Poultry Husbandry
Manhattan
- †Clinton Elliott Pearce, S. B. 1913 (Massachusetts Institute of Technology),
Machine Design
Manhattan
- †Arthur Frederick Peine, A. B. 1911 (Illinois Wesleyan University), A. M. 1913 (University of Illinois), *History*
Manhattan
- †Caroline May Perkins, A. B. 1919 (New Hampshire University), *Zoölogy*
Manhattan
- †Mary Elizabeth Polson, B. S. 1916 (Kansas State Agricultural College), *Clothing and Textiles*
Manhattan
- †Leslie Ray Putnam, B. S. 1910 (Cornell College), *Education*
Manhattan
- Harry Elijah Ratcliffe, B. S. 1923 (Kansas State Agricultural College),
Agricultural Economics
Gaylord
- †Harry Ernest Reed, B. S. 1914 (University of Missouri), *Animal Husbandry*
Manhattan
- *Frank Root, B. S. 1914 (Kansas State Agricultural College), *Animal Husbandry*
Iola

*Under auspices of the U. S. Veterans' Bureau.

† Member of K. S. A. C. faculty.

- Nannie Clytice Ross, B. S. 1916 (Kansas State Agricultural College), *Clothing and Textiles*
Burrton.
- †William Hobson Rowe, A. B. 1922 (University of Michigan), *Agricultural Economics*
Manhattan
- †Frank Ruppert, B. S. 1923 (Washington State College), *Agronomy*
Manhattan
- †Samuel Cecil Salmon, B. S. 1907 (South Dakota State College), M. S. 1923 (Kansas State
Agricultural College), *Agronomy*
Manhattan
- †Paul Baldwin Sawin, B. S. 1924 (Cornell University), *Animal Husbandry*
Manhattan
- †Charles Henry Scholer, B. S. 1914 (Kansas State Agricultural College), *Applied Mechanics*
Manhattan
- †Everett Morrill Schreck, B. S. 1923 (Kansas Wesleyan University), *Botany*
Manhattan
- †Joseph Prestwich Scott, D. V. M. 1914 (Ohio State University), *Surgery and Medicine*
Manhattan
- †Gabe Alfred Sellers, B. S. 1917 (Kansas State Agricultural College), *Shop Practice*
Manhattan
- †Jesse Earl Sellers, B. S. 1921 (University of Colorado), *Chemistry*
Manhattan
- Mary Margaret Shaw, A. B. 1918 (Fairmount College), *Household Economics*
Wichita
- †Ross Silkett, B. S. 1922 (Kansas State Agricultural College), *Agronomy*
Manhattan
- James Taylor Robertson Sim, B. S. 1924 (University of Illinois), *Agronomy*
Port Elizabeth, South Africa
- †William Furber Smith, Ch. E. 1922 (University of Cincinnati), *Chemistry*
Manhattan
- †Bertha Snyder, A. B. 1923 (Southwestern College), *Zoölogy*
Manhattan
- †Arthur Bradley Sperry, B. S. 1919 (University of Chicago), *Zoölogy*
Manhattan
- †Howard Harold Steup, B. S. 1919 (Purdue University), *Poultry Husbandry*
Manhattan
- Ralph Robinold St. John, B. S. 1917 (Kansas State Agricultural College),
Botany and Plant Pathology
Manhattan
- †Ellis Adolph Stokdyk, B. S. 1920 (University of Wisconsin), *Botany and Plant Pathology*
Manhattan
- †Vivan Lewis Strickland, A. B. 1906 (University of Nebraska), A. M. 1915 (Columbia Uni-
versity), *Education*
Manhattan
- †Delbert Jacob Taylor, B. S. 1914 (Purdue University), *Poultry Husbandry*
Manhattan
- †Lewis Walter Taylor, B. S. 1922 (University of Wisconsin), *Poultry Husbandry*
Manhattan
- †Mary Fidelia Taylor, B. S. 1919 (Kansas State Agricultural College), *Physics*
Manhattan
- †Rolla Williams Titus, A. B. 1909 (Washburn College), A. M. 1914 (University of Kansas),
Chemistry
Manhattan
- Srsoljub Rad Todorovic, B. S. 1923 (West Virginia University), *Agricultural Engineering*
Kragujevac, Serbia
- †Maude Lahr Trego, B. S. 1922 (Kansas State Agricultural College),
Food Economics and Nutrition
Manhattan
- †Walter Carl Voll, Diploma 1923 (Rochester Mechanics Institute), *Shop Practice*
Manhattan
- Niles Hamilton Walker, A. B. 1923 (Southwestern College), *Chemistry*
Winfield.
- †Roy Wilson Wampler, A. B. 1920 (McPherson College), M. S. 1921 (Kansas State Agricul-
tural College), *Chemistry*
Manhattan
- †Rolland Hays Waters, A. B. 1914 (Baker University), *Education*
Manhattan
- †George Benson Watkins, B. S. 1921 (University of Michigan), *Chemistry*
Manhattan.

† Member of K. S. A. C. faculty.

- Wilbur Ellis Watkins, B. S. 1923 (McPherson College), *Milling Industry*
Enterprise.
- †Arthur Weber, B. S. 1922 (Kansas State Agricultural College), *Animal Husbandry*
Manhattan.
- Edith May Weidenbach, A. B. 1920 (Fairmount College), *Household Economics*
Wichita
- †Alfred Everett White, B. S. 1904, M. S. 1909 (Purdue University), *Mathematics*
Manhattan.
- †Leon Vincent White, B. S. 1918 (Kansas State Agricultural College), *Civil Engineering*
Manhattan.
- †Fred Erie Whitehead, A. B. 1918 (Baker University), *Entomology*
Manhattan.
- †William Shaffrath Wiedorn, B. S. 1921 (Cornell University), *Horticulture*
Manhattan.
- †Lois Wildy, A. B. 1923 (University of Colorado), *Economics and Sociology*
Manhattan.
- †Louis Coleman Williams, B. S. 1922 (Kansas State Agricultural College), *Horticulture*
Manhattan.
- †Philip Anton Willis, B. S. 1922 (Montana State College), *Mechanical Engineering*
Manhattan.
- †Jesse Collins Wingfield, B. S. 1923 (Kansas State Agricultural College), *Horticulture*
Manhattan.
- Edwin William Winkler, B. S. 1921 (Kansas State Agricultural College),
Agricultural Economics
Rozele
- †Mary Abbie Worcester, B. S. 1917 (New Hampshire University), *Clothing and Textiles*
Manhattan
- †Floyd Maxwell Wright, B. S. 1923 (South Dakota State College), *Dairy Husbandry*
Manhattan
- †James Walter Zahnley, B. S. 1918 (Kansas State Agricultural College), *Agronomy*
Manhattan
- †Naomi Bertha Zimmerman, B. S. 1919, M. S. 1923 (University of Nebraska), *Zoology*
Manhattan

II. Seniors Pursuing Graduate Work

- | | |
|--|--|
| Anthony Paul Atkins, <i>Agriculture</i>
El Dorado | Medrith Droll, <i>Home Economics</i>
Wichita |
| George Smith Atwood, <i>Agriculture</i>
La Cygne | Mildred Faye Emrich, <i>Home Economics</i>
Omaha, Neb. |
| *Marvel Leon Baker, <i>Agriculture</i>
Syracuse. | †George Albert Flinger, <i>Agriculture</i>
Cuba |
| *Guy Charles Bartgis, <i>Agriculture</i>
Cedar Vale | Bernice May Flemming, <i>Home Economics</i>
Wakefield |
| Dan Matthew Braum, <i>Agriculture</i>
Denison | Irwin Lloyd Hathaway, <i>Agriculture</i>
Manhattan |
| Verna Breese, <i>General Science</i>
Wichita | †Beulah Frances Helstrom, <i>Home Economics</i>
McPherson |
| *Joseph Daniel Buchman, <i>Agriculture</i>
Council Grove. | Max Manley Hoover, <i>Agriculture</i>
Burlingame |
| *Hiram Gilbert Burt, <i>Agriculture</i>
Garden City | Benjamin Francis Houlton, <i>Agriculture</i>
Florence |
| Gertrude Conn, <i>Home Economics</i>
Kirbyville, Tex. | Ruth Leonard, <i>General Science</i>
Manhattan |
| Victor Vincent Cool, <i>General Science</i>
Manhattan | Earl Milo Litwiller, <i>Agriculture</i>
Manhattan |
| George William Corbet, jr., <i>General Science</i>
Leona | Herbert Melvin Low, <i>Engineering</i>
Topeka |
| Marie Correll, <i>General Science</i>
Manhattan | Joseph Taylor Mackay, <i>Agriculture</i>
Kansas City, Mo. |
| Eleanor Hannah Davis, <i>General Science</i>
Gaylord. | Alice Tweed Marston, <i>General Science</i>
Wilmington, Dela. |
| *Edgar William Davis, <i>Agriculture</i>
Lyons | Jose Angel Mier, <i>Agriculture</i>
Aguascalientes, Mexico |
| Samuel Wesley Decker, <i>Agriculture</i>
Birmingham | Buford John Miller, <i>Agriculture</i>
Piedmont |
| *Charles Orville Dirks, <i>Agriculture</i>
Augusta | Bud Wesley Morford, <i>Engineering</i>
Augusta |

* Under auspices of the U. S. Veterans' Bureau.

† Member of K. S. A. C. faculty.

George Vernon Mueller, <i>Engineering</i> Sawyer	†Austin William Stover, <i>Agriculture</i> Manhattan
Walter Emory Myers, <i>Agriculture</i> Eskridge	Raymond Luther Stover, <i>Agriculture</i> Manhattan
Ruby May Northup, <i>General Science</i> Cuba	*Joseph Frank Swarner, <i>Engineering</i> Hartford
Otto LeRoy Pretz, <i>Agriculture</i> Olathe	Daniel Overton Turner, <i>Agriculture</i> Milton
Herbert Arthur Rose, <i>Engineering</i> Waldron	Walter Henry von Trebra, <i>Agriculture</i> Oswego
Sylvia Lanora Russell, <i>General Science</i> Lyons	Floyd Lavern Werhan, <i>Engineering</i> Bennington
Lawrence Arthur Schaal, <i>Agriculture</i> Zeandale	Thelbert Leroy Weybrew, <i>Engineering</i> Wamego
Ralph William Sherman, <i>Agriculture</i> . Burlington, N. J.	Henry Evert Wichers, <i>Engineering</i> Downs
Thomas Bruce Stinson, <i>Agriculture</i> Manhattan	Cecil Cline Wilson, <i>Agriculture</i> Canton

Undergraduate Students

The following list includes seniors, juniors, sophomores, freshmen and special students in College. For students in the Summer School and in special courses, see lists following this one.

Abbreviations here used denote curricula as follows: Ag, Agriculture; AE, agricultural engineering; Ar, architecture; BC, biochemistry; CE, civil engineering; EE, electrical engineering; Eng, engineering; FME, flour-mill engineering; GS, general science; HE, home economics; IC, industrial chemistry; IJ, industrial journalism; M, music; ME, mechanical engineering; RC, rural commerce; and VM, veterinary medicine.

SENIORS

Earl Abbott (EE); Garden City	Lucia Biltz (GS); Manhattan
Ethel Charlotte Adam (HE); Manhattan	Maurice Egbert Bivens (EE); Seiling
Glenn Aikins (Ag); Valley Falls	Cloina Bixler (HE); Manhattan
Frank McDaniel Alexander (Ag); Wellington	Helen Ann Blair (HE); Mulvane
Frances Myrtle Allison (M); Florence	Werner Jesse Blanchard (GS); Manhattan
Maurine Esther Ames (HE); Moline	Robert Franklin Blanks (CE); Manhattan
Eunice Miriam Anderson (M); Phillipsburg	Mary Grace Boone (HE); Lansing
George Randolph Anderson (CE); Kansas City	Ralph Wesley Boone (VM); Colony
Elmer Eugene Archer (RC); Carlyle	Roy Eugene Boroff (EE); Stockton
Jules Louis Arnandez (VM); Manhattan	Carl William Bower (Ag); Manhattan
Alfred Lewis Arnold (Ag); Manhattan	†Dan Matthew Braum (Ag); Denison
†Anthony Paul Atkins (Ag); El Dorado	‡Verna Breese (GS); Wichita
†George Smith Atwood (Ag); La Cygne	George Thomas Bronson (VM); Waldo
Madalyn Avery (GS); Wakefield	Francis Neil Brooks (CE); Peru
Andrew Ansel Axline (Ag); Pratt	Neal Dwight Bruce (Ar); Burbank, Calif.
Harold Benton Axtell (EE); Topeka	Thomas Walter Bruner (Ag); Lakin
Ellis Buchanan Babbit (Ag); Hiawatha	Guy Emerson Buck (EE); Salina
Ralph Waldo Baird (AE); Topeka	‡*Joseph Daniel Buchman (Ag); Council Grove
†*Marvel Leon Baker (Ag); Syracuse	Francis Paul Burke (VM); Manhattan
Vida Baker (HE); Sterling	Harley Kercher Burns (ME); Liberal
Alvin Kornelius Banman (Ag); Lyons	*Hiram Gilbert Burt (Ag); Garden City
Galen Andrew Barber (EE); Topeka	Mary Penelope Burtis (GS); Manhattan
Atwell Stuart Barkley (Ag); Manhattan	Dwight Calvin Bushey (EE); Muscotah
Dahy Baskett Barnett (IJ); Manhattan	Claude Raymond Butcher (Ar); Solomon
Edith Elizabeth Barrett (GS); Topeka	Floyd Charles Butel (GS); Overbrook
Murlin Clyde Barrows (Ag); Clifton	Ina Butts (GS); Manhattan
†*Guy Charles Bartgis (Ag); Cedar Vale	Herbert Harold Carnahan (Ag); Garrison
Nelson Suplee Barth (IJ); Manhattan	Alice Burton Carney (RC); Manhattan
Theodore Lawrence Bayer (IJ); Manhattan	Maurice Wainwright Casad (CE); Mooreland, Okla.
Ivan Dewey Bennett (GS); Sterling	Francis Eugene Charles (Ag 1; IJ 2); Republic
Virgil Arthur Berridge (Ag); Goff	Volney Alan Chase (Ar); Manhattan
Blanche Lorraine Berry (M); Jewell	Boyd Ransom Churchill (Ag); Ft. Scott, Ill.
Lenore Fayette Berry (IJ); Manhattan	
Neva Betz (HE); Asherville	

* Under auspices of the U. S. Veterans' Bureau.

‡ Also pursuing graduate study.

SENIORS—Continued

- Mary Jane Clark (HE); Anthony
Verne Ole Clements (EE); Havensville
Roy Arthur Coe (IC); Manhattan
Burton Ellsworth Colburn (Ag); Manhattan
Wilber Doane Cole (CE); Manhattan
Jewel Irene Conkel (HE); Niles
Mildred Althea Conkel (HE); Niles
‡Gertrude Conn (HE); Kirbyville, Texas
William Amy Conrow (GS); Manhattan
Thomas Alfred Constable (ME);
Minneapolis
- Stella Grace Cook (HE); Bucklin
‡Victor Vincent Cool (GS); Manhattan
John Herbert Coolidge (Ag); Greensburg
Charles James Coon (VM); Manhattan
*Metheny John Copeland (EE); Quinter
‡George William Corbet, Jr. (GS); Leona
‡Marie Correll (GS); Manhattan
Walter Tanner Crotchett (Ag); Louisburg
Miles Ellsworth Crouse (Ag); Harlan
Grace Marie Currin (HE); Manhattan
Elizabeth Lida Curry (GS); Winchester
Alan Davis Dailey (IJ); Manhattan
‡Eleanor Hannah Davis (GS); Gaylord
‡*Edgar William Davis (Ag); Lyons
Lewis Brown Deal (ME); Newton
‡Samuel Wesley Decker (Ag); Birmingham
Lloyd Eugene Deister (Ag); Manhattan
Donald Reid DeTar (EE); Anthony
*William Kenneth Dinklage (CE); Fort Scott
‡*Charles Orville Dirks (Ag); Augusta
Myrle Launa Divilbiss (HE); Olathe
Leonora Katherine Doll (GS); Manhattan
Henry Dougherty, jr. (CE); Manhattan
‡Medrith Droll (HE); Wichita
Helen Vane Dunlap (HE); Eureka
Jack Wilbur Dunlap (Ag); Scott City
Benjamin Hedstrom Dutton (IC);
Burlingame
Alfred Douglas Edgar (AE); Manhattan
John William Egger (Ag); Ellis
Milton Stover Eisenhower (IJ); Abilene
‡Mildred Faye Emrich (HE); Omaha, Neb.
Lester Edgar Erwin (Ag); Manhattan
Irene Antoinette Etzold (HE); Liberal
Mary Catherine Etzold (HE); Liberal
Willis Lee Farmer (CE); Kansas City
James Lyster Farrand (Ag); Hunter
Bertha Faulconer (HE); El Dorado
‡George Albert Filing (Ag 1; Grad 2);
Cuba
Solomon McCammon Finney (RC);
Manhattan
‡Bernice May Flemming (HE); Wakefield
Vernett Edward Fletcher (Ag); Manhattan
Carl Edgar Fogleman (ME); Parsons
*Kenney Lee Ford (Ag); Seneca
Addison Forrester (GS); Manhattan
Edward Raymond Frank (VM); Manhattan
Martin Frederick Fritz (GS); Manhattan
Otis Frederick Fulhage (EE); Yates Center
John Silver Fuller (CE); Winfield
Ada Fullinwider (HE); Topeka
Beatrice Edith Gaither (HE); Kansas City
Ruth Emma Gardenhire (HE); Alma
Sam Peter Gatz (Ag); McPherson
Millard Reuben Getty (Ag); Manhattan
Clark Knight Gibbon (EE); Hartford
Frank Gillespie (CE); Garden City
Clarence Fay Gladfelter (Ag); Emporia
Howard Kay Gloyd (GS); Wellsville
Albert Arthur Goering (RC); Moundridge
Veneta Frances Goff (HE); Winkler
Charles Clayton Griffin (Ag); Nickerson
Lou Wesley Grothusen (ME); Ellsworth
La Motte Grover (CE); Salina
Alvin Bentley Haines (EE); Hutchinson
Emmor Weir Hall (RC); Oakley
Queenie Esther Hart (GS); Minneapolis
June Nellie Harter (HE); St. John
William James Hartgroves (Ar); Wamego
‡Irwin Lloyd Hathaway (Ag 1; Grad 2);
Manhattan
Wilda Marguerite Hay (HE); Eskridge
Floyd Chester Healea (CE); Wichita
Bernice Elma Hedge (M); Manhattan
Polly Hedges (HE); Hutchinson
Edwin Hedstrom (Ag); Manhattan
Loren Bryce Hefling (GS); Manhattan
‡Beulah Frances Helstrom (HE 1; Grad 2);
McPherson
Josephine Frances Hemphill (IJ);
Clay Center
Fred Earl Henderson (EE); Dodge City
*George Elwin Hendrix (Ag); Manhattan
Opal Wishard Hepler (HE); Washington
Olive Hazel Hering (IJ); Stafford
Austin Theodore Heywood (Ag); Bennington
Flora Marie Hill (HE); Manhattan
Randall Conrad Hill (GS); Manhattan
Grace Irene Hinnen (GS); Potwin
Ernest Eugene Hodgson (VM); Harveyville
Russel Carl Hoffman (Ag); Haddam
Theodore Thomas Hogan (FME);
Junction City
Geneva Hollis (HE); Fredonia
*Earl Fremont Hoover (VM); Manhattan
‡Max Manley Hoover (Ag); Burlingame
*Richard Hooper (CE); Manhattan
‡Benjamin Francis Houlton (Ag 1; Grad 2);
Florence
Clara Luella Howard (M); Manhattan
Frank Vernon Howard (RC); Manhattan
Orin K. Howe (AE); Manhattan
*Charles Barnus Hudson (Ag); Fort Scott
Lelia Mary Hughes (GS); Kansas City, Mo.
Esther Aldon Huling (HE); Manhattan
James Norman Hume (EE); Humboldt
Mae Amelia Humphrey (HE); Denison
Wilbur William Humphrey (Ag); Manhattan
Herman Tompson Hunter (Ar); Eureka
Bion Shepard Hutchins, jr. (CE);
Mont Ida
Hal Francis Irwin (Ag); Manhattan
Richard Eugene Jansen (ME); Ottawa
Ramon Quintin Javier (VM); Negro Occ.,
P. I.
*Fred Talbot Jenkins (Ar); Manhattan
Mary Eleanor Jensen (GS); Waterloo, Iowa
Lester Eugene Jennings (EE); Zeandale
Arthur Johnson (CE); Manhattan
Bernice Lake Johnson (GS); Simpson
Carl Daniel Johnson (EE); Manhattan
Conrad Hastings Johnson (EE); Latimer
James Franklin Johnson (Ar); La Crosse
Walton Alfred Johnson (ME); Manhattan
Harold William Johnston (ME); Kipp
Charles Archer Jones (Ag); Hiawatha
William Harold Jury (ME); Topeka
Henry Daniel Karns (Ag); Ada
Louis Donald Keller (Ag); Le Roy
Ira David Sankey Kelly (CE); Manhattan
William Crawford Kerr (Ar); Manhattan
Cecil Earl Kielhorn (Ag); Cambridge
Gilbert Raymond Killian (VM); Manhattan
Ferris Francis Kimball (FME); Kansas City
Elmira Wesson King (HE); Elsmore
Lee Travis King (GS); Manhattan
Lucille Kinnamon (IJ); Larned
*Bertie Ray Kirkpatrick (Ag); Paradise
Irvin Bernell Kirkwood (CE); Marysville
Anne Helen Klassen (GS); Inman
*Gustave Louis Krieger (VM); Manhattan
*Fred Franklin Lampton (Ag); Cherokee

* Under auspices of the U. S. Veterans' Bureau.

‡ Also pursuing graduate study.

SENIORS—Continued

- Marie Helen Lamson (HE); Paola
 Raymond Charles Lane (Ar); Manhattan
 Vivian Hazel Lawson (GS); Ottawa
 Ernest Arthur Laude (GS); Humboldt
 Velma Mary Lawrence (IJ); Manhattan
 Ingovar Leighton (HE); West Helena, Ark.
 LeRoy Markle Leiter (CE); Protection
 *John Clyde Lentz (EE); Holton
 Carroll Mendenhall Leonard (ME);
 Manhattan
 James Michael Leonard (EE); Newton
 †Ruth Leonard (GS); Manhattan
 Willis Lloyd Leshner (CE); Dodge City
 *Reese Gardner Lewis (Ag); Emporia
 Mollie Lindsey (HE); Manhattan
 *George Danial Lingelbach (EE); Mineola
 †Earl Milo Litwiller (Ag); Manhattan
 William Karl Lockhart (EE); Humboldt
 Mary Belle Logan (HE); Manhattan
 †Herbert Melvin Low (EE); Topeka
 Ruth Viola Luginbill (HE); Greensburg
 Clarence Joseph Lydick (EE); Anthony
 Henry Landon McCord (ME); Manhattan
 Ernest Carr McCulloch (VM); Manhattan
 Frederick McCloy McElhinney (EE); Riley
 Howard Hutcheson McGee (Ag); Olathe
 John Oliver McIlwaine (GS); Salina
 *Erl Jeremiah McWilliams (Ag); Alta Vista
 †Joseph Taylor Mackay (Ag);
 Kansas City, Mo.
 Aden Combs Magee (Ag); Manhattan
 Frances Emily Mardis (HE); Preston
 Vivian Anna Marley (GS); Manhattan
 †Alice Tweed Marston (GS);
 Wilmington, Del.
 Faith Martin (GS); Winfield
 George Ely Martin (VM); Perry, Mo.
 *Henry John Melcher (EE); Concordia
 Robert Greenwood Merrick, jr. (RC);
 Topeka
 Alva Ernest Messenheimer (EE); Admire
 †Jose Angel Mier (Ag 1; Grad 2);
 Aguascalientes, Mexico
 Andrew John Miller (VM); Manhattan
 †Buford John Miller (Ag); Piedmont
 Frank Miller (ME); Cambridge
 William Taylor Miller (VM); Manhattan
 Ethyl Mills (HE); Manhattan
 Edgar Louis Misegades (EE); Peru
 Harriett Eloise Monroe (HE); Manhattan
 Lena Josephine Moore (HE); Wakarusa
 James Richard Moreland (Ag); Formosa
 †Bud Wesley Morford (ME); Augusta
 Louise Morse (HE); Burns
 Harry Forest Moxley (Ag); Osage City
 Albert Diedrich Mueller (Ag); Hanover
 †George Vernon Mueller (ME); Sawyer
 Meria Kathleen Murphy (HE); Perth
 John Kenneth Muse (Ag); McPherson
 †Walter Emory Myers (Ag); Eskridge
 Jesse Harold Neal (AE); Williamsburg
 Carl Otto Nelson (Ag); Clyde
 Dorothy Lush Nelson (Ag); Altamont
 Margaret Nettleton (HE); Lenora
 Jessie Adelaide Newcomb (HE); Garnett
 Dewey Newcombe (RC); Great Bend
 †Ruby May Northup (GS); Cuba
 Zoe O'Leary (HE); Phillipsburg
 Ignacio Ortiz (IC); Manhattan
 James Edward Parker (RC); Paola
 Robert Thomas Patterson (Ag); Ellsworth
 *Royce Pence (FME); Manhattan
 Ralph Henry Peters (EE); Manhattan
 Alma Eleanore Petrasek (HE); Jennings
 Dorothy Pickard (HE); Lawrence
 Raymond Covert Plyley (GS); Topeka
 †Otto LeRoy Pretz (Ag); Olathe
 Margaret Elizabeth Raffington (HE);
 Hutchinson
 Ernest Lee Raines (Ag); Louisburg
 Simeon Baniaga Rambac (ME);
 Solano, N. V., P. I.
 Marion Elizabeth Randles (HE); White City
 William Rankin (CE); Manhattan
 Ruth Rachel Rannels (GS); Manhattan
 *Alfred Rapp (IC); Manhattan
 Robert Rath (GS); Agenda
 Margaret Marion Reasoner (IJ); Anthony
 Edith Viola Reece (HE); Riley
 Roger Eli Regnier (Ag); Warrego
 Ernest Leo Reichart (Ag); Toledo, Ohio
 Helen Elizabeth Reid (HE); Manhattan
 Harold William Retter (CE);
 North Topeka
 Doris Ione Riddell (GS); Salina
 John Calvin Riddell (CE); Salina
 Ivan Harris Riley (Ar); Newton
 Charles Wesley Roberts (IJ); Oskaloosa
 Max Duane Roberts (Ag); Pomona
 Margaret Beresa Rochford (GS); Osborne
 Mary Jane Roesener (HE); Zeandale
 Paul Gibbons Roofe (Ag); Spring Hill
 Mayetta Roper (HE); Barnes
 †Herbert Arthur Rose (EE); Waldron
 *Morris Emory Rowe (Ag); Winfield
 Glenn Rucker (GS); Burdett
 Easborn Rusco (ME); Clifton
 Mary Katharine Russell (HE); Elkhart, Ind.
 Orpha Eileen Russell (M); Manhattan
 †Sylvia Lanora Russell (GS); Lyons
 Morse Henderson Salisbury (IJ);
 Manhattan
 *Glen Ransom Sawyer (ME); Moline
 Robert Earl Saxton (Ag); Manhattan
 Ruby Sarah Saxton (HE); Manhattan
 †Lawrence Arthur Schaal (Ag); Zeandale
 Ira Schindler (GS); Valley Falls
 Emelie Louise Schneider (HE); Kansas City
 Eben Ellsworth Scholer (CE); Milo
 Everette Clifford Scott (Ag); Galena
 Lester Ralph Sellers (ME); Great Bend
 Paul Morse Shaler (EE); Topeka
 †Ralph William Sherman (Ag);
 Burlington, N. J.
 Ralph Jessup Shideler (IJ); Girard
 Robert Theodore Shideler (CE); Girard
 Nathan James Simpson (ME); Harper
 Dean Olin Smith (CE); Russell
 Ray Leonel Smith (EE); Washington
 Robert Burns Smith (Ag); Colfax, N. Mex.
 Samuel Lewis Smith (ME); Mount Hope
 Zella Kouns Smith (HE); Washington
 Myron Homer Soupene (Ar); Manhattan
 Maurice Burnett Spear (Ag); Bushong
 Clarence Martin Spencer (FME); Emporia
 Edna Josephine Spickerman (HE); Topeka
 Katherine Pearl Spiker (HE); Emporia
 John Steiner (GS); White Water
 Rachel McCune Stewart (HE); Winchester
 Anna Caroline Stewart (HE); Morganville
 †Thomas Bruce Stinson (Ag); Manhattan
 †Austin William Stover (Ag 1; Grad 2);
 Manhattan
 †Raymond Luther Stover (Ag); Manhattan
 Euphemia Faith Strayer (HE); Lawrence
 Fred David Strickler (Ag); Hutchinson
 *Richard Raymond Stucky (Ag); Manhattan
 †*Joseph Frank Swarner (EE); Hartford
 Mildred Pauline Swenson (IJ); Clay Center
 Harry Alcide Swim (EE); Manhattan
 William Henry Teas (Ag); Manhattan
 Alice Elizabeth Thompson (HE);
 Manhattan
 John Hollis Tole (ME); Independence

* Under auspices of the U. S. Veterans' Bureau.

† Also pursuing graduate study.

SENIORS—*Concluded*

- *Chester Tolle (Ag); Manhattan
 William Wesley Trego (ME); Sedgwick
 Florence Ellen True (HE); Perry
 Ethel Florence Trump (HE); Russell
 †Daniel Overton Turner (Ag); Milton
 Nina Winella Uglow (HE); Ames
 Verne Leon Uhlund (Ag); Rozel
 Manuel Valdes (CE); Santiago, Chile
 Helen Margaret Van Gilder (IJ);
 Manhattan
 Lola Beatrice Vincent (HE); Amarillo, Tex.
 *Paul Anthony Vohs (IJ); Osawatomie
 Ferdinand Voiland (RC); Topeka
 George Ellsworth Voiles (CE); Manhattan
 †Walter Henry von Trebra (Ag 1; Grad 2);
 Oswego
 Frank Edward Walbridge (EE);
 Kansas City, Mo.
 Wirt Dudley Walton (Ag); Leavenworth
 *Isom Raymond Ward (EE); Tampa
 William Everette Wareham (RC);
 Manhattan
 Logan Byron Warlich (GS); Manhattan
 George Russell Warthen (Ag);
 Webb City, Mo.
 John Wesley Wasson (ME); Peru
 Edward Watson (Ag); Osage City
 Nora Elaine Watters (HE); Axtell
 Curtis Watts (GS); Winfield
 Lavina Amelia Waugh (M); Oskaloosa
 George Herman Weckel (EE); Garnett
 William Joseph Welker (AE); Coffeyville
 Ruth Elizabeth Welton (HE); Fairview
 †Floyd Lavern Werhan (EE); Bennington
 Winifred West (HE); Kinsley
 †Thelbert Leroy Weybrew (EE); Wamego
 Margaret Maxwell White (HE); Parsons
 Susanna Whitten (HE); Wakarusa
 †Henry Evert Wichers (Ar 1; Grad 2);
 Downs
 Adelaide Louise Wieters (HE); Lanham
 John Camp Wilkins (CE); Kansas City
 Francis Hall Wilkinson (Ar); Manhattan
 *Francis Reid Williams (EE); Manhattan
 Howard Williams (EE); Manhattan
 Raymond Montrose Williams (VM);
 Kansas City
 Maurice Marion Williamson (Ag);
 Kansas City
 Oral Martin Williamson (Ag); Kansas City
 †Cecil Cline Wilson (Ag 1; Grad 2); Canton
 Fred Emery Wilson (Ar); Kinsley
 Ivan Venton Wilson (IC); Tonganoxie
 Karl Marx Wilson (IJ); Concordia
 *Mannie Ray Wilson (EE); Luray
 Mary Wilson (GS); Topeka
 *Walter Wisnicky (Ag); Green Bay, Wis.
 Orwin Chester Wood (EE); Topeka
 Philip Reding Woodbury (Ag); Olivet
 Gilberta Woodruff (RC); Parsons
 Lucile Woulfe (GS); Ardmore, Okla.
 Bernie William Wright (Ag); Arkansas City
 Leroy Lawrence Wurst (EE);
 Russell Springs
 Raymond Yoder (EE); Newton

JUNIORS

- Emily Adams (IJ); Maplehill
 Ralph Adams (RC); Norton
 Waldo Emerson Atkins (Ag); Valley Falls
 Agnes Aldridge (HE); Kansas City
 Fred Allerton (VM); Hamlin
 *Fred Denman Allison (Ag); Hazelton
 Dana Hoffman Anderson (RC); Topeka
 Ruth Bachelder (IJ); Fredonia
 George Myron Baker (CE); Wichita
 John William Ballard (EE); Alma
 August Irwin Balzer (Ag); Inman
 Nora Elizabeth Bare (HE); Protection
 Florence Ann Barnhisel (HE); Wichita
 Paul Baum Bascom (RC); Wichita
 Capitola Belle Bassett (HE); Okmulgee, Okla.
 William Neff Batdorf (IJ); Burlington
 Vincent Edward Bates (Ag);
 Kansas City, Mo.
 Lawrence Edwin Baty (EE); Manhattan
 Everett Ernest Bell (RC); Americus
 Ralph William Bell (EE); Kinsley
 Edith Elenora Bengston (HE); Salina
 Howard Orville Bennett (EE); Wamego
 *Glen Dennis Beougher (Ag); Oakley
 Paul Eugene Berger (RC); Salina
 George Dean Berlin (EE); Ottawa
 Catherine Hope Bernheisel (HE); Hartford
 Theodore McKinley Berry (EE); Manhattan
 Albert Lawrence Biehn (GS); Hebron, Neb.
 Aubrey Ellsworth Bilger (GS); Hunter
 Fred Goff Billings (Ar); Manhattan
 Jarvis Bills (Ag); Magnolia, Mo.
 Hilda Black (HE); Lewis
 Tina Blanchard (GS); Kansas City
 Mary Boid (HE 1; GS 2);
 Culbertson, Mont.
 Emogene Bowen (HE); Manhattan
 Kenneth Karl Bowman (EE); Manhattan
 Allen Ward Boyce (RC); Minneapolis
 Earl Huff Bradley (CE); Winfield
 Maurice Bradley (CE); Winfield
 Margaret Angelina Brenner (HE); Waterville
 Grace Elizabeth Bressler (GS); Manhattan
 John Brightman (EE); Manhattan
 Edwin Lewis Brower (VM); Junction City
 John Channing Brown (RC); Blue Rapids
 Vira Brown (HE); Edmond
 Chester Leroy Browning (Ag);
 Kingsville, Mo.
 Hugh Carl Bryan (Ag); Osage City
 Russell Buck (ME); Topeka
 Kerney Richardson Bunker (ME);
 Kansas City, Mo.
 Phyllis Winifred Burtis (HE); Manhattan
 Vivian Hall Bushong (HE); Manhattan
 Lottie May Butts (GS); Manhattan
 Esteban Aguilar Cabauangan (EE);
 Reina Mercedes, P. I.
 George Henry Callis (GS); Chase
 Harold Edwin Callis (GS); Chase
 Arden Griffith Campbell (GS); Manhattan
 Benjamin Augustine Campbell (Ag);
 Denison, Tex.
 Jessie Campbell (HE); Attica
 Lamar Perkins Caraway (VM); Manhattan
 *Auro Melvin Carkuff (Ag); Manhattan
 Arnold Jackson Carmean (CE);
 Valley Falls
 *Doyle Henry Carter (Ag); Trenton, Mo.
 John Carter, Jr. (Ag); Elkhart
 *Sherman Harold Carter (EE); Le Roy
 Donald Bernard Cash (EE); El Dorado
 *Norris Dodsworth Cash (VM); Manhattan
 Gertrude Claire Catlin (HE);
 Fairbury, Neb.
 Margaret Elma Chandley (GS); Kansas City
 Grovener Cecil Charles (CE); Wichita
 Nathan Goodman Chilcott (EE); Mankato
 Ralph Bennett Chilcott (ME); Mankato
 Louis Edward Childers (IJ); Wamego
 Harold Lincoln Church (VM);
 University Place, Neb.

* Under auspices of the U. S. Veterans' Bureau.

† Also pursuing graduate study.

JUNIORS—Continued

- Charles Samuel Clapper (IJ); Minneola
Helen Clark (HE); Valley Center
Lois Amelya Clark (IJ); Delphos
Charles Warren Claybaugh (IJ);
Pretty Prairie
Eugene Arthur Cleavinger (Ag); Lowemont
Charles Robert Clothier (ME);
Santa Maria, Cal.
Owen Herman Coberly (GS); Garnett
Evelyn Charlotte Colburn (HE); Manhattan
Herbert Burns Colby (EE); Abilene
Morton Daniel Conard (FME); Topeka
Ida Augusta Conrow (HE); Manhattan
Bernard John Conroy (Ag); Manhattan
Nelle Agnes Conroy (HE); Beloit
Grace Constable (GS); Minneapolis
Elsie Leigh Cope (GS); Beattie
Donald Corby (EE); Manhattan
Mary Ellen Cormany (GS); Tulsa, Okla.
Helen Elizabeth Correll (IJ); Manhattan
Gavin Merle Crawford (EE); Leon
Elmer Remington Crooks (Ag); Topeka
Ethel Anne Crumbaker (GS); Manhattan
Edward Cunningham (Ag); Manhattan
Grace Ruby Curl (HE); Olsburg
Erma Evangeline Currin (RC); Manhattan
Russell Dwight Dade (RC); Hutchinson
William Alsop Dalton (GS); St. George
Walter Jones Daly (Ag); Tucson, Ariz.
May Danheim (HE); Blue Rapids
Georgia May Daniels (PSM); Wichita
Ethyl Adeline Danielson (HE); Clyde
Dorothy Davies (GS); Manhattan
Jessie Hedden Davis (M); Manhattan
Grace Lavine Davison (HE); Michigan Valley
Ruth Louise Davison (HE); Kansas City, Mo.
Virginia Deal (HE); Kansas City, Mo.
Helen Sarah Deely (HE); Norton
Eleanor Elizabeth Dempsey (GS); Manhattan
Lloyd Alvin Deniston (RC); Manhattan
Rowland Leeds Dennen (RC); Manhattan
Mary Sisson Dey (HE); Wellington
Charles Edward Dominy (AE); Atwood
Arthur Doolen (Ag); Manhattan
*Gerald Roderick Dowd (VM);
San Francisco, Cal.
Hilda Frost Dunlap (IJ); Blue Rapids
*Herbert Ivan Durham (EE); Norton
Alberta Edelblute (GS); Manhattan
Harold George Ehrhardt (Ag 1; GS 2);
Westphalia
Harold Chester Elder (AE); Mankato
Elizabeth Elledge (HE); Parsons
Blanche Elliott (HE); Caney
George Forbes Ellis (Ag); East Las Vegas,
N. Mex.
Delbert Frederick Emery (GS); Parsons
Lyle Wayne Ernst (Ag); Manhattan
Clifford Wayne Eshbaugh (CE); Manhattan
Harold Waldo Evans (CE); Manhattan
Ralph Emerson Ewing (AE); Manhattan
Raymond Philip Farquhar (ME);
Lawton, Okla.
Ronald Dale Finney (CE); Topeka
Alice Fisher (IJ); Manhattan
Eugene Stevenson Floyd (RC); Salina
Elizabeth Merle Ford (HE); Maryville, Mo.
Robert Miles Forrester (RC); Manhattan
Harvey Dwight Franklin (ME); Horton
Neosho Louise Fredenburg (HE);
Council Grove
Audrey Genevieve Freeman (GS);
Junction City
Hilma Marie Freeman (GS); Courtland
Cullin George Frey (IC); Manhattan
John Charles Frey, jr. (Ag); Manhattan
Willis Frudden (Ar); Charles City, Iowa
Victorine Fry (HE); Claremore, Okla.
Gertrude Fulton (HE); Harper
Frances Opal Gaddie (GS); Bazaar
Karleen Garloch (HE); Kansas City, Mo.
Willis Ewart Garratt (EE); Lawrence
John French Gartner (IJ); Manhattan
*Hugh Alexander Garvie (FME); Abilene
Lorena Esther Gathers (GS); Miltonvale
Harold Leeton Gillman (CE); Salina
Albert William Gillman (RC); Salina
George William Given (GS); Manhattan
Herbert Albert Goering (RC); Moundridge
*John Calvin Goheen (ME); Clay Center
Wallace Chester Goodell (RC); Independence
Arthur Ernest Goodwin (IJ); Concordia
Mary Lois Gorton (HE); Manhattan
*Joseph Greer (VM); Pitcairn, Pa.
Ben Grosse (Ag); Jamestown
*Harry Ludwig Gui (Ag); St. Louis, Mo.
Robert Alfred Gwinn (RC); Anthony
Frank Alexander Hagans (Ag); Manhattan
Florence Ina Haines (HE); Haven
John Prentiss Hale (GS); Hill City
Albert Alexander Haltom (Ag); Alden
Gertrude Claire Hamilton (HE); Wichita
Floyd Vivian Hanson (ME); Assaria
Wilbur Henry Hanson (GS); Concordia
Clarence Leslie Harden (Ag); Minneapolis
George Thomas Harkins (CE); Ottawa
Florence Harris (HE); Manhattan
Jerry Milton Harris (Ag); Eudora
William Gerald Harris (GS); Rose Hill
Bernard Cecil Harter (IJ); El Dorado
Emma Kate Hassler (HE); Chapman
Walter Dietrich Hemker (AE); Great Bend
Alda Henning (HE); Burlington
Martin Henrichs (Ag); Humboldt
Mabel May Herr (HE); Medicine Lodge
David Pollock Hervey (RC); Manhattan
Mary Adelia Higinbotham (GS); Manhattan
Raymond Meredith Hill (EE); Burrton
Verne Clifford Hill (VM); Manhattan
Lona Gertrude Hoag (GS); Manhattan
Carl Fred Hoelzel (Ar); Manhattan
Harold William Hoffhines (GS); Manhattan
Claude Gale Holden (Ag); Ford
Chester Elmer Hommon (CE); Smith Center
James Wing Honeywell (GS); Manhattan
Fred Charles Horan (Ag); Manhattan
*Jennie Horner (HE); Grainfield
George Christopher Horning (CE); Victor
William Nelson Hornish (CE); Pratt
Frank Valburg Houska (CE); Washington
Ezra Howard (CE); Garnett
Walter Henry Hukriede (Ag); Cleburne
*Floyd Edgar Hull (VM); Downs
Bernice Humbert (Ar); Hutchinson
Mary Melvina Hungerford (HE); Randolph
Colbert Clinton Huntington (Ag); Eureka
Susie Katharon Huston (HE); Manhattan
Ozeta Alice Hutchison (HE); Canton
Vance Lavete Hybskman (EE); Corning
*Carl Grant Iles (Ag); Manhattan
Everett Harold Ingersoll (GS); Overbrook
*Irwin Ingram (Ag); Lawrence
Charles Frank Irwin (CE); Le Roy
Fred Irwin (GS); Manhattan
Anna Alice Jacobs (GS); McCune
Julia Aurelia Jennings (HE); Little River
Erma Vandella Johnsmeyer (HE); Manhattan
Earl Gladstone Johnson (AE); Manhattan
Milo Herbert Johnson (GS); Chanute
William Archie Johnston (CE); Concordia
Clifford Charles Jolley (CE); Manhattan
Zardus Jones (RC); Manhattan
Harry Ernest Jung (ME); Salina
Della Matilda Justice (HE); Olathe

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JUNIORS—Continued

- Grace Josephine Justin (IJ); Manhattan
 John Clower Keas (Ag); Chanute
 Ruth Marian Kell (HE); Manhattan
 Ethel Marjorie Kelly (HE); Newton
 Eugene Edward Kelly (GS); Wichita
 Ruth King (HE); Windom
 Margaret Isabel Kline (HE); Hydro, Okla.
 Nilie Charlotte Kneeland (GS); Liberal
 Winifred Ellen Knight (GS); Medicine Lodge
 Dorothy Maude Knittle (PSM); Manhattan
 Kenneth Knouse (Ag); Valley Falls
 Ida Frances Koenig (HE); Kansas City, Mo.
 Schuyler Franklin Kollar (Ag); Manhattan
 Olympia Ethel Kubik (HE); Caldwell
 Elmer Carl Kuhlman (EE); Pratt
 Laurene Kuns (PSM); McPherson
 Mabel Ellen Lamoreux (HE); Waterville
 Roy Clinton Langford (GS); Manhattan
 James Waggoner Lansing (RC); Chase
 *Smith Herman Lapsley (EE); Manhattan
 Mary Isabel Laughbaum (HE);
 Oklahoma City, Okla.
 Hallie Laughlin (HE); La Crosse
 Myrtle Agnes Lenau (HE); Hobart, Okla.
 Gray Levitt (RC); Wilson
 Jeanne Carol Lingenfelter (IJ);
 Kansas City, Mo.
 Frank Bertrand Linn (Ag); Manhattan
 Fred Wallace Lipps (CE); Abilene
 Charles Alden Logan (AE); Eskridge
 Charles Elbert Long (RC); Hutchinson
 Archie Ricklefs Loyd (AE); Hiawatha
 *Archie MacDougall Lukens (ME); Manhattan
 Harry Francis Lutz (RC); Sharon Springs
 Betty McCoin (GS); Wichita
 Elsie Pearl McCollum (HE); Bogard, Mo.
 Hazel McConnell (HE); Russell
 George Raymond McGinn (EE); Winfield
 Randall Birdell McIlvain (EE);
 Smith Center
 Wayne McKibben (EE); Wichita
 George John McKimms (EE); Westmoreland
 Donald Craig McMillin (Ag); Lamar, Colo.
 Irwin Keyes McWilliams (ME); Girard
 Harry Leroy Madsen (EE); Natoma
 Lee Webster Marshall (Ag); Manhattan
 Ethel Martin (HE); Turon
 Lucile Martin (RC); Clay Center
 Fred Charles Mason (CE); Lincoln
 Mildred Cecelia Mast (GS); Goff
 William Joseph Matthias (Ag); Perry
 Ross Wesley May (RC); Holton
 Rolla Daniel Mayden (CE); Manhattan
 Roy Hershell Mears (EE); Parsons
 Earl Ernest Meils (ME); South Haven
 William Hozea Messenger (RC); Manhattan
 Ernest Miller (ME); Coffeyville
 Louis Cunningham Miller (GS); Norton
 Florence Margaret Milligan (HE);
 Red Rock, Okla.
 Edwin Moberg (VM); Worthington, Minn.
 Julia Melvina Moehlman (GS); Manhattan
 George Montgomery (Ag); Sabetha
 Mildred Moore (HE); Carthage, Mo.
 Mary Hope Morris (GS); Manhattan
 Rael Fisher Morris (SE); Oswego
 Sarah Sylvania Morris (HE); Manhattan
 Ralph Parkinson Moyer (ME); Lyndon
 Gladys Muilenburg (IJ); Palco
 Iva Manilla Mullen (HE); Labette
 Dorothy Munch (HE); Concordia
 Stella Constance Munger (HE);
 Manhattan
 Lyle Smith Munn (RC); Colby
 Vincent Werner Nass (EE); Atchison
 Eleanor Ann Nelson (HE); Nettleton, Mo.
 *Francis Joseph Nettleton (CE); Lenora
 Margaret Alice Newcomb (GS); Garnett
 Ralph Merrill Nichols (CE); Oskaloosa
 Bernice Roe Noble (HE); Manhattan
 Dorothy Esther Noble (HE); Wichita
 Philip Myron Noble (CE); Manhattan
 Edith Marie Norris (HE); White Water
 Floyd Orlando Northrop (IJ); Manhattan
 Helen Frances Northup (HE); Cuba
 Helen Grosvenor Norton (RC); Chanute
 John Evans Norton (Ag); Grainfield
 Onie Lindsey Norton (Ag); La Cygne
 Keith Parsons Nowell (EE); Reeds, Mo.
 *Harold Alfred Noyce (Ag); Manhattan
 *Wilmer Lee Oakes (Ar); Manhattan
 Rex Okeson (ME); Fairview
 *Floyd Robert Oliver (CE); Manhattan
 Elver Wayne Osburn (CE); May Day
 Arthur O'Toole (VM); Arnold
 Lowell Henry Paddock (AE); Lakin
 Alice Louise Paddleford (IJ); Cedar Vale
 Mary Alice Patterson (HE); Manhattan
 Irwin Leslie Pefley (CE); Manhattan
 Wendell Woody Perham (RC); Iola
 Robert Harlan Perrill (Ag); Bridgeport
 Elizabeth Perry (HE); Pleasanton
 Edward Petr (RC); Cuba
 Clifford Waybright Phares (EE); Wakeeney
 Helen Sarah Pickens (HE); Lake City
 Myrna Elizabeth Pilley (HE);
 Kansas City, Mo.
 Peter Piper (ME); Manhattan
 Thomas George Pizinger (ME);
 Hoisington
 George Addison Plank (EE);
 Independence, Mo.
 Kenneth Harrison Platt (Ag); Manhattan
 *Armer Porter (VM); Manhattan
 Roy Gaylon Porter (EE); Norton
 Theodore Potter (RC); Natoma
 Mildred Elvira Pound (IJ); Glen Elder
 Josephine Bowen Powers (HE);
 Junction City
 Bruce Pratt (ME); Herington
 Iru Paul Price (EE); Syracuse
 Joseph Price (GS); Valley Falls
 Virgil Dale Proctor (RC); Norton
 Cecil Roy Prose (RC); Macksville
 Carrie Elizabeth Pugh (HE); Kansas City
 Richard Lawrence Pycha (IC); Salina
 Elizabeth Quail (HE); Topeka
 Harry Charles Quantic (GS); Riley
 *Henry Patrick Quinn (IJ); Manhattan
 Glen Bradshaw Railsback (Ag); Langdon
 Frank Randall (ME); Manhattan
 Maxine Ransom (IJ); Downs
 Gladwin Adolph Read (Ag); Manhattan
 Glenn McKinley Reed (Ag); Galesburg
 Hervey Omer Reed (CE); Cassoday
 Virginia Louise Reeder (HE); Troy
 Alexander Frederick Rehberg (EE); Niles
 John William Richards (Ag); Manhattan
 Lois Evelyn Richardson (HE); Manhattan
 Ruby Carol Rickert (IJ); Manhattan
 Arthur Howard Riley (VM); Manhattan
 Alvin Verne Ritts (GS); Topeka
 Norman Losey Roberts (Ar); Manhattan
 Elizabeth Sarah Rodewald (HE); Randolph
 Thomas Ewing Rodgers (IC); Manhattan
 John Imile Rogers (Ag); Manhattan
 Inga Ann Ross (HE); Amarillo, Tex.
 Perie Rumold (FME); Manhattan
 Ralph William Russell (Ag); Jewell
 Gladys LeVillie Sandford (GS); Kansas City
 Alfred Raymond Sargent (Ag); Manhattan
 Jim Fred Savage (VM); Wright
 Elwyn Scheel (EE); Emporia
 Christian William Schemm (EE); Wakeeney

* Under auspices of the U. S. Veterans' Bureau.

JUNIORS—Concluded

- Lester John Schmutz (Ag); Junction City
 Raymond Louis Scholtz (Ag); Frankfort
 Ella Louise Schruppf (HE);
 Cottonwood Falls
 Fred Schultz (Ag); Wathena
 Leo Schutte (EE); Wamego
 Herbert Henry Schwardt (GS); Iola
 Ethel Scott (HE); Burlington
 Robert Ewing Sears (Ag); Eureka
 Alvis Raymond Senter (CE); Ottawa
 Ruby Lavisa Seward (HE); Leon
 Velma Eleanor Shaffer (HE);
 Van Buren, Ark.
 Muriel Beatrice Shaver (IJ); Cedar Vale
 Fred John Sheel (ME); Earleton
 Francis Marlin Sherwood (EE); Grenola
 Donald Angis Shields (RC); Burlington
 Jennetta Frildo Shields (HE); Lost Springs
 Byron Short (IJ); Fredonia
 Bahindas Singh (Ag); India
 Harry Elwin Skoog (Ag); Corbin
 Corinne Alice Smith (HE); Topeka
 Earl Smith (Ag); Pratt
 Julia Smith (GS); Junction City
 Katie Grace Smith (HE); Kingsdown
 Paul Eugene Smith (Ag); Herington
 Vivian Melancthon Solt (ME); Manhattan
 Sarah Elizabeth Southwick (HE); Hoisington
 William Scott Spear (Ag); Olathe
 Glenn Wesley Spring (GS); Manhattan
 Loraine Martin Staley (RC); Garden City
 Arthur Raymond Stark (RC); Goodland
 Grace Ann Steininger (HE); Clay Center
 Everett Olden Stephens (RC); Manhattan
 Theodore Roosevelt Stichel (Ag); Manhattan
 Theodore Still (IC); Tonganoxie
 Gladys Arena Stocker (HE); Concordia
 Sheldon Batchelder Storer (EE); Osborne
 Clark Oliver Stratford (CE); El Dorado
 Theodore Stueber (Ar); Parsons
 Homer Lewis Summers (Ag); Manhattan
 James Kenneth Swales (EE); Kansas City
 Milan Burdette Swartz (IJ); Hiawatha
 Floyd Raymond Swim (IC); Newton
 *Fred James Sykes (Ag); Brewster
 Delos Clifton Taylor (CE); Harveyville
 James Monroe Taylor, jr. (Ar); Manhattan
 Harley Albert Teall (EE); El Dorado
 Daniel Wilson Teare (Ag); Wichita
 Harold Hetherington Theiss (CE); Hutchinson
 Norris Ray Thomasson (EE); Independence
 Laureda Thompson (HE); Manhattan
 Melville Samuel Thompson (GS);
 Manhattan
 Eva Timmons (HE); Riley
 Esther Irene Tracy (HE); Manhattan
 George Edward Truby (Ag); Anthony
 Charles Turnipseed (CE); Arkansas City
 Harry William Uhrig (ME); St. Marys
 Anna Jean Unruh (HE); Pawnee Rock
 Eugene Van Vranken (Ar); Pratt
 Charles Howard Vogel (CE); Arkansas City
 Emil von Reisen (IJ); Marysville
 Gilmore Wann (RC); Hays
 Berenice Ward (HE); Kansas City, Mo.
 Earl Dawson Ward (ME); Elmdale
 Vera Wasson (HE); Neosho, Mo.
 Emory Newton Watkins (Ag); Manhattan
 Raymond Howard Watson (ME);
 Kansas City, Mo.
 Jewell Kimball Watt (Ag); Topeka
 Lathrop Ames Weaver (IJ); Alma
 Howard Gilbert Webber (RC); Manhattan
 Harry Richard Wege (EE); Great Bend
 Glen Weidenbach (EE); Wichita
 Frank Loy Westerman (EE); Wakefield
 Avis Wickham (HE); Manhattan
 Ardis Wilkinson (HE); Manhattan
 Chris Williams (RC); Manhattan
 Hugh Willis (Ag); Eureka
 Claude Leonard Wilson (ME); Ottawa
 Loyal Venice Wimer (EE); Le Roy
 Jessie Helene Winder (HE); Covert
 Paul Raymond Wise (CE); Clear Water
 Ciell Burns Wiseup (IJ); Manhattan
 Glenn Ivan Wood (Ag); Milan
 Winifred Wood (GS); Manhattan
 Oscar Griffith Woody (Ar); Lincoln
 Henry Amos Wright (AE); Welsh, La.
 Maelia Wright (HE); Kansas City
 Marjorie Pearl Wright (HE); Concordia
 *Claude Newton Yaple (Ag); Rago
 Jacob Glenn Yawger (RC); McCracken
 David Yerkes (Ar); Hill City
 Elmer William Young (VM); Manhattan
 Amanda June Zirkle (GS); Berryton

SOPHOMORES

- Neil Adams (Ag); Humboldt
 Robert Paul Aikman (EE); Anness
 Mae Emma Aiman (GS); Manhattan
 Charles Leonard Alberding (Ar); Kiowa
 Vera Ethel Alderman (HE); Arrington
 Richard Howard Allan (RC); Manhattan
 John Franklin Allen (RC); Galena
 Harold Russell Alley (IC); Oxford
 Frank DeMoss Anderson (RC); Iola
 Gladys Marie Anderson (HE); Neosho Falls
 Howard Melancthon Anderson (EE);
 Kansas City
 Paul Lenere Anderson (CE); Soldier
 Lottie Sybell Andrews (GS); Junction City
 Carol Esther Ankeny (PSM); Manhattan
 Mark Winsor Arnold (EE); Toronto
 Ulysses Sam Arnold (EE); Kansas City
 Vernon Asher (RC); Great Bend
 William Allison Asher (Ar); Great Bend
 Dustin Avery (IC); Wakefield
 Margaret Avery (HE); Wakefield
 Walter Erick Axcell (RC); Chanute
 Esther Mary Babcock (HE); Hiawatha
 Albert Heslip Bachelor (RC); Belleville
 Robert Eugene Baehler (Ag); Manhattan
 Roy Bainer (AE); Manhattan
 Carlton McCrary Barber (EE); Concordia
 Herbert Allen Barkley (GS); Ransom
 Harlan Barnes (ME); Bartlesville, Okla.
 Marjorie Fern Barth (GS); Manhattan
 Leon Bartholomew (RC); Mulvane
 Clarence Frederic Bayles (Ag); Garrison
 Paul Everette Bays (EE); Arkansas City
 Ralph Louis Beach (ME); Chanute
 Lucille Minnie Bebb (HE); Reading
 Walter Harold Bell (RC); Manhattan
 Floyd Belt (IJ); Columbus
 Edward Fabian Bender (Ag); Greensburg
 Rhein Benninghoven (ME); Strong City
 Loren Richard Berner (GS); Clifton
 Wilma Biddle (GS 1; HE 2); Hiawatha
 Ruth Ellen Bird (HE); Great Bend
 Ralph Blackledge (IJ); Manhattan
 Mabel Blossom (HE); Holton
 Berthard Charles Bogue (Ag); Manhattan
 Jessie Ellen Bogue (PSM); Manhattan
 Walter Henry Bohnenblust (RC); Riley
 Pearl Eugenia Boid (HE); Culbertson, Mont.
 Roxie Marguerite Bolinger (HE);
 Washington

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SOPHOMORES—Continued

- Hilda Bower (RC); Minneapolis
 Hazel Bowers (HE); Great Bend
 Leslie Bowman (ME); Lebo
 Eugene Brady (EE); Manhattan
 Mary Elizabeth Brandly (HE); Manhattan
 Chauncey Allen Brantingham (RC);
 Kansas City
 Paul Talbott Brantingham (ME);
 Toledo, Ohio
 Harold Bredehoft (EE); Inman
 Miriam Elizabeth Brenner (HE);
 Waterville
 Christian Norman Bressler (RC); Manhattan
 Walter August Brinkman (ME 1; IJ 2);
 Stafford
 Clara Edith Brock (HE); Axtell
 Horace Austin Brockway (Ag); Olathe
 Harold James Brodrick (Ag); Osborne
 Josephine Elizabeth Brooks (HE);
 Manhattan
 Merritt Paul Brooks (Ag); Columbus
 Gerald George Brown (ME); Junction City
 Hale Earnest Brown (EE); Onaga
 Harold Eugene Brown (RC); Longford
 Naomi Mabel Brown (HE); Junction City
 Frank Brownee (Ag); Stafford
 Mamie Ellen Bruce (HE); Blackwell, Okla.
 Aloysius Max Brumbaugh (RC); Home
 Carl Oscar Brummer (IJ); Tipton
 Fred August Brunkau (EE); Ellinwood
 Robert Austin Buchanan (RC); Dwight
 Jessie Viola Burgwin (M); Manhattan
 Carl Elden Burke (RC); Solomon
 Louis Burlie (EE); Anthony
 Ruth Elizabeth Burns (HE); White Cloud
 John Walter Burr (GS); Manhattan
 Charles Earle Burt (GS); Haddam
 Raymond Earl Burton (EE); Haddam
 Edgar Davis Bush (EE); Liberal
 Jess Bushyhead (Ag); Claremore, Okla.
 Archie William Butcher (RC); Solomon
 Winnivere Grace Button (HE); Topeka
 Ira Oran Call (IJ); Downs
 Jesse Clair Campbell (EE); Wakeeney
 Gladys Mae Carder (HE); Langdon
 Sylvia Juliette Carlson (HE); Manhattan
 Mabel Jane Carmean (HE); Wichita
 Virginia Elizabeth Carney (HE);
 Manhattan
 Ralph Melvin Carrel (IC); Topeka
 Mott Titus Carroll (CE); Wichita
 Philip Ray Carter (VM); Bradford
 Thelma O'Dell Carter (RC); Le Roy
 Stanley Caton (Ag); Delmar, Iowa
 Clarence Hart Chase (Ag); Junction City
 George Kenneth Chew (EE 1; RC 2);
 Manhattan
 Mary Chilcott (HE); Esbon
 Edmund Eugene Christman (Ag);
 Joplin, Mo.
 Vera Mabel Chubb (HE); Topeka
 Arty Worth Clark, jr. (EE); Goodland
 Jack Gordon Clark (CE); Leavenworth
 Jonathan Paul Clark (RC); Garden City
 Jessie Julia Clary (IJ); Manhattan
 Thayer Cleaver (AE); Iola
 Orem Richard Clency (RC); Manhattan
 Clyde Henry Cless (Ar); Rossville
 Otto Richard Coburn (CE); Preston
 Thelma Elizabeth Coffin (PSM); Le Roy
 Grace Beulah Cole (GS); Hardin, Mo.
 Leila Belle Colwell (HE); Manhattan
 Earl Leighton Combest (GS); Ransom
 Leslie Roy Combs (IJ); Manhattan
 Frances Winifred Conrow (HE); Manhattan
 Ronald Carlson Cooper (ME); Stockton
 Josephine Bradford Copeland (HE); Salina
 Esther Margaret Cormany (HE);
 Tulsa, Okla.
 Orin Keith Correll (GS); Manhattan
 Katherine Frances Coryell (GS);
 Junction City
 Jack Coulson (IC); Abilene
 Hazel Imogene Craft (GS); Blue Rapids
 Creston Cramer (Ag); Kanorado
 Max Edwin Crannell (Ag); Richmond
 Aletha Bella Crawford (GS); Stafford
 James Miller Crouch (Ag); Clovis, N. Mex.
 Lyle Cushing (CE); Downs
 Eugene Dalrymple (GS); Simpson
 Imogene Daniels (HE); Caney
 Floyd Davidson (GS); Manhattan
 Frank Davis (EE 1; RC 2); Hiawatha
 James Frank Davis (CE); Kansas City
 Claude LeRoy Davison (Ag); Greensburg
 Anna Mae Davy (HE); Lamar, Colo.
 Earl Edgar Dawson (GS); Manhattan
 Virgil Paul Deatherage (EE); Douglass
 Ruth Armacost de Lee (IJ);
 Kansas City, Mo.
 Paxton Harris Dent (IJ); Greensburg
 Ira Gearhart Dettmer (CE); Bushong
 William Emanuel Dial (Ag); Cawker City
 Viola Lula Dicus (HE); Hutchinson
 Herbert Dimmitt (EE); Roswell, N. Mex.
 John Jerome Dlabel (Ag); Wilson
 Lowell Charles Domoney (EE); Downs
 *David Neill Donaldson (AE 1; Ag 2);
 Fort Collins, Colo.
 Thomas Drake (GS); Manhattan
 Eleanor Ferne Drummond (GS); Frankfort
 Margery Lois Dryden (RC); Labette
 Irvin Elvis DuBois (EE); Peabody
 Rida Floy Duckwall (GS); Abilene
 Fred Everett Dunlap (IC); Iola
 Paul Maynard Durland (CE); Irving
 Howard Theodore Dutton (IC); Burlingame
 Lora Marguerite Dye (RC); Logan
 Helen E'lise Eakin (GS); Manhattan
 Ralph Henry Eaton (GS); Wilson
 Homer Lee Edgell (CE); Leavenworth
 Alice Dorothy Edstrom (GS); Clyde
 Orin Ellis (AE); Phillipsburg
 Russell Barton Enfield (GS); Iola
 La Verne Vane Engel (EE); Burr Oak
 David Franklin Engle (VM); Abilene
 Martha Vera Engle (HE); Abilene
 Alice Josephine Englund (HE); Falun
 Fred Page Eshbaugh (Ag); Manhattan
 Darrel Lee Evans (M); Manhattan
 Orrell Corrine Ewbank (GS); Nickerson
 Waldron DeWitt Fair (RC); Medicine Lodge
 Fern Estelle Fairchild (GS); Almema
 Geneva Fern Faley (GS); Manhattan
 Herman Farley (VM); Manhattan
 James Alvin Farmer (ME); St. Joseph, Mo.
 Clayton Farrar (GS); Abilene
 Earl Vern Farrar (ME); Burlingame
 Guy Hubert Faulconer (Ag); El Dorado
 Harry Felton (RC); Hays
 Jewell Ferguson (HE); Coffeyville
 George Joseph Fiedler (EE); Bushton
 Loren Floyd Finkbinder (EE); Clifton
 Delbert Alonzo Finney (RC); Topeka
 Jennie La Rue Fisk (GS); Manhattan
 Olive May Flippo (HE); Abilene
 Mary Jean Flora (HE); Topeka
 Ernest Lowell Florea (CE); Rosalia
 Ernest Rixey Foltz (EE); Belle Plaine
 Loren Henry Ford (EE); Edgerton
 Robert Whitsel Fort (Ag); St. John
 Margaret Lansden Foster (IJ); Manhattan
 Ralph Lloyd Foster (ME); Kansas City, Mo.
 Cecile Mildred Frances (HE); Holton
 Ben Wade Friedel (Ar); Fort Scott
 Forrest Garner (GS); Hiawatha
 Lloyd Albert Gates (EE); Downs
 Bessie Geffert (GS); Manhattan

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SOPHOMORES—Continued

- Susie Charlotte Geiger (HE); Brookville
 Herbert Kyle George (IJ); Altamont
 Will Everett Gibson (CE); Arrington
 Bernice Irene Gilkerson (HE); Seneca
 Marie Gilmore (GS); Herington
 Dorothy Edith Girton (HE); Minneapolis
 Irene Glenn (HE); Manhattan
 Marie Sarah Glenn (HE); Manhattan
 Clyde Lee Gooding (VM); Manhattan
 Ira Herbert Graham (EE); El Dorado
 Lola Jane Graham (HE); Manhattan
 Earl Francis Graves (VM); Manhattan
 Dorothy Inez Greve (IJ); Earlton
 Raymond Edgar Griggs (EE); Manhattan
 Merle Sarah Grinstead (HE); Manhattan
 Frank Perry Gross (Ar); Abilene
 Harold Donovan Grothusen (CE); Ellsworth
 *William Wallace Gunselman (Ag); Holton
 Theodore Fowler Guthrie, jr. (Ag);
 Saffordville
 Chester Walton Haas (GS); Larned
 Joe Douglass Haines (RC); Manhattan
 Kenneth Waldo Halbower (Ag); Anthony
 Helen Bertine Hale (GS); Kansas City, Mo.
 Mamie La Clede Hall (HE); Augusta
 Mary Olive Hall (IJ); New Albany
 Wesley Richmond Hansen (EE); Wichita
 Hope Mildred Harrison (GS); Hugoton
 Lowell Newell Harter (GS); Herington
 Wilma Gwendolyn Hartley (HE);
 Manhattan
 Nelle Alice Hartwig (GS); Goodland
 Glenn Cecil Hatfield (CE); Wichita
 Louise Susan Hattery (HE); Manhattan
 Marjorie Wayne Hawthorne (HE);
 Gypsum City
 John Vance Hays (GS); Manhattan
 Lucile Beatrice Heath (M); Wakefield
 Senn Hunter Heath (ME 1; RC 2);
 Enterprise
 Marjorie Elizabeth Heimerich (GS);
 Clay Center
 Elma Leon Hendrickson (GS); Kansas City
 Everett Merle Hendrickson (CE); Manhattan
 Christie Cynthia Hepler (HE); Manhattan
 Rachel Nancy Herley (GS); Topeka
 Ray Edward Herman (GS); Kingman
 Francis Floyd Herr (Ag); Medicine Lodge
 Earl Howard Herrick (GS); Colony
 Mary Jane Herthel (HE); Clafin
 Emma Hilton (HE); Caney
 Earl Lomas Hinden (Ag); Strong City
 Mildred Faye Hinnen (GS); Potwin
 Foster Asher Hinshaw (EE); Lyons
 Ruth Laura Hochuli (GS); Holton
 Allen Hodshire (ME); Coffeyville
 Constance Erma Hoefler (HE); Kaw, Okla.
 Austin Clair Hoffman (Ag); Abilene
 Clifford Andrew Hollis (RC); Fredonia
 Lionel Holm (Ag); Denmark
 Edith Josephine Holsinger (GS); Kansas City
 *James Ralph Hoover (EE); Manhattan
 *Martin Horigan (CE); Frankfort
 Agnes Marie Horton (HE); Geuda Springs
 Allen Gerald Hotchkiss (EE); Manhattan
 Wilma Irene Hotchkiss (HE); Manhattan
 Virgil Earl Houglund (EE); Beloit
 Paul Edgar Hovgard (ME); Abilene
 Ralph Taft Howard (RC); Mount Hope
 Taylor Howard (ME); Garnett
 Dorothy Elizabeth Howe (GS); Manhattan
 Margaret Joye Howe (GS); Manhattan
 Clay Eugene Howerton (RC); Chanute
 Howard Frederick Huber (GS); Leonardville
 Harry Newman Hudson (CE); Topeka
 Rex Ronald Huey (RC); Louisville
 Katherine Audrey Hugunin (HE); Kirwin
 Raymond Percy Hunsberger (GS);
 Mount Hope
 Clare Hurst (HE); Sedan
 Fahy William Hurst (RC); Manhattan
 Winona Marjorie Hurst (GS); Sedan
 Victor Carl Hurtig (VM); Delphos
 Gerald Ibach (Ar); Ponca City
 Ethel Sadie Iles (HE); Manhattan
 Harry Isham (ME); Coffeyville
 Bernice Georgia Issitt (GS); Navarre
 Hazel Grace Issitt (GS); Navarre
 Arthur Amos Jackson (Ag); Westmoreland
 Carlton Joseph Jackson (Ag); New Albany
 Luevonia Jackson (HE); Lawrence
 Laurel Irene Jarrett (GS); Thayer
 William Harold Jeffrey (CE); Manhattan
 Emma Caroline Jehlik (HE); Cuba
 Lula Ruth Jennings (HE); Greenwood
 *Adolph George Jensen (Ag); Manhattan
 John Erik Johnson (RC); Gardner
 Lillie Marie Johnson (HE); Walsburg
 Raymond Julian Johnson (EE); Manhattan
 Reuben Milton Johnson (CE); Manhattan
 *George Frederick Johnston (EE 1; GS 2);
 Topeka
 John Johnston (GS); Cedar
 Eri John Joines (Ag); Clyde
 Dwight Clovis Jones (IC); Turon
 Esther Geneva Jones (HE); Keats
 Eunice Ethel Jones (GS); Keats
 Jesse Allen Jones (VM); Camden Point, Mo.
 Claire Jordan (GS); Jewell
 Rudolph William Jordan (RC); Manhattan
 Melvin Elwood Karns (EE); Bucklin
 Garnet Elizabeth Kastner (HE); Manhattan
 Leland Edward Keefer (CE); Salina
 Frank Keller (ME); Humboldt
 Frederick Leroy Kelley (ME); Quinter
 Leonard Edwin Kelly (RC); Newton
 John Melville Kimball (CE); Newton
 Jesse David Kimport (Ag); Norton
 Ralph Emerson Kimport (GS); Norton
 Everette Kenneth Kindig (GS); Olathe
 Helen Elise King (M); Manhattan
 Helen Florence Kirk (PSM); Scott City
 Vernon Russell Kiser (CE); Tipton
 Earl Martin Knepp (Ag); Frankfort
 Frances Irene Knerr (GS); Manhattan
 Ruby Bishop Knorp (GS); Hazelton
 Fritz Koch (RC); Burlington
 Wilfred Jonathan Kraus (Ag); Hays
 Leona Gertrude Krehbiel (GS); Moundridge
 Charles Krone (VM); Delphos
 Vanda Faith Laman (HE); Portis
 Harold Cecil Lantis (Ag); Newton
 Ruth May Larsen (HE); Courtland
 Ralph Gerald Larson (CE); Leonardville
 *Willard Larson (GS); Manhattan
 Donald Earl Lathrop (Ag); La Harpe
 Mary Ella Lee (HE); Lawrence
 Warren Shinkle Lemen (RC); Fontana
 Louis Wirt Lemert (EE); Cedar Vale
 Julian Everett Lenau (ME); Hobart, Okla.
 John Henry Lewis (RC); Tonganoxie
 Ruth Agnes Limbocker (HE); Manhattan
 Henry Lewis Lobenstein (Ag);
 Bonner Springs
 Velma Edna Lockridge (IJ); Wakefield
 Carl Walter Londerholm (CE 1; RC 2);
 Kansas City, Mo.
 Ruth Engel Long (HE); Manhattan
 Marie Loop (IJ); Beloit
 E. R. Lord (RC); Hutchinson
 Thomas Edward Lorson (RC); Chapman
 Mary Euphrasia Lowe (HE); Manhattan
 Gladys Loy (PSM); Aurora, Mo.
 Mildred Loy (PSM); Aurora, Mo.
 Horace Luty (CE); Kiowa

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SOPHOMORES—Continued

- George Ernest Lyness (Ag); Walnut
 Calvin Steward Lyon (EE); Faulkner
 Thelma Geraldine McBride (HE); Selden
 James Theodore McBurney (ME);
 Manhattan
 Wayne Matour McClelland (RC);
 Coffeyville
 Nelle Rebecca McComb (HE); Topeka
 Russell Emery McConkey (CE);
 Lawton, Okla.
 Sidney Allyn McCracken (RC); Overbrook
 Harry Loyd McGee (EE); Ramona
 John Joseph McGrath (EE); Holton
 Helen McIver (HE); Abbyville
 Mark James McKeeman (RC); Manhattan
 Wilmer Johnston McMillin (Ag);
 Lamar, Colo.
 Harold Hartwell McNeely (RC); Lang
 Ralph Emerson Machin (EE); Russell
 Roberto Victor Macias (Ag);
 Zacatecas, Mex.
 Donald Elson MacQueen (IC); Salina
 Miriam Louise Magaw (GS); Topeka
 Alice Gertrude Magee (HE); Manhattan
 Harold Parker Mannen (IJ); Lincoln
 Leslie Louis Marsh (Ar); Chanute
 Arling Willard Marshall (EE); Manhattan
 Robert Raymond Marshall (GS); Clifton
 Paul Gordon Martin (CE); Manhattan
 Robert Beaumont Mason, jr. (Ag);
 Neosho, Mo.
 Ethel Mae Meek (HE); Hiawatha
 Joseph Chester Meek (RC); Hiawatha
 Jerome Jacob Meissenheimer (CE);
 Hiawatha
 Bernard Isaac Melia (Ag); Ford
 Mildred Dorothy Meyer (HE); Kansas City
 Frank Allen Meyers (RC); Oakland
 Mildred LaVina Michener (M); Mulvane
 John Louis Mildrexter (RC); Norton
 Ansel Dwight Miller (EE); Belle Plaine
 Earl Miller (EE); Clearwater
 Elvas Miller (IJ); Marysville
 Glenn Thomas Miller (GS); Winchestr
 Lucille Eunice Miller (PSM); Logan
 Phyllis Toeus Miller (HE); Meade
 Theodore Harry Miller (EE); Kansas City
 David McBeth Mirns (RC); Garden City
 *Thomas Adolphus Mitchell (GS); Holton
 Cornelius Henry Mobiley (VM);
 Kansas City
 Sarah Idabelle Monroe (PSM); Manhattan
 Chalmers Walter Moore (RC); Liberal
 *Leo Albert Moore (GS); Manhattan
 Veta Clara Moore (HE); Claremore, Okla.
 Charles Edgar Moorman (M); Manhattan
 Fred Roy Mouck (ME); Liberal
 Regina Muckenthaler (HE); Paxico
 Kenneth Berkley Mudge (EE); Salina
 Loran Albert Murphy (EE); Burlingame
 Harriet Helen Myers (Ag); Americus
 Lenora Maxine Myers (HE); Douglass
 Ruth Ann Naill (IJ); Herington
 Mildred Neilson (HE); Concordia
 Ethel Mae Nelson (HE); Tecumseh
 William Anthony Nelson (EE); Dwight
 William Harold Newhard (RC); Peabody
 Harry Dale Nichols (EE); Liberal
 Mildred Mary Nickles (HE); Abilene
 Clifford Oliver Nielson (CE); Independence
 Roy Nipps (ME); Phillipsburg
 Anna Eleanor Nohlen (GS); Cleburne
 Loren Carlston Nordeen (RC); Dwight
 Vernon Martin Norrish (EE); Manhattan
 Alton Brooks Nuss (CE); Abilene
 Loren Manuel Nuzman (GS); Manhattan
 Elmer Dow Nygren (EE); Manhattan
 Bernice Ruth O'Brien (RC); Manhattan
 Bertha Ruby O'Brien (RC); Manhattan
 Max O'Brien (RC); Humboldt
 Willis Frank O'Daniel (Ag); Westmoreland
 Merle Augustus Ogden (EE); Herington
 Letha Bernice Olson (HE); Oakley
 Trena Matilda Olson (HE); Lincoln, Neb.
 *Wayne Santee O'Neal (VM); Manhattan
 Maurice Edwin Osborne (Ag); Partridge
 Esther Gladys Otto (HE); Riley
 Lillian Frances Oyster (RC); Paola
 Norman Edward Palmquist (Ar); Manhattan
 Lowell Bracken Parsons (IJ); Manhattan
 Ira Lloyd Patterson (Ar); Ellsworth
 Mabel Dora Patton (HE); Chase
 Richard Donald Patton (Ag); Newton
 James Ernest Payne (GS); Manhattan
 Will Pears (EE 1; Ag 2); Clay Center
 Zurlinden Lafayette Pearson (Ag 1; GS 2);
 Manhattan
 Mary Christina Pelton (HE); Robinson
 Robert Perkins (CE 1; RC 2); Oswego
 Austin Harold Pfeiffer (EE); Hamlin
 Margaret Smith Ploughe (IJ); Hutchinson
 Elvin Theodore Plowman (GS); Jewell
 Hazle Alice Poole (GS); Lovewell
 Paul Morris Poole (CE); Galena
 Harold Edwin Portenier (CE); Phillipsburg
 Harold Morgan Porter (EE); Topeka
 Albert Wesley Pressgrove (Ag); Manhattan
 James Wilbur Radford (RC); Mulvane
 Rosemary Railsback (HE); Langdon
 Velma Estelle Randall (HE); Manhattan
 Laverne Raynesford (EE); Salina
 Lyle Cheadle Read (EE); Clay Center
 Mildred Vivian Reasoner (M); Anthony
 Emma Anne Rebman (HE); La Harpe
 Alzina LaVerne Reed (HE); Wakefield
 William Benedict Reed (Ar); Glasco
 Mary Adele Reese (GS); Leoti
 *George Ambrose Reid (EE); Manhattan
 Grace Lowena Reitzel (HE); Waterville
 Gladys Viola Renfro (HE); Red Cloud, Neb.
 Harold George Rethmeyer (EE); Topeka
 Willetta Reynolds (GS); Pratt
 Harold Clifton Rhine (GS); Manhattan
 Mabel Rhine (IJ); Wamego
 Glenn Lavern Rhoades (ME); Alma
 Ralph Henry Rhoades (CE); Newton
 Wilda Aileen Rhodes (PSM); Manhattan
 Frank Lee Richards (Ag); Manhattan
 Lewis Jones Richards (GS); Manhattan
 Lois Thomas Richards (ME); Parsons
 Irving Adolphus Rickert (RC); Manhattan
 Thelma Gladys Rickey (GS); Phillipsburg
 James Truman Roberts (Ag); Manhattan
 Roy Lee Roberts (ME); Garden City
 Kenneth Gregg Robinson (RC); Manhattan
 Harold William Roebke (Ag); Clifton
 Arthur Lincoln Rogers (EE); Manhattan
 Bernice Marie Rogers (PSM); Abilene
 Bruce Abner Rogers (RC); Manhattan
 Samuel Nicholas Rogers (AE); Manhattan
 Harvey Wayne Rogler (Ag); Bazaar
 Helen Leone Rogler (HE); Bazaar
 Nicol Gosler Rogler (CE); Matfield Green
 Bennie Albert Rose (ME); Waldron
 Franklin Thomas Rose (GS); Kansas City
 Dorothy Neleh Rosebrough (HE); Topeka
 Eber Vernon Roush (GS); Lebanon
 Christian Elmer Rugh (EE); Topeka
 Davida Jane Russell (IJ); Manhattan
 Lawrence Oscar Russell (AE); Manhattan
 Myron Edward Russell (M); Manhattan
 Elvin Rutherford (EE); Manhattan
 Grace Samson (HE); Topeka
 Rafael Sanchez (Ag); Napotlan, Mexico
 Dorothy Sanders (M); Manhattan
 Harold Davis Sappenfield (IJ); Fredonia
 William Merle Savage (EE); Durham

* Under auspices of the U. S. Veterans' Bureau.

SOPHOMORES—Continued

- William Henry Schindler (Ag); Valley Falls
 Harvey Wilbur Schmidt (CE); Abilene
 Lawrence Gilbert Schmutz (GS); Junction City
 Paul Schopflin (Ag); Kansas City
 Derald Henry Schultz (Ag); Miller
 Grace Dorothy Schultz (HE); Manhattan
 Richard Schultz (EE); Wichita
 Glen Owen Schwandt (EE); Manhattan
 Emma Katherine Scott (HE); Kirwin
 Flora Louise Scott (PSM); Waterville
 Irene Seiple (HE); Quinter
 Grace Margaret Selden (GS); Bigelow
 Lester William Servis (CE); Rock
 Sheridan Settler (Ag); Council Grove
 Ethel Viola Sexton (HE); Abilene
 Thelma Irene Sharp (HE); El Dorado
 Clara Iola Shaw (HE); Wamego
 Jack William Sheetz (CE); Harveyville
 Marybelle Sheetz (HE); Chillicothe, Mo.
 Harold Maurice Shepard (RC); Hutchinson
 Paul Arthur Shepherd (EE); Harveyville
 Charles Emmett Sherer (Ag); Mullinville
 Ralph Harley Sherman (RC); Iola
 John Shirkey (Ag); Madison
 Howard Eugene Shrauner (CE 1; Ag 2);
 Protection
 Marjorie Lee Shultice (PSM); Manhattan
 James Carl Sipes (Ag); Great Bend
 Robert Oliver Sittler (Ag); Axtell
 Harry Byron Skinner (RC); Manhattan
 Alice Geneva Smith (IJ); Agenda
 Bessie May Smith (HE); Fredonia
 George Waite Smith (Ar); Hutchinson
 Leslie Ben Smith (GS); Neodesha
 Mabel Rachel Smith (HE); Eskridge
 Patricia Smith (HE); Topeka
 Esther Olivia Snodgrass (HE);
 Talmage, Neb.
 James Frederick Snyder (CE); Monrovia
 Maynard Harold Solt (IC); Manhattan
 Elizabeth Catherine Sorenson (HE);
 Kansas City
 Clara Doris Sours (HE); Amsterdam, Mo.
 Paul Speer (ME); Olathe
 Gwendolyn Roberta Springer (PSM); Goff
 Clarence Sprout (Ag); Mullinville
 Cleta Agnes Staats (GS); Coats
 Dorothy May Stahl (HE); Manhattan
 Firman Robert Staib (RC); Turon
 Helen Marie Stamey (HE); Hutchinson
 Carl Merrill Stanly (CE); Manhattan
 John Roger Stebbins (ME); Ellis
 Lydia Stebbins (HE); Kansas City
 Alta Mary Stephens (HE); Manhattan
 Curtis Eugene Stevens (IJ); Pretty Prairie
 Arlo Stewart (Ag); Topeka
 Ferol Avalon Stickel (HE); Manhattan
 Dorothy Mildred Stiles (M); Kansas City
 Edmund Lewis Stone (EE); Roswell, N. Mex.
 Gladys Mirriam Stover (GS); Manhattan
 Tom Martin Stratton (GS); Reading
 Lawrence Hiram Strickler (Ag); Hutchinson
 Edna Belle Striegel (GS); Murdock
 Leonard Lewis Strobel (Ag 1; IJ 2); Pratt
 Clifford Harry Strom (EE); Junction City
 Paul Loyd Stuenkel (CE); Lenora
 William Fred Stuenkel (Ar); Lenora
 Carl Eugene Sturdevant (ME); Chanute
 George Edward Stutz (Ag); Manhattan
 Ruben Bernard Sundgren (GS); Sitka
 Charlotte Huntington Swanson (GS);
 Manhattan
 Ruth Swenson (GS); Topeka
 Clarence John Tangeman (EE 1; RC 2);
 Newton
 Carman Carl Tate (EE); Lockney, Tex.
 Gordon Taylor (EE); Junction City
 Jesse Everett Taylor (Ag); Wichita
 Ward Wesley Taylor (Ag); Smith Center
 Eric Tebow (RC); Scandia
 Gilbert King Terpening (Ag); LaPryor, Texas
 Lee Thackrey (GS); Manhattan
 Vernie Caroline Theden (PSM);
 Bonner Springs
 Ernest Raymond Thomas (Ar); Manhattan
 Walter Iven Thomas (CE); Canton
 Florence Thompson (HE); Beaver, Pa.
 George Marcus Thrope (RC); Paola
 Mildred Bertha Thurow (HE); Macksville
 Jesse Harold Tindall (CE); Minneola
 Milton Henry Toburen (GS); Cleburne
 Simon Jona Tombaugh (EE); Kansas City
 Dean Willard Towner (EE); Solomon
 Genevieve Thelma Tracy (IJ); Manhattan
 Harry Edwin Tuthill (EE); Salina
 Ralph Lee Tweedy (GS); Iola
 Edna Mae Unruh (PSM); Haddam
 Elizabeth Alice Van Ness (PSM); Topeka
 Leland Stanford Van Scoyoc (CE 1; GS 2);
 Manhattan
 Luella Inez Varner (PSM); Arkansas City
 Rollo Evans Venn (ME); Neodesha
 George Arthur Venneberg (GS); Havensville
 Belle Margaret Viers (HE); Manhattan
 Velma Elizabeth Vincent (HE); Alden
 Richard Louis von Trebra (Ag); Oswego
 John Corning Wagner (Ar); Lamar, Colo.
 Oliver Walgren (VM); Denver, Colo.
 Alton Homer Walker (Ag); Kansas City, Mo.
 Joe Chadwick Wallace (Ag); White City
 Raymond Bertrum Walter (Ag); Wakefield
 Louise Wann (GS); Hays
 Ralph Wareham (RC); Manhattan
 Samuel Blake Wareham (RC); Manhattan
 Dorothy Genevieve Waters (HE); Milford
 Beth Karleen Watson (PSM); Vermillion
 Ethel Faye Watson (HE); Minneapolis
 Aubrey Joseph Weber (EE); Manhattan
 *Everett John Weeks (EE); Manhattan
 Lloyd Sherman Weikal (CE); El Dorado
 Katherine Welker (HE); Coffeyville
 Charles Wells (IC); Chanute
 Leonice Pearl Wells (HE); Meriden
 Glen Harold Wendling (CE); Arlington
 Wilma Emeline Wentz (HE); Ames
 Verda Vesta Wever (PSM); Manhattan
 Carl Richard White (GS); Kingsdown
 Kathryn Whitten (HE); Wakarusa
 Edward Warner Wichman (EE); Lawrence
 Francis Eugene Wiebrecht (EE); Strong City
 Virgiline Lucile Wieman (HE); Topeka
 John Mac Wiley (Ag); Burlington
 Hugh Wilson Wilkin (ME); Lyndon
 *Archie Clay Williams (GS);
 Siloam Springs, Ark.
 Hugh Charles Williams (Ar); Manhattan
 Mildred Maurine Williams (HE); Bigelow
 Nina Williams (GS); Mora, Minn.
 Leo Kenneth Willis (EE); Galesburg
 Earl Jennings Wilson (GS); Assaria
 Earl Sanford Wilson (EE); Jetmore
 Harry Robert Wilson (RC); Wichita
 Otis Harold Wilson (IC); Jennings
 Ruth Elizabeth Wilson (IJ); Goddard
 *Claude Winterscheid (EE); Gridley
 George Halbert Wishart (IJ); Mankato
 Lorene Janie Wolfe (HE); Johnson
 Sebie Belle Wolfe (GS); Johnson
 Duane Everett Wollner (EE); Coffeyville
 Roscoe Daniel Womer (RC); Manhattan
 Lawrence Ewalt Woodman (EE); Manhattan
 Bertha Gertrude Worster (IJ); Manhattan

* Under auspices of the U. S. Veterans' Bureau.

SOPHOMORES—*Concluded*

Lillian Worster (HE); Manhattan
 Marion Elizabeth Wortham (GS); Lerna, Ill.
 Irvin Day Wright (ME); Stockton
 Kenneth Elwood Yandell (EE 1; RC 2);
 Wilson

Nora Yoder (GS); Newton
 Albert Miller Young (EE); Junction City
 Mildred Fern Young (PSM); Paola
 Iscah Marian Zahn (GS); Seneca

FRESHMEN

Alice Abbott (PSM); Gretna
 Henry Chaffee Abell (GS); Riley
 Ramon Alvarez Acevedo (VM); Calivo, P. I.
 George Acree (CE); Kansas City, Mo.
 Margaret Adams (GS); Long Island
 Ray Adams (CE); Topeka
 Catherine Elizabeth Agnew (PSM);
 Yates Center
 Harold Ahrens (Ag); Mankato
 Marjorie Eloise Ainsworth (IJ); St. John
 Dorothy Marguerite Akin (GS); Manhattan
 Kenneth Owen Alberti (EE); Kansas City
 Florence Elizabeth Aldrich (IJ); Norton
 Curtis Carpenter Alexander (RC);
 Hutchinson
 Lonnetta Alexander (HE); Kansas City
 Henry Wright Allard (IC); Manhattan
 Donald Chester Allen (IJ); Valley Falls
 William Hurlbret Allen (EE); Rock Creek
 Elizabeth Allison (HE); Manhattan
 George Max Allen (EE); Topeka
 Helen Mary Alsop (HE); Wakefield
 Ruth Louise Althoff (M); Topeka
 Foley Tyra Alvis (EE); Yates Center
 George Kenneth Ames (RC); Moline
 Elizabeth Helen Anderson (PSM); Topeka
 Fern Frances Anderson (IJ); Manhattan
 Glen Thomas Anderson (GS); Iola
 Hazel Lillian Anderson (HE); Bronson
 Joseph McDaniel Anderson (GS); Salina
 Everett Harlan Anderson (CE); Abilene
 Ira Ralph Angell (EE); Portis
 Glenn Marshall Ankeny (RC); Manhattan
 Mary Ethel Anthony (M); Clay Center
 Hubert Gregory Applebaugh (EE); Culver
 Dorothea Pearly Arbutnot (HE);
 Bennington
 Elise Arbutnot (PSM); Lebanon
 Cecil Lee Archer (IJ); St. Francis
 Orris Fair Armantrout (IJ); Wichita
 Carl Newton Arnold (EE); Kansas City
 Martin Harold Ashcraft (CE); Protection
 Dean Henry Asper (Ar); Downs
 Frank Newell Atkin (EE); Manhattan
 Jessie Dolores Atkins (IJ); Manhattan
 Charles Beatty Ault, jr. (CE); Brownell
 Paul Axtell (Ag); Argonia
 John Henry Ayars (Ag); Keats
 Elmer Hiram Azbill (IJ); Manhattan
 Charlotte Leah Bailey (HE 1; PSM 2);
 Topeka
 Guy Norveil Baker (Ag); Syracuse
 Mildred Mae Baker (GS); Syracuse
 Stella Iva Baker (HE); Haviland
 Jack Michael Baney (IJ); Pratt
 John Francis Barclay (CE); Webber
 Anna Christina Bare (HE); Protection
 Marion Crawford Barkley (AE 1; GS 2);
 Manhattan
 Irene Bridget Barner (HE); Wellington
 Thomas Ralph Barner (CE); Belle Plaine
 Mansel Barnes (RC); Protection
 Ruth Barnhisel (HE); Wichita
 John Frazer Barr (RC); Manhattan
 Lovell Barr (Ag); Manhattan
 Lowell Barr (Ag); Manhattan
 Robert Moore Barrett (GS); Manhattan
 Janice Mary Barry (IJ); Manhattan
 Floyd Garrett Basin (EE); Dunlap
 Harold Ralph Batchelor (EE); Manhattan
 Helen Joy Batchelor (HE); Manhattan
 Arthur Ralph Bauerfind (FME 1; GS 2);
 Minneapolis
 Ignacio Becerra (Ag); Buenos Aires,
 Argentina
 Fred Beck (Ar); Inka
 Alice Elizabeth Beeler (IJ); Jewell
 Marcia Alice Beggs (HE 1; IJ 2);
 Washington
 Ruth Leonora Bell (HE); Manhattan
 Paulam Anne Bellinger (GS); Manhattan
 Cecil Lorraine Benham (EE); Enterprise
 Jack Dale Bennett (RC); Concordia
 Arthur Wallace Benson (Ag); Clay Center
 Silas Solomon Bergsma (Ag); Lucas
 Christine Leola Bertsch (HE); Mayetta
 Guy Cecil Bigelow (Ag); Potwin
 Walter Bell Bigelow (CE); Buffalo
 Wilbur Herbert Binford (Ar); El Dorado
 Harry James Bird (IJ); Neodesha
 Robert Stuart Bishop (VM); Manhattan
 Elsie Madge Bitler (HE); Eureka
 Ruth Evelyn Blachly (HE); Ramona, Okla.
 Harris Franklin Blackburn (EE);
 Malta Bend, Mo.
 Philip Carl Blackburn (GS); Herington
 Hobart Pattison Blasdel (IC); Sylvia
 Nina Bliss (HE); Topeka
 Weston Blunt (RC); Charles City, Iowa
 Alfreda Frances Bock (IJ); Dellwyn
 Irma Marie Boettcher (GS); Holton
 Lloyd Alexander Boles (EE); Madison
 Maree Mercedes Boller (PSM); Manhattan
 Reba Ellen Bommer (PSM); Oketo
 Frances Gertrude Bond (IJ); Topeka
 George Timothy Bond (CE); Topeka
 Richard Roscoe Bourne (GS); Delphos
 Kate Marie Bowen (HE); Chillicothe, Mo.
 Dee Bowyer (EE); Potwin
 Verne Wendell Boyd (GS); Irving
 Lynn Harvey Bradford (IC); Topeka
 Chris Ray Bradley (Ag); Mayetta
 Edward Brainard (Ag); Canadian, Tex.
 Lillie Pauline Brandy (IJ); Manhattan
 Clay Willard Brion (RC); Ada
 Lawrence Briscoe (EE); Latham
 Myrle Violet Broberg (IJ); Manhattan
 Frank Brokish (Ag); Munden
 Harry Carter Brookhart (ME); Columbus
 James Byron Brooks (Ag); Garrison
 John Thomas Brooks (GS); Columbus
 Paul Orville Brooks (CE); Horton
 Bruce Keach Brown (EE); Delphos
 Claude Harold Brown (AE); Winfield
 Edna Mae Brown (HE); Riley
 Glenn Brown (Ar); Lamar, Colo.
 Hale Brown (Ag); Edmond
 Howard Roy Brown (RC); Riley
 Mable Georgianna Brown (HE); Hill City
 Ralph Elmore Brown (CE); Salina
 Roberta Janice Brown (GS); Topeka
 William Brown (GS); Carbondale
 Forrest Brunm (RC); Manhattan
 William Alexander Brun (CE); Muscotah
 Oris Raymond Bruner (Ag); Greensburg
 Malcolm Bennett Bryan (EE); Greensburg
 Willa Lois Buchanan (HE); Coldwater
 Edna Elizabeth Bullimore (HE); Clifton
 Herman Charles Bunte (EE); Hutchinson
 Merel Melvin Burkholder (EE); Burr Oak

FRESHMEN—Continued

Sue Margaret Burris (HE); Chanute
 Henry Alonzo Burt (Ag); Shallow Water
 Margaret Kirby Burtis (HE); Manhattan
 Augustus Wells Burton (ME); Moran
 James Edward Burton (ME); Hollis
 Ward Walter Butler (AE); Glasco
 Herbert Raymond Butterfield (RC); Mulvane
 Vail Howard Butterfield (EE);
 Woodburn, Ore.
 Clifton Andrew Byers (CE); Abilene
 Orville Roy Caldwell (Ag); Emporia
 George Dale Call (EE); Moline
 Floyd Russell Callahan (ME); Osawatomie
 Roy Raymond Cameron (Ag); St. George
 Oren Emery Campbell (Ag); Cimarron
 Elmer Le Roy Canary (Ag); Lawrence
 Orville Raymond Caple (EE); Colwich
 Margaret Louise Carl (HE 1; PSM 2);
 Gentry, Ark.
 Carl Milton Carlson (Ag); Corbin
 William Carnahan (Ag); Amber, Okla.
 William Wright Carpenter (RC); Coffeyville
 Earl Francis Carr (Ag); Byers
 Lloyd Edward Carson (EE); Clifton
 Clifford Rarick Carter (EE); Enid, Okla.
 Robert Edwin Carter (CE); Manhattan
 Elizabeth Marie Cartmell (PSM);
 Kansas City
 Lillian Iva Carver (PSM); Manhattan
 Harold Nelson Cary (Ag); Ogden
 Loyd Charles Cassel (ME); Long Island
 Ralph Harry Chapin (EE); Westphalia
 Walter Edgar Chapman, jr. (EE); Ellis
 Vernon Olen Chatterton (Ar); Colony
 Ernest Iden Chilcott (Ag); Esbon
 Clark Nelson Christian (Ag); Clyde
 Arthur Eugene Churchill (EE); Osage City
 Margurite Doris Clark (PSM); Manhattan
 Lawrence Clem (EE); Chanute
 Cecil Clements (RC); Mulvane
 Orval Russell Click (EE); Plains
 Grace Elizabeth Clute (GS); La Crosse
 Roscoe Coberly (Ag); Gove
 Clarence Lyle Coe (RC); Wichita
 Charles Dent Coffman (GS); Overbrook
 Ernest Benjamin Coffman (Ag); Morrill
 Paul Southworth Colby (EE); Abilene
 Henry Lee Collett (Ag); Marion
 George Collier (EE); Colwich
 Rolfe Leon Conard (ME); Tasco
 Guy Hess Condit (GS); Pratt
 John Paine Cone (AE); Rozel
 James Eugene Conklin (IJ); Hutchinson
 Etta Marie Conroy (PSM); Manhattan
 Frances Ella Converse (GS); Manhattan
 Jessie Lenore Conwell (HE); Manhattan
 Ralph Raymond Conwell (Ag); Manhattan
 Helen Ethel Cook (HE); St. Johnsburg, Vt.
 George Curtis Cooksey (IC); Manhattan
 Eunace Quenton Coombs (Ar); Sedgwick
 Dean Copeland Cornish (GS); Pratt
 Bryan Cornwell (RC 1; EE 2); Paola
 Rushton Gardner Cortelyou (CE);
 Manhattan
 John Francis Costello (RC); Junction City
 Eldon Fred Covert (RC); Topeka
 John Henry Cox (RC); Assaria
 Mary Josephine Cox (HE); Topeka
 Arthur Allen Craig (Ag); Baldwin City
 Cyril John Cregan (GS); Chapman
 Alma Rose Cress (GS); Manhattan
 Lenore Marguerite Cress (HE); Manhattan
 Lena Lillian Crider (HE); Phillipsburg
 Arthur Harry Croft (Ag 1; IJ 2); Anthony
 Earl Franklin Cross (FME); Wichita
 Newton Cross (IJ); Manhattan
 Bert Andrew Crowder (ME); Topeka
 Mary Louise Crowder (HE); Manhattan
 Ralph Milton Crowell (EE); Iola
 Willis Harold Cuddy (RC); Manhattan
 Albert Cunningham (GS); Manhattan
 Ola Antoinette Curtis (HE); Lincoln
 Paul Daily (GS); Big Spring, Tex.
 Eldon Lyle Dale (EE); Zenith
 Isaac Joseph Dalrymple (CE); Simpson
 Hazel Flossie Dalton (HE 1; RC 2);
 Kansas City
 Robert Maxwell Dalton (GS); St. George
 Edgar Dannevik (EE); St. Joseph, Mo.
 Clyde Evans Davidson (EE); Manhattan
 Keith Burnett Davidson (CE); Glasco
 Gordon Davies (IJ); Hutchinson
 Clayton Merle Davis (EE); Fredonia
 Daisy Davis (HE); Glen Elder
 Elmer Davis (GS); Glen Elder
 Howard Preston Davis (CE); Manhattan
 Lester Eugene Davis (GS); Manhattan
 Loren Le Roy Davis (Ag); Effingham
 Lyle William Davis (CE); Holton
 Marion Bradford Davis (VM); Manhattan
 Raymond Howard Davis (Ag); Effingham
 Rex Knaus Davis (EE); Madison
 Daisy Deane Davison (GS); Michigan Valley
 Kenneth Herrick Dawley (GS); Manhattan
 Edward Glen Dawson (Ag); Manhattan
 Harry Ellsworth Day (M); Kansas City
 Harold John Dayhoff (EE); Abilene
 Milton David Deahy (GS); Topeka
 George Everett Dean (RC); Blue Rapids
 Floyd Archie Decker (EE); Troy
 David Deines (CE); Bazine
 Clara Farmer Denison (GS); Hazelton
 Harold Mead Denison (EE); Berryton
 Glenn Scott Derby (EE); Axtell
 Julius Herbert Derussean (EE); Clyde
 Margaret DeVinny (IJ); Lincoln
 Ed LaVern DeVore (RC); Macksville
 Pearl Suiter DeVore (HE); Macksville
 Miriam Lenore Dexter (IJ); Manhattan
 Charles Ross Dickens (Ag); Agra
 Marion George Dickson (CE); Manhattan
 Clarence Byron Diefendorf (EE); Fairmont
 John Dill (EE); Augusta
 Helen Estella Diller (HE); Morrowville
 John Armstrong Dirks (GS); Augusta
 Louis James Dittmore (GS); Cuba
 Paul Lawrence Dittmore (GS); Cuba
 Bonna Louella Dittmar (PSM); Manhattan
 Ernest Headen Diven (PSM); Cherryvale
 Leo Arthur Dixon (CE); Columbus
 Esther Eulalia Dizmang (HE); Bronson
 Oscar Kirk Dizmang (GS 1; Ag 2); Bronson
 Ona May Dogion (HE); Louisville
 Albert William Dooley (EE); Burns
 Robert Ellis Dorr (CE); Osage City
 Howard Earl Dorst (Ag 1; RC 2); Gardner
 George Norton Doudna (Ag); Wellsville
 William Miller Douglas (EE); Reading
 William Wray Douglass (CE 1; RC 2);
 Ransom
 Wilkins Edgar Downing (GS) Pratt
 Mildred Kathryn Doyle (HE); Clay Center
 Mark Leonard Drawatzky (Ag); Wichita
 Harvey Dreyer (RC); Kiowa
 Dorothy Jane Drummond (PSM); Norton
 George Craig Drummond (Ag);
 Cottonwood Falls
 Edith Marie Dunham (HE); Manhattan
 Pansy Elmina Dunlap (HE); Berryton
 Joseph Edgar Durham (GS); Manhattan
 Glenn Albert Durland (GS); Irving
 Doris Irene Dwelly (HE); Manhattan
 John Clayton Dwelly (GS); Logan
 Warren Russell Dyer (RC); Pueblo, Colo.
 Jack Richard Eakin (RC); Manhattan
 Edwin Osborne Earl (EE); Nickerson
 Frank Charles Eaton (GS); Erie
 Kelly Arthur Eaton (Ar); Erie
 Antoinette Edelblute (HE); Manhattan
 Anona Bessie Edwards (HE); Herington
 Martin Arthur Edwards (EE); Chautauqua

FRESHMEN—Continued

Mildred Clara Edwards (HE); Athol
Stanley Francis Edwards (RC);
Waynoka, Okla.
Emma Ruby Egelston (HE); Westmoreland
Albert Ehrlich (GS); Marion
Frances Eugenia Ekdahl (HE); Manhattan
Frederick Thomas Elder (Ag);
Buenos Aires, Argentina, S. A.
Wallace Albert Eldred (Ar); Lebanon
Betty Esther Elkins (HE); Wakefield
Irene Elliott (HE); Meriden
Mildred Joyce Ellis (GS);
Las Vegas, N. Mex.
Opal Marion Endsley (PSM); Garden City
Kermit Vernon Engle (Ag); Abilene
Wilbur Gunter Enns (IC); La Porte Ind.
Duard Enoch (FME); Abilene
Allen Mason Enos (GS 1; Ag 2); Perry
Harry Emanuel Erickson (M); Manhattan
Linnie Ambrose Erwin (GS); Pratt
Clerdeth Dale Evans (CE); Russell
Herbert Beals Evans (CE); Wellington
Hobart Leslie Evans (Ag); Austin, Tex.
Orval Denton Evans (Ag); Lyons
Ralph Wilson Evans (CE); Washington
Ray Hunter Ewalt (RC); Manhattan
Diana Ellen Fair (GS); Medicine Lodge
Bernice Viola Faley (HE); Kansas City, Mo.
Ruth Pearl Faris (GS); Kansas City
Marie Ruth Farmer (HE); Kansas City
Byron Webster Farnsworth (EE);
Arkansas City
Lawrence Stewart Farrell (IC); Manhattan
Hazel Beatrice Farrow (HE); Beloit
Benjamin Merle Faulconer (IJ); El Dorado
Carl Faulconer (RC); Manhattan
Ruth Marie Faulconer (M); Manhattan
Jennie Fay (HE); Wichita
Goldie Olive Fear (PSM); Manhattan
Elwin Elton Feather (ME); Minneapolis
William Bonsfeild Fenn (Ar); Salina
Howard Wellington Fennner (EE); Neodesha
Andrew Lowell Ferris (RC); Delphos
Gerald Ferris (IJ); Chapman
Francis Eileene Fields (PSM); Manhattan
Eldon Eugene Finley (ME); Cherryvale
Maudie Faye Finley (PSM); Manhattan
Marian McKee Flack (CE); Eskridge
Marjorie Minnette Fleming (PSM);
Manhattan
Mark Hays Flick (FME); Manhattan
William Flipse (EE); Manhattan
Nels Philip Florell (GS); Jamestown
John Foltz (GS); Wakarusa
Vernon Daniel Foltz (GS); Belle Plaine
Ceil Paul Foote (Ag); Wichita
Leila Marie Ford (HE); Bradford
Rhoda Jane Foss (GS); Beaver City, Neb.
Lura May Fox (M); Coldwater
Robert Noll Francis (ME); Cherryvale
Forrest Foster Frank (CE); Manhattan
George Arthur Franklin (RC); Pawnee Rock
Stanley Malcolm Fraser (EE); Talmage
Alfred Walter Frederick (EE); Manhattan
Elva Luther Frederick (EE); Manhattan
John Milton French, Jr. (EE); Topeka
Everett Wayne Frey (CE); Manhattan
Lester Raymond Frey (IJ); Manhattan
George Dark Frisbie (ME); Kingman
Wilbert Garold Fritz (RC); Manhattan
Irma Rosetta Fulhage (GS); Yates Center
Howard William Garbe (ME); Valley Falls
Joseph Homer Garrison (GS); Lincolnville
Evelyn Alberta Garvin (GS); Lawrence
Carl Cuthbert Gates (RC); Greensburg
Charlie Gates (EE); Kingman
Raymond Vincent Gates (RC); Greensburg
Ray Geddes (IC); Wellington
Harriet Geffert (HE 1; RC 2); Manhattan
Howard Geitgey (Ag); Anthony
Esther Marie George (GS); Manhattan
Randall Sylvan George (IJ); Lebanon
Victor Murdock George (CE); Dodge City
Howard James Germann (EE); Clifton
Robert Cecil Gibb (CE); Cottonwood Falls
Iva Mary Gibson (RC); Burr Oak
Harold Stewart Gill (EE); Topeka
Willard LeRoy Gillmore (GS); Jewell City
Howard Wetmore Gilmore (AE); Oneida
Gordon Gillam Gladson (EE); Chanute
George Gledhill (IJ); Gaylor
Grace Cecelia Glenn (HE) Manhattan
Louise Charlotte Glick (HE); Jewell
Russell Wayne Good (Ag); Coffeyville
Earl Todd Goodfellow (GS); Wells
Wilbur Wayne Gordon (IC); Garden City
Corywell Gove (RC); Junction City
Joseph Paul Grady (RC); Lansing
Lowell Ludwig Grady (GS); Colby
Helen Elizabeth Graham (GS); Manhattan
Eugene Graves (EE); Wamego
Clare Gray (GS); Manhattan
Ervin Douglass Gray (EE); Stafford
Ellwood LeRoy Gray (VM); Manhattan
Herbert Jackson Greeley (EE); El Dorado
Helen Jeanette Greene (HE); Beverly
James Rayford Greenlee (GS); Harveyville
Edward Maurice Gregg (RC); Frankfort
Marian Virginia Gregg (HE); Topeka
James Smith Griffes (GS); Manhattan
Sherman Buck Griswold (Ag); Rossville
Emery Grove (CE); Bigelow
Claribel Florence Grover (GS); Iola
Welthalee Grover (HE); Iola
Mernice Albina Gunter (HE); White City
Lawrence Steanson Guthrie (AE);
Saffordville
Lydia Alma Haag (GS); Holton
Raymond Collier Haas (EE); Herington
James Micheal Hacker (IJ); Manhattan
Victor Wesley Haflich (EE); Fairview
Stanley Otto Hahnwald (Ag); Rifle, Colo.
Mary Elizabeth Haise (Ag); Russell
Dorothy Hull (PSM); Sullivan
Robert Henry Hall (Ag); Lincoln
Harold Charles Hamil (EE); Mayfield
Alvin Willis Hamilton (EE); Wichita
Matthew Edgar Hamilton (EE); Argonia
Robert Douglas Hamilton (Ar 1; RC 2);
Norton
Richard Edward Hamler (GS 1; Ag 2);
Manhattan
Flora Kathryn Hamm (HE); St. George
Jamal Hassan Hammad (Ag);
Nablus, Palestine
Nola Nadine Hammond (PSM); Manhattan
Roland Harvey Hammond (RC);
Kansas City
Burritt Pingrey Hann (EE); McFall, Mo.
John Alexander Hanna (CE); Medicine Lodge
Sarah Elizabeth Hanna (PSM); Courtland
Arthur Henry Hannah (Ar); Kansas City
Lloyd Raymond Hansen (Ag); Willis
Leona Marie Hanson (HE); Randolph
Raymond Arnett Hanson (RC); Concordia
Eldon Thomas Harden (Ag); Centralia
William Francis Hardwick (Ag);
Clovis, N. Mex.
Howard Freeman Harmon (ME); Girard
John David Harness (Ar); Augusta
Luman Harper (AE); Augusta
Marion Brackett Harrison (HE); Jewell
Mary Caroline Harrison (GS); Galena
Acra Margaret Hart (HE); Overbrook
Thomas Franklin Hart (Ag); Macksville
Benjamin Franklin Hartman (CE); Salina
Virgil Hines Harwood (CE); Hutchinson

FRESHMEN—Continued

Charles Estel Hassett (CE); Kansas City, Mo.
 Chester Calvin Hassler (EE); Chapman
 John Thomas Hatfield (EE); Valley Falls
 Kenneth Beryl Haun (EE); Jetmore
 Chester Harvley (GS); Manhattan
 Roy Harold Hawk (GS); Florence
 Kenneth Charles Hawkinson (GS); Cleburne
 Oscar Willard Hays (CE); Sylvia
 James Theodore Hayslip (EE); Manhattan
 Harry Sylvester Hazel (Ag); Indianapolis, Ind.
 Barton Heath (RC); Fairbury, Neb.
 Josephine Senn Heath (IJ); Enterprise
 Minnie Helen Heath (HE); Manhattan
 Lawrence Noel Hedge (IJ); Manhattan
 Robert Baker Hedrick (EE); Florence
 Helen Charlotte Heise (GS); Topeka
 Adolph Helm (EE); Chanute
 Ralph Louis Helmreich (ME); Kansas City
 Helen Louise Hemenway (IJ); Junction City
 Albert Hemphill (RC); Belleville
 Charles Henderson (ME); Peck
 Leonard Louis Henderson (EE); Ordway, Colo.
 Lulu May Hendricks (HE); Webber
 Neva Marie Hendrickson (PSM); Lebanon
 Marie Mable Henkell (HE); Hiawatha
 Carl Henning (RC); Burlington
 John Maurice Henry (Ag); St. Francis
 Mary Henry (PSM); St. Francis
 Ralph Theron Hermon (EE); Bazine
 Edgar William Heyl (CE); Wallace
 Alfred Herman Hiesterman (Ar); Greenleaf
 Harold Herbert Higginbottom (EE); Manhattan
 Earl Elwood Hill (Ag); Manhattan
 George Lee Hill (FME 1; RC 2); Gardner
 Maurice Hill (RC); Manhattan
 Leslie Hinkle (GS); Junction City
 Erma Frances Hinz (GS); Abilene
 Walter Henry Hinz (EE); Abilene
 Charles Frank Hirsch (RC); Ellinwood
 Willard McIntyre Hixon (EE); Berryton
 Marshall Kitch Hoag (RC); Manhattan
 Esther Freda Hoch (HE); Hartford
 Alma Louise Hochuli (GS); Holton
 Russell Arthur Hoffman (RC); Cherryvale
 Colburn Chick Holmes (IJ); Mound City
 Howard Louis Holt (ME); Sedan
 William Milton Holt (EE); Augusta
 Ruth Louise Holton (IJ); Manhattan
 Frances Taylor Hooper (HE); Lincoln
 John Lester Hooper (GS); Robinson
 Meridith Louise Hooper (M); Leavenworth
 Grace Ellen Hopkins (M); Neodesha
 Marvin Lee Hopkins (GS); Rossville
 Dorothy Denise Horan (HE); Troy
 Ralph Ivor Horne (GS); Alma
 McPherson Archie Horner (Ag); Grainfield
 Vance Holland Houdyshell (EE); Pawnee Rock
 Russell Eugene Houk (VM); Moran
 Mignon Corwin House (IJ); Manhattan
 Raymond Edgar House (GS); Brookville
 Dwight Hout (Ar); Formoso
 Florence Inez Howard (GS); Burrton
 Nina Mae Howard (IJ); Abilene
 Vera Frances Howard (HE); Mount Hope
 Norman Hamilton Howell (VM); Kansas City
 Guy Raymond Huey (RC); Louisville
 Gilbert Lawrence Hug (EE); Scranton
 Charles Daniel Robert Hull (IJ); Concordia
 Thelma Verdeen Hull (HE); Mankato
 Helen Lois Humphrey (HE); Manhattan
 Ross Gross Hurley (IJ); Junction City
 Ernest Huscher (RC); Concordia
 Horner Theodore Hutchison (CE); Wichita
 Corwin Hutton (EE); Washington
 Clara Bessie Huxmann (HE); Arnold
 Emma Labelia Huxmann (HE); Arnold
 Audrey Hylen Hybskman (RC); Corning
 Ralph Olston Hybskman (CE); Seneca
 John Hyer (EE); Coffeyville
 Harley Herschel Hyten (IC); Caldwell
 Allan Ingle (Ar); Salina
 Marie Inley (HE); Junction City
 Frances Catherine Isherman (HE); Topeka
 Aletta Mauriene Jackson (PSM); Scott City
 Mary Clara Jackson (M); Manhattan
 Everett James (Ag); Macon, Mo.
 Harold James (Ag); Macon, Mo.
 William Frederick James (IJ); Junction City
 Elsie Mae Jarvis (HE); Kansas City
 Maggie Lorene Jeffrey (HE); Elmdale
 Harris Warren Jenkins (EE); Kinsley
 Pearl Stella Jepson (GS); Cleburne
 Mary Helen Jerard (PSM); Manhattan
 David William Jewett (EE); De Soto
 Vivian Shade Jewett (HE); Kansas City
 George Loomis Jobling (IC); Caldwell
 Beryl LaVerne Johnson (HE); Olsburg
 Esther Louise Johnson (HE); Kansas City
 George Johnson (CE); Altamont
 George Johnson (GS); Manhattan
 Glenn Irvin Johnson (AE); Greeley
 Helen Lillian Johnson (HE); Manhattan
 Henry William Johnson (EE); Leavenworth
 John Harold Johnson (Ag); Norton
 John Oscar Johnson (EE); Wakarusa
 Marjorie Esther Johnson (HE); Topeka
 Mary Hannah Johnson (PSM); Alta Vista
 Roland Manley Johnson (Ar); Topeka
 Ruth Johnson (HE); Manhattan
 Alice Kathleen Johnston (GS); Manhattan
 George Johnston (Ag); Westphalia
 Arnold Jones (RC); Haddam
 Inez Jones (GS); Kansas City
 Melvin Claude Jung (RC); Lyons
 Carrie Ida Justice (HE); Olathe
 Lillian Kammeier (IJ); Manhattan
 Erwin Samuel Kanzig (Ag); Eudora
 Ralph Marion Karns (Ag); Ada
 Mary Lee Keath (IJ); Chillicothe, Mo.
 Chester Keek (GS); Auburn
 Henry Alexander Keller (EE); Great Bend
 Robert Warren Kellogg (EE); Sedan
 Gilbert Lenard Kelso (CE); Cleveland, Okla.
 Mabel Rose Kennedy (PSM); Manhattan
 Milton Joseph Kennedy (RC); Wichita
 Wilber Baldwin Kennedy (ME); Lyons
 Edwin Joseph Kent (RC); Kansas City
 Virgil Fletcher Kent (GS); Manhattan
 Milton Mathew Kerr (IJ); Manhattan
 Dorothy Carlene Kiddoo (HE); Neodesha
 Arthur William Kimball (RC); Leavenworth
 Mary Marceene Kimball (IJ); Manhattan
 Ruth Maurice Kimball (HE); Manhattan
 Katheryn Anna Kimble (HE 1; PSM 2); Miltonvale
 Doris Kimport (HE); Norton
 Benjamin King (GS); Nickerson
 Kathryn Elizabeth King (GS); Manhattan
 George Leslie Kirk (Ag); Axtell
 Stanley Jay Kirk (ME); Iola
 Melvin Kirkwood (Ag); Natoma
 Ernest Everett Kissick (RC); Beverly
 Victor Jay Klinefelter (Ag); Brookings, S. Dak.
 Kenneth Walden Knechtel (Ag); Larned
 Norma Louise Knoch (HE); Lincoln
 Frank Wendell Knopf (EE); Holton
 Ray Edward Knostman (RC); Wamego
 Walter Koerner (CE); Wakefield
 Howard Russell Kohler (EE); Eudora
 Velma Tiera Krause (PSM); Logan
 Jerry Charles Krysl (Ag); Lucas
 Walter Fred Kuiken (GS); Glen Elder
 Archie Rhynaldo Kyle (EE); Ellsworth

FRESHMEN—Continued

Mohamed Labib (Ag); Barada, Egypt
 Oswald Joseph Lacerte (EE); Colver
 Delbert Linelle Lacey (CE); Moran
 Charles Epps Lagerstrom (RC); Topeka
 Carlton Frederick Lalicker (RC);
 South Haven
 William Arthur Lamb (EE); Bird City
 *Paul Griffith Lamerson (Ag); McPherson
 Alva Lambert Lancaster (EE); Atchison
 Charlotte Alice Landrum (HE); Louisville
 Oscar Dewey Lantz (Ar); Chapman
 Louis Phillip Lapaille (Ag); Clyde
 Bertha Harriet Lapham (M); Manhattan
 Blanche Lapham (M); Manhattan
 Robert Peter Laptad (Ag); Lawrence
 Florence Mildred Larmer (HE); Webber
 John Irving Larrick (IJ); Gaylord
 Emil Larson (EE); Agenda
 Ralph William Latzke (GS); Chapman
 Walter Adonis Layton, jr. (M); Salina
 Mary Elizabeth Leaman (HE); Manhattan
 Avery Leslie Leatherman (Ag); Dunavant
 Helen Lee (IJ); Kansas City
 Jack Lee (RC); Kansas City
 Waldo Raymond Lee (Ag); Keats
 Mildred Inette Leech (PSM); Fredonia
 Otho Glenn Lehman (CE); Cleveland, Okla.
 Marguerite Josephine Lenore (HE);
 Kansas City
 Fred William Leonard (EE); Cedar Vale
 John Lewis (GS); Rossville
 Alison Thomson Lhotak (ME); Irving
 Maurice Lillis (RC); Kansas City
 Albert William Lindlar (EE); Manhattan
 Hazel Irene Lindquist (HE); Gove
 Shepard Keene Linscott (GS); Farmington
 Aubrey Erskine Lippenoott (RC); Fort Riley
 Emily Jean Loewen (HE); Hillsboro
 Lois Virginia Long (GS); Idana
 Carroll Robert Longfellow (EE); Moline
 Theodore Hamilton Loofbourrow (Ar);
 Westmoreland
 Dolly Ferne Lovewell (HE); Lovewell
 Frances Georgia Lowe (HE); Manhattan
 Clarence Ludeman (EE); Wichita
 Wallace Eustace Lumb (GS); Wakefield
 Ada Katharine Lush (GS); Altamont
 Charles Ellis Luthy (RC); Carbondale
 Harry Lytle (VM); Oberlin
 Donald McAlister (EE); Manhattan
 Margaret Alice McChintock (HE); Wichita
 Winifred Evelyn McCollough (HE);
 Rossville
 Wilma Irene McCord (HE); Manhattan
 Cecil McCormick (RC); Manhattan
 John Bush McCormick (AE); Oatville
 Orla Logan McCormick (Ar); Sylvan Grove
 Wallace Norton McCown (IJ); Emporia
 Roy McCoy (EE); Kansas City
 Ammel Eli McCullough (RC); Solomon
 Dora Jane McCullough (HE); Solomon
 Frances William McDade (EE); Salina
 Arthur McDaniel (ME); Chanute
 Cecil Perry McDonald (Ar); Iola
 James Julius McDonald (CE); Manhattan
 James Leroy McEachern (EE); Girard
 Mary Mildred McGirr (PSM); Vinton, Iowa
 Bonita McGrath (IJ); Atchison
 Harry McGrath (AE); Home
 Darrell Ganash McGraw (Ar); Belleville
 John Weiss McGuire (ME); Coffeyville
 Albert Emery McKaig (GS); Olathe
 Bernice Alice McKee (HE); Rexford
 William Wilson McKee (EE); Culver
 Pearl Lauretta McKinley (HE); Humboldt
 Kenneth Robert McKinney (RC); Iola
 Richard Frank McKinney (CE); Great Bend
 Ellis Buford McKnight (GS); Eskridge
 Mary Ellen McLeod (GS); Vermillion
 Elden Morris McMahan (RC); Norton
 Earl Ira McMillan (AE); Miltonvale
 Harold Matthew McNiff (EE); Manhattan
 Hugh McNichols (GS); Burr Oak
 Paul Edward McReynolds (ME); Plainville
 Raymond David MacDonald (Ag);
 Scott City
 Elbert Machoner (IJ); Wakefield
 Virgil Deon Maddox (Ag); Hazelton
 Homer James Magee (RC); Seneca
 Fred Dale Mahan (ME); Fort Scott
 Wilber Merlyn Mann (Ag); Quinter
 Evelyn May Manwarring (HE); Concordia
 Laurel Armstrong March (EE); Bucklin
 James Hugh Marchbank (CE); Manhattan
 Harold Charles Markley (RC); Carbondale
 Charles Marsh (RC); Valley Falls
 Charles Leroy Marshall (Ar); Atchison
 George Edward Marshall (Ag);
 Bonner Springs
 Mary Amelia Marshall (HE); Sylvia
 Carlton Beeler Martin (Ag); Manhattan
 Elmer August Martin (IJ) Stockton
 Irene Grace Martin (HE); Hiawatha
 Raymond Cecil Martin (EE); Liberty
 Fred Edward Masek (GS); Norton
 James Milton Mason (Ag); Neosho, Mo.
 Morgan Wellington Mason (RC); Abilene
 Vernon Ives Masters (GS); Natoma
 Meda Rea Masterson (HE); Riley
 Lucile Maust (GS); Garden City
 Dwight Lowry Maxwell (CE); Ottawa
 William Clyde May (RC); Manhattan
 Mildred Enola Mayden (HE); Manhattan
 Walter Seamons Mayden (ME); Manhattan
 Nora Elsie Mead (HE); Smith Center
 Ward Vernon Mead (Ag); Winfield
 Francis Kendall Means (GS); Everest
 Thelma Lucile Mebus (GS 1; HE 2);
 Kansas City
 Donald Meek (RC); Idana
 Daniel Verne Meiller (ME); Minneapolis
 John Harry Merridith (GS); Kansas City
 James Bailey Merryfield (FME); Salina
 Cleo Meseke (EE); Manhattan
 Delphine Marjorie Meserve (PSM); Ellis
 Gladys Eleanor Messenger (HE); Manhattan
 James Alvin Metz (EE); Kansas City
 Manie Herbert Meyer (EE); Mulvane
 Gladys Madeline Middaugh (HE); Seneca
 Edwin Mikesell (EE); Fredonia
 Alice Elizabeth Miller (GS); Muscotah
 A. Q. Miller, jr. (CE); Salina
 Clara Grayce Miller (HE); Colby
 Harold Clark Miller (EE); Mitchell
 Irene Gertrude Miller (HE);
 Cottonwood Falls
 Mary Aliza Miller (HE); Muscotah
 Merle Miller (Ag); Takoma Park, D. C.
 Silas Milbern Miller (IJ); Meade
 Victor Henry Miller (EE 1; RC 2);
 Pawnee Rock
 Wilbur Rupert Miller (GS); Lincoln
 Elizabeth Mills (HE); Manhattan
 Horace Arthur Mills (VM); Ansley, Neb.
 Carleton Quinn Mitchell (Ar); Leavenworth
 Ida Mae Francis Mitchell (HE);
 Columbia, Mo.
 Mabel Jean Mitchell (HE); Arkansas City
 Arthur Clifford Mittendorf (Ag);
 Hutchinson
 Cecil Thowald Moller (CE); Scandia
 Marjorie Lucille Moody (PSM); Riley
 Em Elwell Moore (IJ); Nowata, Okla.
 Herbert Arthur Moore (RC); Wichita
 Jerome Joseph Moore (EE); Argonia
 Margaret Eva Moore (HE); Osborne
 Robert Moore (AE); Wells
 Richard Allen Moorman (PSM);
 Manhattan
 John Joseph Moran (Ag); Clifton
 Margaret Morris (PSM); Coffeyville

* Under auspices of the U. S. Veterans' Bureau.

FRESHMEN—Continued

Velma Neva Morris (PSM); Manhattan
 Frank Brenner Morrison (GS); Manhattan
 John Ross Moyer (Ag); Hiawatha
 Major Floyd Mueller (AE); Sawyer
 Blanche Bonnie Muilenburg (HE); Palco
 Darold Munson (Ar); Assaria
 Harold Lewis Murphy (Ag); Protection
 James Frederick Murphy (EE); El Dorado
 Samuel David Murphy (ME); Colony
 Walter Harold Murray (CE); Manhattan
 Grant Harland Muse (RC); Wichita
 Marie Sara Muxlow (GS); Manhattan
 Merlin George Myerley (Ag); Lyons
 Philip Todd Naaman (Ar); Salina
 Carl Oscar Nelson (EE); Jennings
 Donald Kenneth Nelson (EE);
 St. Joseph, Mo.
 Dorothy Gertrude Nelson (IJ); Marysville
 Lucy Belle Nelson (HE); Jamestown
 Merle May Nelson (IJ 1; HE 2); Jamestown
 Robert Edward Nelson (GS); Westmoreland
 Verle Emery Nelson (Ag); Savonburg
 Glenn Newcomer (IJ); Alexander
 Theodore Newlin (Ag); Lewis
 Trice Hubert Newsom (RC); Medicine Lodge
 Alice Coecilia Nichols (IJ); Liberal
 Karl William Niemann (Ag);
 Muskogee, Okla.
 Emmett Nixon (FME); Peck
 George Kirkland Nixon (RC); Downs
 Faith Aeoline Noble (IJ); Abilene
 George Vernon Norris (ME); Manhattan
 Mary Norrish (HE); Manhattan
 Mary Collins Notestine (Ar); Winfield
 Mina Tess Novak (GS); Manhattan
 Will Nyhart (EE); Atchison
 Ethel Evelyn Oatman (HE); Lawrence
 Bernice Lorene O'Daniel (M); Westmoreland
 Clarella Odell (HE); Eagle City, Okla.
 George Sidney Oldson (CE); Downs
 William Oliver (Ag); Perry
 Nels Peter Olson (Ar); Brookville
 Severt Carl Olson (Ar); Clyde
 Simon Campos Ortiz (GS); Manhattan
 Kathryn Osborn (HE); Clifton
 Ed Frederick Overall (Ar); Hutchinson
 Thomas Allen Owens (EE); Ness City
 Robert Bateman Painter (ME); Meade
 Walter Louis Panning (ME); Ellinwood
 Archie Pargett (VM 1; Ag 2); Cawker City
 Harry Fealy Park (CE); Mound City
 Arthur Hayden Parks (RC 1; Ag 2); Eureka
 Frank Nellis Parshall (RC); Cimarron
 Homer Leroy Parshall (RC); Cimarron
 Zella Mae Parsons (IJ); Topeka
 Agnes Patterson (HE); Manhattan
 Lloyd Everett Patterson (EE); St. John
 Helen Elizabeth Pattison (HE); Topeka
 Rumsy Eads Payne (IJ); Manhattan
 Elizabeth Norden Pears (HE); St. Francis
 Harold Hammond Peal (EE); Augusta
 Ruth Jeannette Peck (HE); Beatrice, Neb.
 Evelyn Stella Peffey (IJ); Manhattan
 Edwin Dean Pence (Ag); Dunavant
 Junior Perkins (Ar 1; RC 2); Gardner
 Marie Eleanor Perkins (HE); Oswego
 Ted Perrine (IJ); Siloam Springs, Ark.
 Herbert Perry (EE); Windom
 Charles Aaron Peterson (Ag); Caney
 Elliot Albert Peterson (GS); Randolph
 Glenn Gordon Peterson (RC); Delavan
 Mildred Laurel Peterson (RC); Manhattan
 Richard Henry Peterson (EE); Marquette
 Ralph Frank Pettit (Ag); Humboldt
 Loren Winfield Pew (GS); Greensburg
 Mary Kathryn Pfeiffer (GS); Hamlin
 Ruth Annie Phillips (GS); Junction City
 Francis Kinsey Pierce (Ag); Minneapolis
 Mary Margaret Pile (HE); Liberal
 Harold Henry Platt (Ag); Manhattan
 Owen James Poe (Ar); Kansas City, Mo.
 Dorothy Ogle Vander Poole (HE); Lovewell
 Hazel Rebecca Popham (HE);
 Chillicothe, Mo.
 Elmer Eugene Porter (EE); St. John
 Lucile Elizabeth Potter (IJ); Larned
 Claude Priest (CE); Towanda
 John Jesse Province (ME); Stafford
 Cecil Edwin Pruitt (Ag 1; RC 2); Beloit
 Frank Hoyt Purcell (GS); Manhattan
 Robert Hartley Pyle (Ag); Pawnee Rock
 Corintha Ruth Quinlan (HE); Linwood
 Clarence Maloy Quinn (CE); Junction City
 Addie Alice Radebaugh (HE); Frankfort
 Stephen Marten Raleigh (EE 1; Ag 2);
 Clyde
 Clyde Lamb Randall (GS); Kansas City
 Jean Florence Rankin (PSM); Wakefield
 Jeanie Greene Rankin (GS); Manhattan
 Joseph Earl Rankin (Ag); Mound City
 Ezra Guy Rasmussen (RC); Cleburne
 Harold Vernon Rathbun (EE); Manhattan
 Elsie Margaret Rawles (HE); Kansas City
 Geraldine Buente Reboul (GS); Phillipsburg
 Mildred Marie Redd (HE); Norton
 John Wesley Reed (EE); Larned
 Myron Wesley Reed (GS); Norton
 Silmar Arthur Reed (EE); Marysville
 Victor Reef (ME); Merriam
 Anna Dorothy Rehberg (HE); Bennington
 John Reich (Ag); Eureka
 Homer Edward Reid (ME); Liberal
 Helen Angeline Reinhard (HE); Atchison
 Agnes Jeanette Remick (IJ); Manhattan
 William Harley Remington (Ag);
 Colorado Springs, Colo.
 Homer Leroy Reppart (CE); Junction City
 Joseph Rodney Rhoades (GS); Newton
 Margaret Grace Rhodes (HE); Tampa
 Charlotte Mae Richards (HE); Manhattan
 Frances Marie Richards (IJ); Manhattan
 Ruth Josephine Richards (HE); Manhattan
 Frank Leslie Richardson (EE); Gentry, Ark.
 Irwin Roland Ricklefs (Ag); Troy
 Madge Ricky (PSM); Norton
 Joseph Ogden Riley (GS); Olathe
 Lyle Emerson Rinker (ME); Ellinwood
 Charles Philip Riordan (EE); Solomon
 Alvà Andrew Ritchie (RC); Mound Valley
 Bella Catherine Robertson (HE); Mulvane
 Harriet Robertson (HE); Mulvane
 Irene Robertson (HE); Aurora, Mo.
 Ruth Margaret Robertson (HE); Mulvane
 Gomez Robinson (ME); Kansas City
 Esther Joanna Rodewald (HE); Randolph
 Matthew Charles Rodney (RC); Abilene
 Owen Rogers (EE); Bronson
 Mary Magdalene Rolfe (PSM); Wetmore
 Leonard Root (IJ); Independence
 Richard Roper (EE); Manhattan
 William Richard Rorick (IJ); Cherryvale
 Jesse Mulvane Ross (EE); St. John
 Millburn Montgomery Ross (CE);
 Kansas City
 Thomas Darwin Rountree (EE); Clayton
 Lillian Mae Roush (HE); Manhattan
 George Vernon Rowland (ME);
 Bartlesville, Okla.
 Kathryn Elizabeth Rumold (HE 1; M 2);
 Manhattan
 Charles Edward Russell (CE); Fredonia
 Dora Irene Russell (HE); Manhattan
 Lillian Alexander Russell (HE); Wichita
 Lorene Russell (HE); Manhattan
 Mary Dillon Russell (M); Manhattan
 Mildred Russell (GS); Fredonia
 Adrian Leroy Ruth (RC); Scott City
 Russell Scott Sage (EE); Maplehill

FRESHMEN—Continued

- Myron Lloyd Sallee (ME); Long Island
 Ellmore Franklin Sanders (VM); Erie
 Marie Emmeline Sanders (IJ); Manhattan
 Cecil Wilbur Sargent (GS); Riley
 Paul Sargent (Ag); Manhattan
 Frank Saunders (EE 1; RC 2); La Crosse
 Clifford Carrick Sawyer (EE); Liberal
 Aldene Scantlin (HE); Pratt
 Frances Mary Schepp (Ar); Manhattan
 Theodore Oscar Scherer (Ag 1; M 2);
 Lees Summit, Mo.
 Arvilla Ubertine Schmidt (HE); Manhattan
 Oliver Delmar Schmidt (EE); Lorraine
 Edward Wesley Schneberger (GS); Cuba
 Helen Schneider (IJ);
 Albuquerque, N. Mex.
 Fred Schopp (Ag); Abilene
 Ralph Schopp (GS); Abilene
 John Lawrence Schulte (Ag); Westphalia
 Floyd Scott (RC); Independence
 Jesse Scott (GS); Tonganoxie
 Ralph Oatho Scott (GS); Ransom
 Esther Sebring (HE); Rossville
 Henry Charles Seekamp (Ag); Mulvane
 Lila Mae Segrist (HE); Delia
 Lloyd Marvin Sellers (AE); Lyons
 Harold Carlton Sentel (Ar); Burden
 Lee Howard Sharp (GS); Oakley
 James Morton Shaw (Ag 1; AE 2);
 Kansas City
 Alice Millicent Sheets (HE); Copan, Okla.
 Lee Sheets (CE); Burlington
 Dorothy Sheetz (HE); Harveyville
 Emily Ethel Sheppard (HE); Wakefield
 Ralph Reel Shewmaker (CE); Chanute
 Fred Merle Shideler (IJ); Girard
 Myron Leslie Shields (EE); Leavenworth
 Sylvia Susan Shields (HE); Lost Springs
 Crystal Nell Shinn (HE); Concordia
 Charles Shoyer (ME); Soldier
 Raymond Earl Shrader (IJ); Concordia
 Waldo Richard Shuff (EE); Plevna
 Orville Theodore Shurtz (EE); Logan
 Beulah Verne Siddens (HE); Manhattan
 Ernest Siefkin (EE); Wichita
 Ivan Orel Simmons (Ag); Americus
 Lonnie Joseph Simmons (EE); Manhattan
 Ernest Harold Simpson (AE);
 Conway Springs
 Lena Catherine Simpson (HE); Lawrence
 Maynard Henry Simpson (RC); Barnard
 Berlin Edwin Sipple (CE); Chautauqua
 Howard Dean Skaggs (EE); Fredonia
 Veda Rozella Skillin (HE); Frankfort
 Maurice Bailey Skinner (RC);
 Medicine Lodge
 Agnes Slatten (HE); Jamesport, Mo.
 Clarence Archibald Sloan (EE);
 Dalhart, Tex.
 Lawrence Davis Slocombe (RC); Peabody
 Frank Dudley Smalley, jr. (RC);
 Kansas City
 Aubrey Smart (RC); Kansas City
 Bessie Henrietta Smith (HE); Frankfort
 Betty Ruth Smith (HE); Neosho Falls
 Elizabeth Lorraine Smith (HE); Manhattan
 Gerald Anthony Smith (GS); Delphos
 Howard Leaverne Smith (GS); Axtell
 James Everett Smith (Ag);
 Woodward, Okla.
 James Frank Smith (RC); Peabody
 Louis Harrison Smith (VM); Lebo
 Norman Courtland Smith (GS); Lane
 Raymond Edward Smith (GS); Manhattan
 Simon Fred Snider (EE); Courtland
 Charles Edward Snyder (Ag); Soldier
 Malcolm Arthur Snyder (EE); Lenora
 Anna Mae Somerville (HE); Manhattan
 Doris Amy Soper (HE); Manhattan
 James Milton Soper (Ag); Manhattan
 Harold Mahloy Souders (Ar); Eureka
 Ellis Homer Spangler (EE); Newton
 Leonore Elizabeth Spence (GS); Randolph
 Stanley Samuel Spencer (RC); Oakley
 Owen Floyd Spicker (Ar); Wetmore
 Noble Jacob Springer (Ag); Garrison
 Horace Web Sproul (EE); Manhattan
 Jack Harvey Spurlock (VM); Burlingame
 Clinton Leonard Stalker (GS); Rossville
 Lucile Bessie Stalker (M); St. John
 Ethyl Mildred Stansbury (HE); Montrose
 Calvin Steele (RC); Fairbury, Neb.
 Margaret Steinkirchner (GS); Newton
 Morton Daniel Stevenson (RC); Paola
 Edna Coral Stewart (HE); Morganville
 George Stewart (Ag); Morganville
 Gilson Stewart (RC); Wamego
 Glenn Delbert Stewart (EE); Saffordville
 James Arlie Stewart (CE); Abilene
 Ruth Stewart (PSM); Coldwater
 David Houston Stickley (Ag); Canadian, Tex.
 John Fred Stielow (EE); Russell
 Almeron Willis Stillwell (ME); Wichita
 Maud Elizabeth Stitt (HE); Coats
 Herbert Andrew Stocking (ME); Hiawatha
 Glen Harold Stoffer (FME); Abilene
 Albert Ernest Stohr (GS); Soldier
 Gladys Jaunita Stoops (GS); Manhattan
 Joseph William Stout (GS); Emporia
 Stuart Stout (GS); Fort Scott
 Harold Earl Stover (EE); Colwich
 Charles William Stratton (M); Manhattan
 Floyd Dewey Strong (RC); Manhattan
 Mildred Strong (HE); Linwood
 Arnold Strowig (GS); Paxico
 Carl Loren Studer (Ag); Manhattan
 Leo Rudolph Studer (ME); Manhattan
 Mary Lena Stutz (HE); Manhattan
 Edna Marie Suiter (HE); Macksville
 Maggie Irene Summers (HE); Beloit
 Zaven Karaget Surmelian (Ag);
 Constantinople, Turkey
 Cecil Ronald Sutterlin (GS); Westmoreland
 Merle David Swalley (RC); Independence
 Paul Swan, jr. (EE); Washington
 Joseph Gaines Swartz (EE); Atchison
 Thelma Henryetta Swartz (GS); Soldier
 Carl Tanner (EE); Newton
 Albert John Tarro (EE); Osage City
 Leo Joseph Tauer (IJ); Wamego
 John William Taul (CE); Waynoka, Okla.
 Gerald Leslie Taylor (EE); Marion
 Jared Frederick Taylor (ME 1; Ag 2);
 Wichita
 Inez Floy Teater (GS); Ness City
 William Luther Terry (Ar); Newton
 Russell Ira Thackrey (GS); Manhattan
 Collins Walter Thole (Ag); Stafford
 Joseph Morgan Thomas (EE); Portis
 Agnes Thompson (GS); Manhattan
 Frances Clarinda Thompson (HE 1; Ar 2);
 Amherst, Mass.
 Wesley Alexander Thompson (EE); Agenda
 Henry Warden Thornton (GS); Le Roy
 Arlie Irene Thresher (HE); Jetmore
 Raymond Jennison Tillotson (EE); Shields
 James Norwood Tobias (Ag); Manhattan
 Bernie Lorenzo Toliver (RC); Abilene
 Ivan Keith Tompkins (Ag); Byers
 Lolita Grace Toothaker (HE); Manhattan
 Kenneth Marshall Topping (RC); Overbrook
 Charles Horace Towle (CE); Wakefield
 Dwight Calvin Tracy (RC); Smith Center
 Blaine Allman Tull (RC); Manhattan
 Alice Marian Turner (IJ); Manhattan
 Harry Arthur Turner (GS); Tonganoxie
 James Lamb Turner (IJ); Clyde
 Ned Franklin Turner (GS); Waterville
 Undine Margaret Uhl (HE); Holton
 John Fred Umberger (GS); Elmdale

FRESHMEN—Concluded

Reginald Lee Roy Vance (Ar); Kansas City
 Kenneth King Vanderbelt (EE); Abilene
 Pauline Alice Van Osdol (HE); Junction City
 Alexander Van Pelt (Ag); Carthage, Mo.
 Edward Earl Van Valkenburg (Ag); Harper
 Jack Vasey, jr. (CE); El Dorado
 Jess Veal (EE); Downs
 Van Victor Venables (Ag); Bellaire
 Vivian Vada Venables (IJ); Bellaire
 Howard Victor Vernon (Ag); Oberlin
 Eleanor Marie Veroda (PSM); Cuba
 Dorothy Vester (HE); Sylvia
 Fred Walker Viar (GS); Dunlap
 George Raymond Viar (GS); Dunlap
 Helena Mary Viers (M); Manhattan
 Forrest Barber Volkel (EE); Lenora
 Helen Waggoner (IJ); Wichita
 Crystal Louise Wagner (GS); El Dorado
 Mary Frances Wagner (IJ); El Dorado
 William Manford Waite (RC); Abbyville
 Mildred Wakefield (RC); Culver
 Dorothy Mae Waldron (HE); Kansas City
 Adelia Lavonne Walker (IJ); Manhattan
 Diantha Walker (HE); Manhattan
 Lewis Merritt Walker, jr. (RC); Abilene
 Ralph Deforest Walker (EE); Junction City
 William Irving Walker (Ag); Manhattan
 Elsie Gertrude Wall (PSM); Cawker City
 Clair Elza Wallace (Ar); Caney
 Cecil Albert Walt (EE); Gove
 Elmer Oscar Wangerin (EE); Kensington
 Edward Loyal Ward (ME); Ellinwood
 Arthur Wasson (EE); Chautauqua
 Albert Miles Watson (Ag); Osage City
 Kenneth Earl Watt (EE); Chanute
 Cloyce Herbert Watters (GS); Brookville
 Carolyn Leone Webb (GS); Manhattan
 James Sheridan Webb (CE); Moline
 Harold Mansfield Weddle (CE); Lindsborg
 Adolph George Weingart (EE); Troy
 David Martin Weissner (IJ); Paxico
 Lois Edna Welch (PSM); Glen Elder
 Florence Geneva Wells (IJ); Meridan
 Jesse West (AE); Farwell, Tex.
 June Marguerite West (GS); Manhattan
 Vesta Marguerite West (HE); Manhattan
 Fred Marion Westbrook (EE); Hutchinson
 Earle Whitney Westgate (GS); Manhattan
 Lyle Westwood (ME); Lyons
 Forest Livings Whan (RC); Manhattan
 Ronald Ban Whearty (GS); Westmoreland
 John Fenton Whetzel (Ag); Manhattan
 John William White (EE); Neodesha
 Kathryn Marie White (HE); Oswego
 Laura Lorena White (PSM); Clay Center
 Kerr Whitfield (CE); Ness City
 Mary Whitten (HE); Wakarusa
 Louis George Wienske (EE); Manhattan
 Hypatia Jeanne Wilcox (HE); Wichita
 Mary Edith Wilkins (GS); Kansas City
 Alice Louise Williams (IJ); Conway Springs
 Anna Mae Williams (GS); Olathe
 Floyd Lee Williams (IJ); Wellington
 Howard Charles Williams (EE); Cleburne
 Juanita Marie Williams (GS); Guthrie, Okla.
 Harold Arthur Williamson (GS); Manhattan
 Deo Orval Wilson (RC); Manhattan
 Everett Hugh Wilson (GS); Arkansas City
 *Glen Wilson (EE); Neodesha
 Lawrence Harold Wilson (EE); Alida
 Lloyd Owen Wilson (ME); Humboldt
 Mary Elizabeth Wilson (HE); Beloit
 Ruth Wilson (HE); Kinsley
 Claude Jennings Winslow (GS);
 Tonganoxie
 Linnie Mae Winslow (GS); Carlton
 Charles Walter Withey (GS); Home
 Marguerite Inez Wolf (RC); Wichita
 Floyd Arson Wolfenbarger (Ar); Manhattan
 Arthur Wolgast (Ar); Alma
 Waldo Deen Wollam (CE); Ulysses
 Genevieve Marguerite Woodruff (HE);
 Havensville
 *Harold Edwin Woolheater (IJ); Marion
 Dorwin Clair Wright (Ag); Bronson
 Irwin Ira Wright (ME); Stockton
 Rachel Wright (HE); Welsh, La.
 Merle Eugene Wyatt (RC); Beloit
 Emmett Felix Yost (EE); Downs
 John Yost (EE); La Crosse
 Gerald Martin Young (EE); El Dorado
 John Wray Young (RC); Hutchinson
 Manser Emerson Young (GS); Burden
 Lawrence Warner Youngman (GS);
 Harveyville
 Richard Louis Youngman (IC); Kansas City
 Alfred Henry Zeidler (RC); Manhattan
 Helen Alice Zeidler (GS); Manhattan
 Dorothy Evelyn Zeller (HE); Manhattan
 Maynard Eugene Zeller (Ag); Manhattan
 Elsie Theresa Zohner (HE); Penokee

SPECIAL STUDENTS

Joseph Omer Abbott (GS); Lawrence
 Leone Lera Bacon (GS); Kingman
 Florence Baker (GS); Manhattan
 Helen Marian Balyeat (GS); Blue Mound
 Alta Elizabeth Barger (GS); Manhattan
 Ruth Carolyn Bennett (GS); Manhattan
 Millard Thomas Bland (GS); Concordia
 Walter Edwin Block (GS); Beverly
 Henry Stuart Bockes (Ag); Beloit
 Helen Lucile Bower (GS); Fairview, Okla.
 Harold Clinton Bowling (GS); Ionia
 Kenneth Barrett Bowman (GS); Abilene
 Clara May Boydston (GS); Holton
 Nancy Nysewander Brenneman (GS);
 Manhattan
 Arthur Lee Brown (GS); Manhattan
 Helen Brown (HE 1; GS 2); Carbondale
 Emmett Anderson Brumitt (Ag); Codell
 Per Emanuel Callin (Ag); Ledinge, Sweden
 Earl Carroll (GS); Manhattan
 Helen Edythe Cass (HE); Collyer
 Anna Katherine Champeny (PSM); Oxford
 Frances Lee Clammer (GS); Manhattan
 Owen Lovejoy Cochrane (GS); Manhattan
 Albert Norton Colburn (Ag); McPherson
 Edgar Elwood Coleman (GS); Alma
 Frank Low Coleman (GS); Oskaloosa
 Lena Cook (HE); Scott City
 Margaret Corby (GS 1; HE 2); Manhattan
 Floyd Hunter Creighton (GS); Manhattan
 Mary Elva Crockett (GS); Manhattan
 Beth Suzanne Currie (GS); Manhattan
 Clifford Wilkin Currie (GS); Manhattan
 Amy Lou Dalton (HE 1; GS 2); Virgil
 Junior Edward Davis (GS); Alden
 Antonio Villarreal de la Garza (AE);
 Monterey, Mexico
 Jay Lester Dennon (EE); Tecumseh
 Marguerite Luella Dickerhoof (GS);
 Manhattan
 Donald May Diefendorf (GS); Riley
 *William James Douglas (Ag); Piper
 Belle Durham (GS); Norton
 Glen Edward Eakin (GS); Manhattan
 John Vance Eastwood (GS);
 Independence, Mo.

* Under auspices of the U. S. Veterans' Bureau.

SPECIAL STUDENTS—Concluded

- Berenice Geraldine Elliot (M); Manhattan
 Richard Elliott (GS); Newton
 Eva Vivian Elvey (GS); Coffeyville
 Richard Erikson (Ag); Manhattan
 Forest Noble Erwin (M); Pratt
 Lucile Marguerite Evans (M); Manhattan
 Ernest North Farnham (EE 1; GS 2); Abilene
 Jesse Edward Fiegel (GS); Concordia
 Harold Flamm (M); Amarillo, Tex.
 *Robert Clarence Fleming (Ag); Harlowton, Mont.
 Daisy Boswell Floyd (GS); Manhattan
 Martha Harbord Foreman (GS); Manhattan
 Blanche Forrester (GS); Manhattan
 Mangum Cocratus Fox (GS); Newton
 Amnon Harold Fry (GS); Independence, Mo.
 David Earl Fry (GS); Oak Hill
 *Hugh Shepard Funk (Ag); Manhattan
 *John Clarence Gard (CE); Manhattan
 Donna Greene (GS); Bonner Springs
 Ella Gregory (GS); Reading
 Frank Griffin (GS); Clay Center
 Thomas Joseph Griffith (GS); Manhattan
 Meiert Grootes (VM); Reading, Minn.
 Don Haegert (GS); Manhattan
 Emily Elizabeth Hall (GS); Topeka
 *Hector Wilfred Harris (GS); Horton
 Mabel Enola Harris (GS); Woodward, Okla.
 Ralph Carter Harrison (GS); Wichita
 Myrtle Inez Haver (GS); Englewood
 *Arculus Leopold Hawkins (GS); Council Bluffs
 Lucile Herr (GS); Hutchinson
 Sherman Adison Herren (GS); Manhattan
 Oragayle Hesser (GS); Fostoria
 Caldwell Hessin (GS); Manhattan
 Roxie Ennid Hessong (GS); Nowata, Okla.
 Olen Hindman (Ag); Wright
 Marjorie Hubner (PSM); Newton
 Adda Hunter (HE); El Dorado
 William Alexander Hunter (GS); Manhattan
 Ronald Vanten Hutton (GS); Manhattan
 Mildred Lucile Iles (GS); Manhattan
 Christine Dorothy Immer (GS); Hutchinson
 Sara Virginia Jolley (GS); Manhattan
 Jerome Jerry Katz (GS); Kansas City
 Marian Gibbonney Kirkpatrick (M); Manhattan
 Theunis Munnik Kleinenberg (Ag); Pietersburg, Transvaal, South Africa.
 John William Koerner (Ar); Wakefield
 Alpha Kramer (GS); Spivey
 Louis Lauritson (Ag); Kansas City
 Genevieve Lovejoy (GS); Almena
 Walter Henry Lutz (GS); Sharon Springs
 Etna Place Lyon (GS); Manhattan
 *George Roy McMahon (Ag); Manhattan
 Lois Elizabeth McNitt (GS); Washington
 Francis Clay McQuiddy (GS); Canadian, Tex.
 Robina Marian Manley (GS); Junction City
 Dorothy Martin (GS); Hutchinson
 Jose Gomez Martinez (Ag); Wichita
 Thelma Adelaide Merwin (GS); Great Bend
 Fred Miller (Ag); Wamego
 Evelyn Frances Melter (GS); Liberal
 Kathryn Moore (GS); Wichita
 Robert Merton Morrison (EE); Manhattan
 Ruth Nettleton (GS); Lenora
 Alice Agnes Noble (GS); Oneida
 Mona Josephine Novak (GS); Manhattan
 Robert Brogan O'Bryan (GS); Fort Scott
 Noel Olmstead (GS); Concordia
 Alice Eugenia Olson (GS); Manhattan
 William Edwards Otis (Ag); Manhattan
 Eli Benjamin Packer (GS); Liberal
 Zenia Pearson (HE 1; Ag 2); Manhattan
 Paul Eugene Pfuetze (GS); Manhattan
 Sybil Porter (GS); Manhattan
 Frank McLean Quail (GS); Topeka
 Ross Daniel Reber (Ag); Morrill
 Ann Margurite Robinson (HE); Florence
 Larse Loetta Rolph (HE); Delphos
 Dorothy Ellen Ross (HE); Kansas City, Mo.
 Neva Marie Ross (GS); Meade
 Laura Faye Russell (PSM); Manhattan
 Nina Russell (GS); Manhattan
 James Schneider (Ag); Interlaken, Switzerland
 Thomas Sears (GS); Eureka
 Thomas Shaw (GS); Manhattan
 Edwin Denison Shields (GS); St. Francis
 *Harold Simpson (EE); Manhattan
 Sister Crescentia Giersch (GS); Manhattan
 Norman Flette Spear (GS); Bushong
 Clyde Leslie Spring (GS); Manhattan
 Melba Elizabeth Stratton (GS); Udall
 Edward Julian Sudendorf (GS); Salina
 Grace Elizabeth Summers (GS); Beloit
 William Wayne Teeters (GS); Abilene
 Lee Thomas (GS); Fall River
 Georgia May Thompson (GS); Sylvia
 Alva Charles Thyer (Ag); Blue Mound
 Ruth Trinkle (GS); Garden City
 John Willard Truax (GS 1; ME 2); Peabody
 Herbert Mark Wallingford (CE 1; GS 2); Ashland
 William Glen Walton (GS); Topeka
 Charley Ward (GS); Altamont
 Hazel Emma Weber (GS); Manhattan
 Helen Welsh (HE); Manhattan
 Ruth Violet Welsh (GS); Blackwell, Okla.
 Dorothea Allyce White (GS); Burr Oak
 Louise Helen Wilkins (GS); Kansas City
 Louis Dixon Wilkinson (Ar); Topeka
 Dorothy Jean Willits (HE 1; GS 2); Topeka
 Isal Winterscheid (HE); Gridley
 Jacob Wolberd (GS); Cawker City
 Francis Marion Zeigler (M); Salina

SUMMER SCHOOL

- Jessie Gertrude Adee; Wells
 Georgene Barbara Affleck; Clay Center
 Margaret Ahlborn; Smith Center
 Glenn Allen Aikins; Manhattan
 Emma Mae Aiman; Manhattan
 Marion Francis Aiman; Manhattan
 Esther Mildred Alcorn; Ionia
 Louise Josephine Alexander; Holcomb
 Harriet Wright Allard; Manhattan
 Glen Allen; Burlington
 Irene Kathryn Allen; Clay Center
 *Fred Allison; Manhattan
 *Noble Marrol Allm; Junction City
 Leonard Rhys Allott; Manhattan
 Bernard Martin Anderson; Manhattan
 Cora Christina Anderson; Neosho Falls
 Frank DeMoss Anderson; Iola
 Gladys Alverta Anderson; White City
 Gladys Marie Anderson; Neosho Falls
 Grace Mabel Anderson; Clifton
 Helen Anderson; Thayer
 Howard Melathon Anderson; Kansas City
 Mabel Anderson; Vesper
 Maggie Mae Anderson; Neosho Falls
 Carol Esther Ankeny; Manhattan
 Margaret Pearl Ansdell; Jamestown
 Clifford Leland Antle; Emporia
 Jules Louis Arnandez; Manhattan

* Under auspices of the U. S. Veterans' Bureau.

SUMMER SCHOOL—Continued

Ethel May Arnold; Manhattan	Awilda Brown; Winfield
Leah Ellen Arnold; Manhattan	Beatrice Brown; Manhattan
Ulysses Sam Arnold; Manhattan	Edna Mae Brown; Riley
Mae Bell Arrington; Kansas City	Vira Brown; Edmond
Edward Leroy Askren; Manhattan	William Elijah Brown; Walnut Grove, Ark.
Marjorie Ault; Naponee, Neb.	Chester Leroy Browning; Kingsville, Mo.
Ruth Lillian Aurelius; Fremont	Nina Myrtle Browning; Manhattan
Alice Leanne Axelton; Garrison	Ralph Samuel Brummett; Seneca
Andrew Ansel Axline; Pratt	Florence Grace Bruner; Burdett
Harold Benton Axtell; Topeka	Thomas Walter Bruner; Burdett
Adalia Capsey Backman; Manhattan	*Joseph Daniel Buchman; Council Grove
Marvin Bahl; Pleasanton	Guy Emerson Buck; Salina
Martha Ruth Bainer; Manhattan	Harris Loree Burnett; Dodge City
Florence Wortham Baker; Manhattan	Lucy Tapp Burns; Weston, Mo.
*Marvel Leon Baker; Syracuse	John Walter Burr; Manhattan
Vida Baker; Sterling	*Ira Elbert Burris; Wichita.
Herbert Bales; Manhattan	*Hiram Gilbert Burt; Garden City
*William Ballard; Miami	Mary Penelope Burtis; Manhattan
*Ira Lee Balsley; Manhattan	Phyllis Winifred Burtis; Manhattan
Ethel Bammes; Manhattan	Florence Marian Burton; Haddam
Galen Andrew Barber; Dorrance	Maude Alice Burton; Blue Rapids
William Joseph Barber; Council Grove	Helen Mildred Bushby; Belleville
Alta Elizabeth Barger; Manhattan	Elgin Roy Button; Topeka
Justus Wheeler Barger; Manhattan	Cena May Calkins; Olivet
*Chester Fred Barker; Manhattan	Bert Lumb Cameron; Manhattan
Atwell Stuart Barkley; Manhattan	Roy Raymond Cameron; St. George
Otha Anthony Barnes; Morrowville	Florence Mima Carey; Manhattan
*Sam Lewis Barnett; Salina	*Aura Melvin Carkuff; Manhattan
Carroll Miller Barringer; Manhattan	Ella Ann Carkuff; Manhattan
Murlin Clyde Barrows; Clifton	Sylvia Juliette Carlson; Manhattan
Marjorie Fern Barth; Manhattan	Alice Burton Carney; Manhattan
John Thomas Bartley; Fostoria	Virginia Elizabeth Carney; Manhattan
Theodore Lawrence Bayer; Manhattan	Thelma Myrtle Carpenter; Fordyce, Ark.
Helen Cecile Beck; Manhattan	*Harry Edwin Carrier; Topeka
Ruth Elizabeth Becker; Springfield, Ohio	Earl Carroll; Manhattan
Lillian Louise Bedor; Hollis	*Doyle Henry Carter; Trenton, Mo.
*George Luther Bell; Goff	*Sherman Harold Carter; Le Roy
Glen Dennis Beougher; Okley	Thelma Odell Carter; Le Roy
Elsie Kathryn Bergstrom; May Day	Fern Case; Alta Vista
Mary Betz; Asherville	*Sylvester Ulrice Case; Lyons
Perry Betz; Asherville	*Norris Cash; Manhattan
*George Mike Bhear; Manhattan	Laura Anna Celoud; Cuba
Julia Blitz; Manhattan	*Austin Southwell Chapin; Manhattan
Robert Stuart Bishop; Manhattan	Edna Neetta Chapin; Westphalia
Emma Mary Black; Auburn	Edward Jost Chapman; Leavenworth
Francis Black; Manhattan	Ralph Bennett Chilcott; Mankato
Hilda Black; Lewis	Etta Estella Chillson; Manhattan
William Wayne Blackhall; Sterling	Iva Bernice Clark; Hutchinson
Hazel Haseltine Blair; Manhattan	David Charles Clarke; Manhattan
Tina Blanchard; Manhattan	Charles Warren Claybaugh; Pretty Prairie
Robert Blanks; Manhattan	Thayer Cleaver; Iola
*Floyd Arthur Bleger; Saxman	Roy Engle Clegg; Altoona
Elizabeth Blockolsky; Manhattan	Letha May Clewell; Belle Plaine
Anna Boell; Wamego	Charles Robert Clothier; Manhattan
Margaret Alice Boell; Wamego	Charles Haynes Cloud; Winfield
*Charlie Bernhard Bohling; Meade	*Everett Pardon Colburn; Manhattan
Helen Anna Boller; Junction City	Wilber Cole; Topeka
Lulu Lightbody Booth; Corning	*Herbert Lee Collins; Wellsville
John Borrer; Westphalia	Leslie Collins; Manhattan
Leone Cheever Bower; Manhattan	Ursula Oldham Collins; Manhattan
Leslie Bowman; Lebo	Belva Gertrude Coltharp; Bala
Evelyn Frances Boyce; Minneapolis	Evelyn Colwell; Manhattan
James William Bradley; Niles	Earl Leighton Combest; Ransom
Sadie Brainerd; White Water	Glenn Ellis Compton; Rozel
Ferne Ethel Bramhall; Kingman	Gertrude Conn; Kirbyville, Texas
Carl Alfred Brandley; Manhattan	Etta Marie Conroy; Manhattan
Mary Elizabeth Brandley; Manhattan	Nelle Agnes Conroy; Beloit
Verna Breese; Wichita	Nelle Isabelle Conroy; Manhattan
Miriam Elizabeth Brenner; Manhattan	Helen Ethel Cook; Manhattan
Mildred Clara Brichacek; Lucas	Vivian Delphine Cook; Randolph
Clara Howard Bridenstine; Manhattan	*Metheny John Copeland; Quinter
*Harry Otis Briscoe; Manhattan	Pearle Zelma Copenhofer; Manhattan
Margaret Brockish; Westmoreland	Wilber Copenhofer; Manhattan
Amelia Blanche Brooks; Manhattan	Nora Bee Corbet; Leona
Dorothy Brooks; Manhattan	Catherine Elizabeth Corey; Blue Mound
Josephine Elizabeth Brooks; Manhattan	Judith Naomi Cornell; Wakefield
	Helen Elizabeth Correll; Manhattan
	Marie Correll; Manhattan

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SUMMER SCHOOL—Continued

- Bessie May Coulter; Wichita
 Marceline Willard Couture; Topeka
 Orville Cragun; Kingman
 Marie Elizabeth Cramb; Gladstone, Neb.
 *Hugh Crawford; Dodge City
 Alma Rose Cress; Manhattan
 Lenore Margaret Cress; Manhattan
 Mary Elva Crockett; Manhattan
 Willa Cropp; Glasgow, Mo.
 Helen Golda Crow; Dighton
 George Mary Crow; Manhattan
 Edith Naomi Crumbaker; Manhattan
 Ethel Anna Crumbaker; Manhattan
 Gladys Hattie Crumbaker; Manhattan
 Gladys Ann Cummins; Palmer
 John Daniel Cunningham; Manhattan
 Erma Evangeline Currin; Manhattan
 Grace Marie Currin; Manhattan
 Elizabeth Curry; Winchester
 Frances Rebekah Curtis; Kansas City
 *Walter Elmer Curtis; Independence, Mo.
 Alan Davis Dailey; Manhattan
 *Charles Otto Dailey; Garden City
 Emily Ruth Dailey; Arlington
 *Henry Sylvester Dairy; Ottawa
 Day Daniels; Manhattan
 Georgia May Daniels; Wichita
 Calvin Davidson; Yates Center
 Althea Grace Davies; Manhattan
 Kathrine Elizabeth Davis; Manhattan
 Frank Davis, Hiawatha
 George Stuart Davis, Clay Center
 Junior Edward Davis; Alden
 Jessie Hedden Davis; Manhattan
 Marion Bradford Davis; Manhattan
 Robert Davis; Buffalo
 Harry Ellsworth Day; Kansas City
 Rebekah Deal; Kansas City, Mo.
 Charles Dean; Topeka
 *Grover Dean; Manhattan
 *Alfred Fred Dehn; Atchison
 Orville Marshall Deibler; Manhattan
 Lloyd Eugene Deister; Manhattan
 Antonio Villarreal de la Garza;
 Monterey, Mexico
 Dorsie Deniston; Manhattan
 Abbie Clair Dennen; Manhattan
 Alexander Drenler; Winchester
 Robert De Rose; Manhattan
 Miriam Lenore Dexter; Manhattan
 Hubert Dimmitt; Manhattan
 *William Kenneth Dinklage; Fort Scott
 Edith Delores Dockstader; Manhattan
 Ona Mae Dodgion; Louisville
 Leonora Katherine Doll; Manhattan
 *David Neill Donaldson; Manhattan
 Margaret Grace Douglas; Topeka
 Frances Douplik; Agenda
 *Gerald Roderick Dowd; San Francisco, Cal.
 Margaret Dubbs; Manhattan
 Dorothy Helen Duffy; Junction City
 Jack Wilbur Dunlap; Scott City
 *Herbert Ivan Durham; Norton
 Charles Ebenstein; Manhattan
 *Herbert Theodore Eberly; Republic City
 Alice Dorothy Edstrom; Clyde
 Edith Christine Edstrom; Clyde
 *Edward Edwin Edwards; Manhattan
 Muriel Bernice Edwards; Belvue
 Winifred Edwards; Athol
 Milton Stover Eisenhower; Abilene
 Doris Evangeline Ekstrom; Agenda
 Ethel Vern Ekstrom; Agenda
 Elizabeth Elledge; Parsons
 Leonard Paul Elliott; Manhattan
 Louis Harold Elmore; Belleville
 Frederick Emery; Manhattan
 George Malcolm Emrich; Longford
 Mildred Faye Emrick; Omaha, Neb.
 Russell Enfield; Iola
 Anna Marie Erickson; Clyde
 Delpha Alice Erickson; Manhattan
 Harriet Marie Esdon; Garrison
 Mary Rebecca Esdon; Manhattan
 Darrel Lee Collins Evans; Manhattan
 James Glenn Evans; Chanute
 *Hollis Edgar Ewing; Parsons
 Lena Fabricius; Hill City
 Hazel Elenore Faidley; Wakefield
 Arline Jessie Faley; Manhattan
 Ethel Almeda Fansler; Junction City
 Ruth Marie Faulconer; Manhattan
 Maude Esther Fickel; Haddam
 Alta Fields; Manhattan
 Frances Eileene Fields; Manhattan
 *Robert Fife; Iola
 Lena Esther Fincham; Blue Rapids
 Thelma Pearl Fincham; Blue Rapids
 *Roy Fisher; Cabool, Mo.
 Beatty Hope Fleenor; Manhattan
 Herman Vincent Fleming; Nickerson
 *Robert Clarence Fleming; Harlowtown, Mont.
 Vernett Edward Fletcher; Manhattan
 Elizabeth Flora; Kansas City
 Hazel Sarah Florence; Manhattan
 Daisy Boswell Floyd; Manhattan
 Angela Fogarth; Junction City
 *Kenney Lee Ford; Seneca
 Bessie Forsyth; Clay Center
 Margaret Lansden Foster; Manhattan
 Betty Ruth Fowler; Kingman
 Edward Raymond Frank; Manhattan
 Harvey Dwight Franklin; Horton
 *Leslie Matthew Freeman; Paola
 Gonzulo Delpin Fuentes; Manhattan
 Otis Fulhage; Yates Center
 Elsie Fulton; El Dorado
 *Hugh Shepard Funk; Hill City
 Mariana Gage; Minneapolis
 Ralph Dana Gage; Minneapolis
 Beatrice Edith Gaither; Kansas City
 Dorothy Isabel Gallemore; Manhattan
 Margaret Ruth Gallemore; Manhattan
 Ruth Emma Gardenhire; Alma
 Herbert Otis Garth; Strong City
 *Hugh Alexander Garvie; Abilene
 Lloyd Albert Gates; Downs
 Lalla Louise Ganthier; Hill City
 Bess Geffert; Greenleaf
 Jesse Conrade Geiger; Wichita
 *Fred Philip Gibbs; Manhattan
 Marie Gibson; Independence, Mo.
 Edna Gill; Sylvia
 Mabel Josephone Gill; Attica
 Frank Arthur Gillespie; Garden City
 John Arthur Glaze; Manhattan
 Grace Glenn; Manhattan
 Howard Kay Gloyd; Wellsville
 Florence Godfreson; Waterville
 Mabel Godsey; Emporia
 Marion Arthur Goff; Manhattan
 Merle Elmer Goff; Manhattan
 *John Goheen; Clay Center
 Velma Good; Lebanon
 Wallace Chester Goodell; Independence
 Arthur Goodwin; Concordia
 Esther Lucille Goranson; Randolph
 Fannie Harriet Gorton; Manhattan
 Mary Lois Gorton; Manhattan
 Wilma Ruth Gott; Lincolnville
 Helen Margaret Gould; Westmoreland
 Helen Elizabeth Graham; Manhattan
 Lucille Alma Gramse; Perry
 *Samuel Grappia; Manhattan
 Ellwood LeRoy Gray; Osawatomie

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SUMMER SCHOOL—Continued

- Roy Monroe Green; Manhattan
 *Rush John Green; Manhattan
 Paul Wallace Gregory; Manhattan
 Joseph Irvine Griffith; Wichita
 Merle Sarah Grinstead; Manhattan
 Adeline Poston Groves; Kansas City, Mo.
 Clara Barbara Gruber; Brookville
 Edith Gabriella Grundmeier; Barnard
 Lola Leontine Gudge; Wichita
 *Harry Ludwig Gui; St. Louis, Mo.
 *William Wallace Gunselman; Holton
 Clinton Guy; Manhattan
 *Ira Adam Haber; Manhattan
 Clarence Gridley Haegert; Manhattan
 Frank Alexander Hagans; Manhattan
 Hazel Nellie Hahn; Clay Center
 Ray Hahn; Clay Center
 Edith Margaret Haines; Manhattan
 Lawrence Fener Hall; Manhattan
 Mary Edith Haller; Admire
 Doris Handlin; Manhattan
 John Hanna; Hutchinson
 *Clarence McKinley Hanson; Clyde
 *Roy Everett Happel; Manhattan
 Bernice Evelyn Harbaugh; Agenda
 Marian Hardman; Downs
 George Thomas Harkins; Manhattan
 Alice Tibbetts Harkness; Lakin
 John Elbridge Harner; Manhattan
 Hildegard Elulia Harlan; Manhattan
 Marguerite Velma Harper; Ponca City, Okla.
 Claude Harris; Manhattan
 Mabel Enola Harris; Woodward, Okla.
 Paul Washington Harris; Havensville
 *Benjamin Charles Harrison; Seneca
 *Albert Harrold; Manhattan
 Martha Harrop; Manhattan
 Queenie Esther Hart; Minneapolis
 William James Hartgroves; Wamego
 Richard Michael Hartigan; Manhattan
 Jane Gladys Hartley; Manhattan
 Ernest Hartman; Manhattan
 Fred Hartwell; Goodland
 Ella Hathaway; Mankato
 Ada Haukenberry; Manhattan
 *August John Hauptli; Glen Elder
 Rosa Haverty; Hollenberg
 Estella Hawley; Clay Center
 Wilda Marguerite Hay; Eskridge
 *Guy Hayes; Kansas City, Mo.
 Elizabeth Sara Head; Manhattan
 Gladys Esther Heath; Manhattan
 Lucile Beatrice Heath; Manhattan
 Vera Doolittle Hedges; Blue Mound
 Harold Keith Hefling; Manhattan
 Loren Bryce Hefling; Manhattan
 Gladys Sophia Heller; Riley
 Josephine Frances Hemphill; Clay Center
 Fred Earl Henderson; Dodge City
 Lillian Henderson; Manhattan
 *George Elwin Hendrix; Manhattan
 Merle Revere Henre; Kansas City
 Louise Vera Henry; Belleville
 Christie Cynthia Hepler; Manhattan
 Inez Catherine Heptig; Iush
 Olive Hazel Hering; Stafford
 Grace Herr; Manhattan
 David Pollock Hervey; Wichita
 Roxie Ennid Hessong; Mapleton
 Randall Conrad Hill; Manhattan
 George Hitchcock; Tescott
 Della Elizabeth Hodges; St. George
 Luvina Hodges; St. George
 Ernest Eugene Hodgon; Harveyville
 *John William Hodson; Liberty
 *Myrna Mae Hoffman; Manhattan
 Paul Hoffman; Manhattan
 John Henry Hofman; Manhattan
 Mary Lucile Hofmann; Manhattan
 Emil Hodanson; Marquette
 Juanita Hoke; Manhattan
 Lois Holderbaum; Kansas City
 Ola May Holland; Geuda Springs
 Geneva Hollis; Fredonia
 Glenn Hollister; Manhattan
 George Arthur Holloway; Hutchins
 Arlie Alfreda Honeywell; Seneca
 *James Ralph Hoover; Manhattan
 *Richard Hopper; Manhattan
 Fred Charles Horan; Manhattan
 Walter Rawlins Horiacher; Manhattan
 Katherine Margaret Horner; Sycamore
 Opal Maye Horr; Thayer
 Wilma Irene Hotchkiss; Manhattan
 Helen Ella Houdek; Agenda
 Mignon Corwin House; Manhattan
 Paul Edgar Hougard; Abilene
 Frank Lucian Howard; Manhattan
 Sherman Hayes Howard; Manhattan
 Margaret Howe; Manhattan
 Orrin Kem Howe; Kansas City
 Charles Bannus Hudson; Fort Scott
 Eugene Huff; Chapman
 Nellie Pauline Hughes; Manhattan
 *Floyd Edgar Hull; Manhattan
 Ihla Geraldine Hull; Manhattan
 Emma Wilhelmina Humfeld; Manhattan
 *George Humphrey; Manhattan
 Albert Glen Hunt; Larned
 Eunice Ada Hunt; Blue Rapids
 Loyall Virgil Hunt; Wilmore
 George Dewey Huston; Manhattan
 Helen Hutchins; Kansas City
 Margaret Hyde; Kansas City
 Thomas Leroy Iden; Salina
 *Carl Grant Iles; Manhattan
 Evert Harold Ingersoll; Overbrook
 *Irvin Ingram; Lawrence
 Fred Irwin; Manhattan
 *George Jackson; Herman
 *Thomas King Jackson; Manhattan
 Victoria Lee Jackson; Kansas City, Mo.
 Perry Leonard Jacobs; Quindaro
 *Buel William Jaggar; Manhattan
 Harry Raymond James; Manhattan
 Harriett Agnes Jenkins; Kansas City
 LaMotte Nathaniel Jenkins; Kansas City
 Alice Marie Jennings; Manhattan
 *Adolph George Jensen; Manhattan
 *John Benjamin Jewell; Manhattan
 Albert Theodore Johnson; Paola
 Delbert Elmer Johnson; Wamego
 Florence Marguerite Johnson; Manhattan
 Genevieve Alberteen Johnson; Burlingame
 Helen Wilhelmina Johnson; Burlingame
 James Foley Johnson; Manhattan
 Mamie Bertina Johnson; Manhattan
 Minnie Florence Johnson; Manhattan
 *Roy Vernon Johnson; Manhattan
 Theodore Oliver Johnson; Manhattan
 Thorsten Johnson; Vermillion
 Viola Hulda Johnson; Clifton
 Alice Kathleen Johnston; Manhattan
 Frances Allegra Johnstone; Manhattan
 *Charles Francis Jones; Manhattan
 Hattie Beatrice Jones; Bigelow
 *Floyd William Jordan; Cherokee
 Eulalia Ferne Kaiser; Newton
 George Benjamin Kappelman; Miltonvale
 Ralph Marion Karns; Ada
 *Irl Roscoe Keagy; Ottawa
 Beulah Keiffer; Manhattan
 Rosina Alvena Keller; Frankfort
 *James Melvin Kelley; Elkhart

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SUMMER SCHOOL—Continued

- Mamie Kendrick; Brunswick, Mo.
 Mabel Rose Kennedy; Manhattan
 *Carl Marion Kerley; Peck
 Sarah Blanche Kershaw; Garrison
 Mary Frances Kientz; Manhattan
 *Russell Stanley Kifer; Springfield, Mo.
 John Haigler Kile; Manhattan
 Gladys Ruth Kimmel; Athol
 Florence Lorene King; Olsburg
 Kathryn Elizabeth King; Manhattan
 Marion Malcolm King; Manhattan
 Venice Marie King; Olsburg
 Iva Leona Kirk; Belleville
 *Bertie Ray Kirkpatrick; Manhattan
 Alice Marie Kjellin; Garrison
 Nillie Charlotte Kneeland; Liberal
 Ila Thelma Knight; Jamestown
 Dorothy Maude Knittle; Manhattan
 James Earl Knox; Sterling
 Rose Anne Kotapish; Irving
 Paul Kovar; Manhattan
 Snoda Grace Krider; Burns
 *Gustave Louis Krieger; Manhattan
 Vanda Faith Laman; Portis
 Mabel Ellen Lamoreaux; Waterville
 Blanche Lapham; Manhattan
 Frank Eugene LaPlant; Delphos
 *Smith Herman Lapsley; Manhattan
 Helen Pauline Larson; Manhattan
 Merlin James LaShelle; Manhattan
 Mary Isabel Laughbaum;
 Oklahoma City, Okla.
 Hallie Laughlin; LaCrosse
 Louis Lauritson; Kansas City
 Irene Gabrielle Lawrence; Wichita
 William Grant Lay; Topeka
 Amy Jane Leazenby; Manhattan
 Mary Rhodes Leeper; Topeka
 *John Clyde Lentz; Manhattan
 Carroll Leonard; Manhattan
 James Michael Leonard; Newton
 Ruth Evangeline Leonard; Manhattan
 *Reese Lewis; Emporia
 Viola Mae Lewis; Kansas City
 Jessie Lindstrom; Leonardville
 *George Daniel Lingelbach; Minneola
 Madeline Locke; Erie
 Maude Cathryn Loftan; Washington
 Mary Belle Logan; New Florence, Mo.
 Grace Beatrice Long; Cuervo, N. Mex.
 Ruth Engel Long; Manhattan
 Russell Newton Loomis; Manhattan
 *James Albert Loop; Manhattan
 *Glen Wood Loudner; Gaylord
 Herbert Melvin Low; Topeka
 Frances Lowe; Manhattan
 Lucy Lydia Lowe; Manhattan
 Mary Euphrasia Lowe; Manhattan
 *Archie MacDowell Lukens; Manhattan
 Bertha Nora Lukens; Manhattan
 *James Corwin Lusk; Manhattan
 Viola Leota Lyster; Beloit
 Ralph Bruce McCarroll; Hutchinson
 Winifred Owen McCarty; Ames
 Mabel McComb; Wichita
 Nellie Rebecca McComb; Topeka
 James Paul McConnell; Manhattan
 Rachel McCoy; Wamego
 Ernest McCullough; Manhattan
 Helen McDonald; Manhattan
 James Julius McDonald; Reeses Mill, W. Va.
 *Howard Hutcheson McGee; Olathe
 Helen McIver; Abbyville
 Roswell James McIntosh; Manhattan
 *George Roy McMahan; Manhattan
 *Asbury Wesley McMinn; Manhattan
 Mary Marcella McQuiestan; Clay Center
 *George McRoberts; Silver Lake
 William Gladstone McRuer; Manhattan
 Robert Victor Macias; Mexico
 Reuben Cleo Maddy; Utica
 Clara Ruth Madison; Spivey
 Pearl Mahaffey; Galesburg
 Hattie Jane Mardis; Preston
 Arling Willard Marshall; Manhattan
 Daniel Claire Marshall; Manhattan
 Lee Webster Marshall; Manhattan
 Ethel Martin; Manhattan
 Florence Merle Martin; Cuba
 Flossie Pearl Martin; Cuba
 Isaac Martin; Pawnee Rock
 Ruth Martin; Hiawatha
 Inez Isabelle Marts; Junction City
 Fred Mason; Lincoln
 Mary Aletha Mason; Belle Plaine
 Lola Lorraine Matter; Manhattan
 Orpha Maust; Garden City
 Hazel Irene May; Manhattan
 Josephine Jane May; Holton
 Ross Wesley May; Holton
 Mildred Mayden; Manhattan
 Rolla Mayden; Manhattan
 Gertrude Helen Meenen; Clifton
 *Henry John Melcher; Concordia
 Marjorie Melchert; Ottawa
 *Elbert Earl Meldrum; Wichita
 Arthur Ruel Merrill; Wathena
 *Edward Winebright Merrill; Manhattan
 *Thomas Franklin Merrill; Douglass
 Velma Meserve; Ellis
 Alva Ernest Messenheimer; Admire
 Elda Lillian Meyer; Manhattan
 Jose Angel Mier; Mexico
 Mary Martha Mikulecky; Agenda
 Nellie Mildfelt; Clay Center
 John Lenius Mildrester; Norton
 Andrew John Miller; Manhattan
 Angie Howard Miller; Manhattan
 Buford John Miller; Manhattan
 Elsie Helen Miller; Bonner Springs
 Ernest Miller; Coffeyville
 Keith Walter Miller; Manhattan
 Silvana Enos Miller; Hesston
 Clyde Minner; Soldier
 Florence Irene Mirick; Halstead
 Mildred Agnes Mitchell; Republic
 *William Elmer Mitchell; Manhattan
 Lyla Effie Moline; Randolph
 Nell Bernice Monday; Summerfield
 Sarah Idabelle Monroe; Manhattan
 Bernice Marie Monteith; Blue Rapids
 Edna Moon; Randolph
 Cecil Moore; Manhattan
 Hubert Franklin Moore; Altoona
 Lena Josephine Moore; Wakarusa
 *Leo Albert Moore; Manhattan
 Ruby Bernice Moore; Clay Center
 Charles Edgar Moorman; Manhattan
 Violet Frances Morford; Olsburg
 Mary Hope Morris; Manhattan
 Ralph Morrish; Manhattan
 *Coy Ellis Morrison; Gibbon, Neb.
 Robert Merton Morrison; Manhattan
 Louise Morse; Burns
 Dudley Bertie David Moses;
 Johannesburg, S. Africa
 *Jesse Mowery; Garden City
 Harry Forrest Moxley; Osage City
 Lawrence Reed Mulliken; Manhattan
 Jonathan Alexander Munro; Manhattan
 *Fred Franklin Murphy; Manhattan
 Hannah Bridget Murphy; Perth
 Meria Kathleen Murphy; Perth

* Under auspices of the U. S. Veterans' Bureau.

SUMMER SCHOOL—Continued

- Guy Murray; Manhattan
 Nancy Mary Mustoe; Norton
 Frank Lewis Myers; Manhattan
 Harry Albert Myers; Americus
 Bertha Elizabeth Nanninga; Leonardville
 Jesse Harold Neal; Williamsburg
 Leonard George Nehring; Alma
 *Carl Otto Nelson; Clyde
 Dorothy Lush Nelson; Altamont
 Margaret Nettleton; Lenora
 Jennie Viola Nettrouer; Manhattan
 Gayle Neubauer; Bonner Springs
 Georgia Katherine Newcomb; Garnett
 Jessie Adelaide Newcomb; Garnett
 Dewey Newcombe; Great Bend
 *Otis Clinton Nicholas; Soldier
 Charles Nitcher; Manhattan
 Anna Eleanor Nohlen; Cleburne
 Ruth Elizabeth Nolf; Bennington
 Edith Berenice Nonken; Manhattan
 Mary Norrish; Manhattan
 Helen Grosvenor Norton; Chanute
 Pauline Harriette Nylund; Scandia
 *Wilmer Lee Oakes; Manhattan
 *Jacob Oblander; Manhattan
 Bertha Ruby O'Brien; Manhattan
 Berenice Elizabeth O'Connor; Leavenworth
 *John William O'Connor; Leavenworth
 Margaret Ellene O'Kane; Blue Rapids
 Ethyle Lenora Oliver; Manhattan
 Floyd Robert Oliver; Manhattan
 *Wayne O'Neal; Manhattan
 Clarence Oppy; St. George
 Eleanor Lucille Osner; Cleburne
 Georgia Elizabeth Ostrander; Clifton
 Alfred Paden; Manhattan
 Mabelle Amelia Parks; Manhattan
 Walter Parrott; Muscotah
 George Walter Pate; Nickerson
 James Ernest Payne; Manhattan
 Loyal Frederick Payne; Manhattan
 Margaret Elizabeth Payne; Fontana
 Vivian Peak; Manhattan
 *Raymond Alexander Pearson; Ottawa
 Zenia Pearson; Manhattan
 Anna Pence; Manhattan
 *Royce Owen Pence; Manhattan
 Bertha Mae Periman; White Water
 Reuben Trapper Periman; White Water
 Phoebe Peterson; McPherson
 Sylvia Irene Petrie; Pratt
 Helen Sarah Pickens; Lake City
 Don Homer Pickrell; Leon
 Kenneth Harrison Platt; Manhattan
 Izil Isabel Polson; Fredonia
 Esther Gertrude Pommerenke; Clay Center
 Gladys Thelma Potts; Kansas City, Mo.
 Mildred Elvira Pound; Glen Elder
 Faye Marie Powell; Iola
 Florence Martha Price; Courtland
 *George Price; Republic
 James Francis Price; Manhattan
 Helen Jeannette Priestley; Kansas City
 Virgil Dole Proctor; Norton
 Carrie Elizabeth Pugh; Kansas City
 Pauline Marguerite Puls; Wichita
 *Cecil Halle Ragan; Blue Rapids
 George Hemrod Railsback; Alden
 Ernest Lee Raines; Louisburg
 Ethel Agnes Ramsour; Junction City
 Inez Ramsour; Junction City
 Horace Randels; Anthony
 Marian Elizabeth Randles; White City
 *Alfred Lee Rapp; Manhattan
 William Robert Rapp; Americus
 Harry Elijah Ratcliff; Gaylord
 Anne Louise Ratliff; Manhattan
 Grace Elizabeth Ratliff; Manhattan
 *Benjamin Dawson Rawie; Stanley
 Margaret Marion Reasoner; Herington
 Octavia Rector; Kansas City, Mo.
 Frances Thelma Reed; Concordia
 Violet Ruth Finley Reed; Manhattan
 *George Ambrose Reid; Manhattan
 Anna Hilkea Remmers; Riley
 Ethel Florella Rennick; Mulvane
 Howard Elbert Rennick; Mulvane
 Una Bernice Rexroat; Morganville
 Harold Rhine; Manhattan
 Mabel Rhine; Manhattan
 Ruth Mary Rhoades; Manhattan
 Henry Irving Richards; Manhattan
 Leah Lucile Richardson; Kingman
 Lela Richardson; Wynnewood, Okla.
 Maie Evaille Richardson; Hanover
 Ruby Carol Rickert; Manhattan
 Irving Adolphus Rickert; Manhattan
 John Riddell; Salina
 Clifford Harry Roach; Manhattan
 Zola Mae Roach; Manhattan
 Velma Elizabeth Roark; Blue Rapids
 Helen Roberts; Kirwin
 *Jack Roberts; Manhattan
 Howard Hardy Robinson; Washington
 Carl Otto Roda; Paradise
 *Norvel Rollins; Ness City
 Crystal Dorothy Rollow; Russell
 Helen Belle Romig; Manhattan
 Mabel Irene Roney; Scranton
 Paul Gibbons Roofe; Spring Hill
 *Frank Root; Manhattan
 Herbert Rose; Waldron
 Dorothy Ross; Manhattan
 Neva Marie Ross; Meade
 *William Joseph Ross; Kincaid
 Victoria Frances Rost; Belleville
 *Morris Emory Rowe; Winfield
 *Lester Rowland; Excelsior Springs, Mo.
 William Curtis Rowley; Clyde
 Helen Rudbeck; Manhattan
 Gretchen Rugh; Abilene
 Lorene Anna Russell; Manhattan
 Orpha Eileen Russell; Manhattan
 Ralph William Russell; Jewell
 Louise Annette Rust; San Diego, Cal.
 William Elwin Rutherford; Manhattan
 Cecil Rede Ryan; Gravette, Ark.
 Mary Elizabeth Ryan; Junction City
 Helen Lucile Sager; Clyde
 Morse Henderson Salisbury; Manhattan
 Raphael Sanchez; Napatlan, Mexico
 Dorothy Sanders; Manhattan
 *Leland Lincoln Sanders; Blue Mound
 *Austin Milton Sanderson; Manhattan
 *Jacob Calvin Sauer; Manhattan
 Jim Fred Savage; Spearville
 *Glen Ransom Sawyer; Manhattan
 Robert Earl Saxton; Manhattan
 Helen Olive Schofield; Manhattan
 Lena Pauline Schulthess; Horton
 Bertha Jane Schwinley; Lawrence
 Alma Scott; Manhattan
 Joseph Prestwick Scott; Manhattan
 Olivette Scritchfield; St. George
 Viola Alice Scritchfield; Manhattan
 Georgia Martha Sedivy; Blue Rapids
 Helen Sedivy; Blue Rapids
 *Charles Julius Sedlacek; Greenleaf
 Ruby Lavisa Seward; Leon
 Velma Eleanor Shaffer; Van Buren, Ark.
 Paul Morse Shaler; Topeka
 Clara Iola Shaw; Wamego
 Clare Liggett Shellenberger; Manhattan
 Sylvia Susan Shields; Lost Springs
 Frank Howard Shirck; Waterville
 Irene Warner Shupe; Herington
 Vaughn Siler; Washington
 *Aaron Simpson; Ilmo, Mo.

* Under auspices of the U. S. Veterans' Bureau.

SUMMER SCHOOL—Continued.

- *Harold Simpson; Manhattan
 Florence May Sisson; Manhattan
 Sister M. Colasanius Flanagan; Concordia
 Sister Eleanor Kelly; Salina
 Sister Mary Grace Waring; Salina
 Sister M. Rosina Nolan; Concordia
 Lois Sitterley; Manhattan
 Harry Byron Skinner; Manhattan
 *Joseph William Skinner; Manhattan
 Esther Hildagard Skyllberg; Clifton
 Aubrey Charles Smart; Manhattan
 Georgia Fern Smercheck; Irving
 Emma Rebecca Smith; Cleburne
 George Walter Smith; Hutchinson
 Julia Smith; Junction City
 Lorna Mae Smith; Clyde
 Marion Welsh Smith; Manhattan
 Mildred Zylph Smith; Belleville
 Ray Leonel Smith; Washington
 Zella Kouns Smith; Washington
 Ruth Leila Smythe; Junction City
 Simon Fred Snider; Courtland
 Bertha Snyder; Winfield
 Ruth Margaret Southern; Manhattan
 *Fred Sowers; Dunlap
 *Frank William Springer; Jasper, Ark.
 *Walter Religh Stanton; Hutchinson
 *Laura Esabel Stepanek; Cuba
 Rachel Steuart; Winchester
 Howard Harold Steup; Manhattan
 Harry Stevens; Postoria
 La Von Stewart; Wamego
 Jessie Alice Still; Ogden
 Thomas Bruce Stinson; Manhattan
 Fred Stockbrand; Yates Center
 *Jess Stone; Manhattan
 Warren Edward Stone; Saffordville
 *Earl Leroy Storum; Baldwin
 Raymond Luther Stover; Manhattan
 Charles William Stratton; Manhattan
 Euphemia Faith Strayer; Lawrence
 Floyd Dewey Strong; Manhattan
 *Richard Raymond Stucky; Manhattan
 Reva Mae Stump; Blue Rapids
 Mae Rachel Sullivan; Logan
 Lauretta Victoria Summers; Manhattan
 John Floyd Suterlin; Westmoreland
 Pearle Pauline Sutton; Blue Rapids
 Charlotte Huntington Swanson; Manhattan
 Paul Daniel Swayze; Kansas City, Mo.
 Hazel Marie Sweet; Manhattan
 *Carl Benjamin Swisher; Culver
 Bernice Lolelia Tallcott; Hollenberg
 Lois Beryl Tallcott; Hollenberg
 Winifred Mary Tauer; Wamego
 Evelyn Elizabeth Taylor; Manhattan
 Gladys Eleanor Taylor; Chapman
 William Teas; Manhattan
 Joseph Eugene Thackrey; Manhattan
 *John Elton Tharp; Jamestown
 Harold Hetherington Theiss; Manhattan
 Lora Thiele; Hanover
 Addie Thomas; Detroit
 Dale Robert Thomas; Manhattan
 Ernest Raymond Thomas; Manhattan
 Ruby Thomas; Argonia
 Alice Elizabeth Thompson; Amberst, Mass.
 Dessie Olive Thornburgh; Manhattan
 Harold Leroy Thuma; Robinson
 Nellie Mae Tibbets; Blaine
 Dora Marie Toburen; Barnes
 Lolita Grace Toothaker; Manhattan
 Lorretta Mary Torrey; St. George
 Esther Irene Tracy; Manhattan
 Saray Elizabeth Tracy; Manhattan
 Olive Marie Trecek; Cuba
 Jacob Trieschmann; Ellsworth
 Florence Tubbs; Clay Center
 *Floyd Jacob Tucker; Manhattan
 Margaret Frances Tucker; Wamego
 Paul Tupper; Lecompton
 Alice Mary Turner; Clyde
 Lola Juanita Turner; Manhattan
 Rowena Turner; Chanute
 Helen May Twidwell; Home
 Minnie Marie Ubel; Wamego
 Hobart Cully Uhl; White City
 *Walter Edward Ulm; Manhattan
 John Bennett Underwood; Leonardville
 Neola Nelle Vail; Zeandale
 Madge Van Aernam; Kansas City, Mo.
 Hobart Scott Van Blarcom; Manhattan
 Fern Rufina Van Blaricom; Clifton
 Gladys Myrna Van Blaricom; Clifton
 Charles Elijah Vance; Garden City
 James Lowell Van Gilder; Manhattan
 Julius Patterson Van Vliet; Manhattan
 Ruth Varney; Manhattan
 Theodore Roosevelt Varney; Manhattan
 Pauline Vogelsang; Randolph
 Gretchen Voiland; Topeka
 George Ellsworth Voiles; Manhattan
 Andrew Voran; Lorraine
 Iro Nelson Vowel; Anness
 Marian Alice Wade; Manhattan
 Ruth Josephine Wahle; Junction City
 *Cecil Waits; Manhattan
 *Carl Walker; Manhattan
 Edwin Hart Walker; Montrose
 Eleanor Irene Walker; Manhattan
 Forrest Lorenzo Walker; Manhattan
 Lewis Earl Walker; Garden City
 Lewis Merritt Walker, jr.; Abilene
 Leola Wallace; Villisea, Iowa
 *Carl Emil Wallin; Courtland
 Helen Laura Walter; Wakefield
 Wirt Walton; Leavenworth
 Gilmore Wann; Hays
 *Isom Raymond Ward; Tampa
 Glen Chas. Ware; Larned
 Samuel Blake Wareham; Manhattan
 Dorothy Genevieve Waters; Milford
 Eugene Albertice Waters; Wellsville
 Rolland Hays Waters; Wellsville
 Florence Potter Watson; Manhattan
 *James Watson; Shannon
 Margaret Jane Watson; Turon
 Raymond Howard Watson; Kansas City
 Sheppard Arthur Watson; Manhattan
 Jewell Kimball Watt; Topeka
 Nora Elaine Watters; Axtell
 George Vance Wayman; Admire
 Fred Weed; Athol
 *Everett John Weeks; Manhattan
 Georgia Weeks; Belvue
 *Leroy Andrew Welborn; Manhattan
 Lois Edna Welch; Glen Elder
 William Joseph Welker; Coffeyville
 Olive Oteman Wells; Belleville
 Robert Emmitt Welsh; Manhattan
 Bertha Evelyn Wentworth; Furley
 Clinton West; Lawrence
 Winifred West; Kinsley
 Lucy Ethel Whipple; Manhattan
 Alma Elvira White; Emporia
 Margaret Maxwell White; Parsons
 Fred Erie Whitehead; Manhattan
 Susanna Whitten; Wakarusa
 *Avis Wickham; Manhattan
 William Shaffrath Wiedorn; Manhattan
 Lusk Wilkie; Belleville
 *Archie Clay Williams; Manhattan
 Louis Coleman Williams; Manhattan
 Mary Alameda Williams; Bushong

* Under auspices of the U. S. Veterans' Bureau.

SUMMER SCHOOL—Concluded.

Harold Arthur Williamson; Manhattan	Chester Stanley Wood; Manhattan
Oral Martin Williamson; Kansas City	*Earl Lloyd Woodard; Manhattan
*Cecil Cline Wilson; Canton	Frances Mary Woodside; Idana
Clifton Wilson; Wichita	Blanche Woodward; Summerfield
Emily Thomas Wilson; Manhattan	Mary Worcester; Bernick, Maine
*Manry Ray Wilson; Luray	Rheva Isla Wright; Onaga
Delpha Winkler; Manhattan	Leroy Lawrence Wurst; Russell Springs
Edwin William Winkler; St. George	Marian Grace Yoeman; Kingman
Milton Shipman Winter; Lecompton	Elmer William Young; Manhattan
*Claude Winterscheid; Gridley	*Joseph Clark Younk; Wakefield
Isal Winterscheid; Gridley	Mary Viola Zehnder; Atchison
Clell Burns Wisecup; Manhattan	Naomi Zimmerman; Manhattan
*Walter Wisnicky; Green Bay, Wis.	

STUDENTS IN SPECIAL COURSES

The abbreviations following the names of students have the following significations: AMSC, automobile mechanics' short course; BSC, blacksmiths' short course; BldSC, builders short course; CSC, carpenters' short course; CCSC, commercial creamery short course; ESC, electrical short course; ETC, engineering trade course; FSC, farmers' short course; MISC, milling short course; HSC, housekeepers' short course; MSC, machinists' short course; NGA, nongraded agriculture; TOSC, tractor operators' short course; VS, Vocational School.

Horace Marshall Abraham (FSC); Emporia	Clarence Crews (VS); Longton
*Joseph Clayton Achey (NGA); Paola	George Wellington Crouch (VS); Manhattan
*William Agee (NGA); Raymondville, Mo.	*Samuel Croucher (NGA); Osage
Charlie Agusta Ahrens (AMSC); Mankato	Georgia Mary Crowl (VS); Riley
Raymond Allee (FSC); Grainfield	George Crumbaker (FSC); Manhattan
Clarence Albert Anderson (FSC); Clifton	*Walter Elmer Curtis (NGA);
Tilbert Anderson (VS); McPherson	Independence, Mo.
Edna LaVerne Arand (HSC); Belvue	*Henry Sylvester Dairy (VS); Ottawa
Laurence Andrew Bailey (AMSC 1; FSC 2);	(deceased).
Kinsley	Kirkland Walders Davis (CCSC); Manhattan
*William Ballard (NGA); Paola	*Grover Adlia Dean (NGA); Boicourt
*Ira Lee Balsley (NGA); Ottawa	*Alfred Fred Dehn (NGA); Atchison
*Chester Fred Barker (NGA); Heathville	William Dickens (VS); Manhattan
*Sam Lewis Barnett (NGA); Salina	Curtis William Dickson (VS); Manhattan
James Lewis Barry (ESC); Manhattan	Austin Diehl (FSC); Enterprise
Nolan Douglas Basore (ESC); Berryville, Ark.	Arthur Edmond Diggs (AMSC); Manhattan
Henry Eldon Beck (FSC); Riley	*George Joseph Dooley (NGA); Wichita
*Erwin Alford Behymer (NGA); Dodge City	James Phillip Douglass (ETC); Marysville
John Frederick Berg (FSC); Meriden	Leslie Hehner Dудey (BSC); Conway Springs
Robert Walker Berry (VS); Manhattan	*Herbert Theodore Eberly (NGA); Republic
*George Mike Bhear (NGA); Kansas City, Mo.	Robert Lewis Elfstrom (FSC); Concordia
Charles William Black (AMSC); Auburn	*Roy Robert Erwin (NGA); Wichita
Walter Raleigh Black (AMSC); Auburn	William Thomas Esry (VS); Manhattan
Derbin Blair (ESC); Beloit	Winifred Jane Evans (VS); Liberal
Elsie Ernestine Boehner (HSC); Cawker City	*Hollis Edgar Ewing (NGA); Parsons
Velma Bolin (VS); Topeka	Walter Scott Ewing (TOSC); Solomon
Ada Pearl Bradley (VS); Wabaunsee	Clarence Fankhouser (TOSC); Madison
Carrie Brandejsky (VS); Severy	Ray Bonifield (CCSC); Conway Springs
Frank Brandejsky (VS); Severy	*Roy Fisher (NGA); Manhattan
Jerry Brandejsky (ETC); Severy	*Silas Porter (NGA); Emporia
Lewis Ransom Bridenstine (VS); Manhattan	Lester Cecil Fox (VS); Minneola
Roy Harold Bridenstine (VS); Leoti	Richard Friedemann (CSC); Oberlin
*Harry Otis Briscoe (NGA); Lincoln	*Corwin Hamilton Funk (ESC); Gridley
John Edwards Brooks (VS); Hutchinson	Albert Louis Galbreath (VS); Hutchinson
Lawrence Vernon Brown (FSC); Great Bend	Carl Elsworth Gardner (FSC 1; VS 2);
*Ralph Samuel Brummett (NGA); Seneca	Smith Center
Frank Edward Bundy (CCSC); Belleville	Jewell Floyd Gardner (FSC); Smith Center
*Ira Burris (NGA); Windsor, Mo.	John Wilber Garnett (FSC); Garden Plain
Guy Marion Caldwell (CCSC); Manhattan	*Bryan William Gaston (NGA); Glen Elder
Merle Call (VS); Osborne	Harold Paul Gaston (CCSC); Pratt
*Owen Callahan (NGA); Moreland	John William Gehrke (AMSC); Wilsey
*Dave Cardwell (NGA); St. Joseph, Mo.	Julius Edwin Gigstad (FSC); Everest
*Harry Edwin Carrier (NGA); Topeka	Roy Edward Goodrich (TOSC); Lenora
George Caspar, jr. (FSC); Alida	Clifford Thomas Gordon (VS); Manhattan
*Austin Southwell Chapin (ETC); Manhattan	Herbert Ralph Gordon (VS); Eudora
Willis Ransom Churchill (VS); Kansas City	John Wayne Gottshall (VS); Goodland
Walter Eugene Clinton (AMSC); Dallas, Tex.	*Samuel Grappia (NGA); Manhattan
Howard Kenith Coder (ESC); Beloit	Jerome Harold Greathouse (VS); Coyville
Clarence Ernest Colglazier (ETC); Vernon	*Rush John Greene (NGA); Nickerson
*Ralph Collins (NGA); Marysville	*Albert Best Gregg (NGA); Hiawatha
Ralph Howard Compton (FSC); Larned	Lloyd Dan Grubb (FSC); Netawaka
Roy Lee Compton (FSC); Larned	Roscoe Guinn (CCSC); Warrensburg, Mo.
Frank Edwin Cox (VS); Assaria	Robert Henry Gump (AMSC); Carlton
Lyll Lynch Crane (FSC); Baker	

* Under auspices of the U. S. Veterans' Bureau.

STUDENTS IN SPECIAL COURSES—Continued.

- Fred Theodore Gunselman (VS); Holton
 *Ira Adam Haber (NGA); Manhattan
 Forrest Hills Hagenbuch (FSC); Troy
 Pearl Jane Haire (HSC); Woodbine
 Doris Handlin (HSC); Manhattan
 Leota Christina Hansen (VS); Willis
 *Clarence McKinley Hanson (NGA); Clyde
 *Roy Everett Happel (NGA); Effingham
 *Benjamin Charles Harrison (NGA);
 Manhattan
 *Albert Harrold (NGA); Manhattan
 Carl Hartman (VS); Manhattan
 Amelia Marie Hartmann (VS); Leocompton
 Fred Hartwell (VS); Goodland
 *August John Hauptli (NGA); Glen Elder
 Frank Hawkins (VS); Manhattan
 *Guy Carpenter Hayes (NGA); Manhattan
 Louise Vera Henry (VS); Belleville
 John Long Hicks (VS); Cuervo, N. Mex.
 Howard William Higbee (VS); Fall River
 *John William Hodson (NGA); Liberty
 *John Holm (ESC); Scranton
 *Lloyd Edison Hook (NGA); Iola
 Lawrence Hoover (FSC); Junction City
 Leo Hostetler (FSC); Harper
 Kenneth Ralph Howser (AMSC); Barclay
 William Alexander Hughes (VS); Lawrence
 Lewis Chew Hunt (CSC); Manhattan
 *John Vernon Iford (NGA); Pratt
 *George Nelson Jackson (NGA); Herman, Neb.
 *Thomas Jackson (NGA); Herman, Neb.
 *Buel William Jaggard (NGA); Manhattan
 *John Benjamin Jewell (NGA); Olivet
 *Roy Vernon Johnson (NGA);
 Green Forest, Ark.
 Wesley Harold Johnson (VS); Manhattan
 *Lloyd William Jordan (NGA); Cherokee
 Mattie May KampSchroder (HSC); Clinton
 *Murill Edgar Kane (NGA); La Harpe
 *Irl Roscoe Keagy (NGA); Ottawa
 *James Melvin Kelley (NGA); Elkhart
 *Carl Marion Kerley (ETC); Peck
 *Oscar Dunbar Kerr (NGA); Windsor, Mo.
 Paul Everett Kidwell (VS); Kenneth
 *John Morgan Kincaid (NGA); Wichita
 Albert Klein (CSC); Clay Center
 Merriell Chester Kountz (VS); Topeka
 Minnie Ella Krasny (HSC); Topeka
 Fern Stoutimore Lapsley (HSC); Manhattan
 Charlie Law (AMSC); Gypsum
 Rullie Cyrus Lee (FSC); Keats
 Evan Shields Lewelling (FSC); Delia
 Jack Harris Linscott (VS); Burlington, Iowa
 James Wylie Logan (FSC); Hoisington
 Peter Lohrentz (BSC); Moundridge
 Jesse Chester Long (VS); Manhattan
 *James Albert Loop (NGA); Scottsville
 *James Corwin Lusk (NGA); Olivet
 Ed William Lutz (VS); Hutchinson
 Verne William McGatlin (BSC); Lucerne
 Juanita Faye McHenry (VS); Paola
 *Asbury Wesley McMinn (NGA); Salina
 *Earl Harper McQuiston (NGA); Greenwich
 *George McRobert (NGA); Silver Lake
 Chris Mall (GSC); Clay Center
 Otto Earnest Marsh (ETC); Fort Scott
 Carl William Martin (VS); Dunavant
 Lawrence Timothy Martin (AMSC);
 Broughton
 Mildred Alva Matosk (HSC); Holyrood
 *Thomas Franklin Merrill (NGA);
 Douglass
 Emil Fred Miller (TOSC); Tampa
 Lester Theodore Milligan (AMSC);
 Red Rock, Okla.
 William Allen Millikan (MSC); Olathe
 *William Elmer Mitchell (NGA); Topeka
 *Coy Ellis Morrison (NGA); Gibson, Neb.
 Abbot Morton (FSC); Oberlin
 Charles Roger Mosshart (VS); Manhattan
 William Allen Mossman (AMSC); Eskridge
 Clyde Meryn Mounts (VS); Manhattan
 *Jesse Mowery (NGA); Garden City
 *Dorothea Henriette Mueller (HSC); Hope
 Mary Mullen (HSC); Broughton
 *Cyrus Ben Mulley (NGA);
 Kansas City, Mo.
 *Richard Brenton Myers (NGA); Great Bend
 Clay Harden Newell (FSC); Stafford
 *Otis Clinton Nicholas (ETC); Manhattan
 Virgil Glenn Nonemaker (VS); Osborne
 Margaret Marie Nonken (HSC); Manhattan
 Walter North (BSC); Bazar
 *Jacob Oblander (NGA); Lehigh
 Percy Omo (AMSC); Pratt
 Etoile Matilda Orth (VS); Manhattan
 Fred Lester Pae (FSC); Concordia
 Lynn Blum Patton (FSC); Garnett
 *Raymond Alexander Pearson (NGA); Ottawa
 Perly Raymond Pederson (FSC);
 Clay Center
 Samuel Penner (FSC); Beatrice, Neb.
 *Everett Allen Paterson (NGA); Admire
 Alfred Petsch (TOSC); Herkemer
 Cyrus Benford Pike (FSC); Goddard
 Cecil Plank (FSC); Harper
 *George Arthur Price (ETC); Republic
 Harry Donald Pugh (ESC); Topeka
 *Benjamin Dawson Rawie (NGA); Stanley
 Alfred Theodore Rezac (FSC); St. Marys
 Matthew Martin Rezac (FSC); St. Marys
 John Joseph Rilinger (VS); Seneca
 Margaret Laurene Ritz (HSC); Cawker City
 *Jack Roberts (NGA); Topeka
 Martin Henry Roepke (VS); Barnes
 *Norvel Rollins (NGA); Ness City
 *Michael Romey (NGA); Victoria
 *William Joseph Ross (NGA); Kincaid
 Herman Rowe (CSC); Marysville
 Louise Annette Rust (VS); San Diego, Cal.
 Golden Dewey Ryan (VS); Shoshone, Idaho
 *Leland Lincoln Sanders (NGA); Blue Mound
 *Austin Milton Sanderson (NGA); Lyndon
 John Elliott Sanderson (FSC); Marysville
 Lillian Sands (VS); Kansas City
 Raymond Henry Scheller (FSC); Marysville
 John Isaac Frederick Schultz (VS); Salina
 John Schumann (FSC); Hiawatha
 Fred Jacob Schwab (BSC); Keats
 James Lester Schwab (AMSC); Chapman
 William Clarence Schwab (TOSC); Madison
 Galen Schwandt (VS); Manhattan
 Walter Simon Scott (VS); Kansas City
 *Charles Sedlacek (NGA); Greenleaf
 *Clinton Shaddy (NGA); Chetopa
 George Hobart Singular (TOSC); Clifton
 *Orville Thomas Slaughter (NGA); Montrose
 *Orville Marion Sloan (NGA); Thayer
 Frank John Smerchek (TOSC); Garnett
 Lawrence Ralph Smith (FSC);
 Council Grove
 Melville Francis Smith (VS); McAllister
 *Fred Sowers (NGA); Dunlap
 *Frank William Springer (NGA); Jasper, Ark.
 *Walter Raleigh Stanton (NGA); Wakeeney
 *Charles Stephens (NGA); Manhattan
 David Ray Stewart (VS); Wamego
 Arthur Joseph Stoltz (VS); Pratt
 *Jess Stone (NGA); Kansas City
 Phillip Arthur Storrer (TOSC); Madison
 *Earl Leroy Storum (NGA); Baldwin City
 Richard William Stumbo (VS); Iola
 Leona Odessa Supernaugh (VS); Newton

* Under auspices of the U. S. Veterans' Bureau.

STUDENTS IN SPECIAL COURSES—*Concluded.*

*Paul John Swanson (NGA); Topeka	*Cecil Augustus Waits (ETC); Manhattan
George Glenn Swartz (FSC); Larned	*Carl Samuel Walker (NGA); Home
Joe Swartz (FSC); Larned	*Carl Wallin (NGA); Courtland
Harry Benjamin Sweet (FSC); Mankato	Herbert Edmund Warner (VS); Burlingame
*Zepher Koble Sweetland (NGA); Valley Center	*James Watson (NGA); Shannon
John Wedd Teas (VS); Manhattan	Elmer Lawrence Waters (VS); Marysville
Roy Lewis Temple (MSC); Olathe	*Fred Webster (NGA); Mayetta
*John Elton Tharp (NGA); Jamestown	*Leroy Andrew Welborn (NGA); Axtell
Allen Charles Theiss (VS); Hutchinson	Richard Clinton Wells (VS); Manhattan
Eric Thompson (CSC); Scandia	*Edgar Forrest Westray (NGA); Wichita
Francis Howard Thompson (VS); Hill City	Howard Otis Wiley (ESC); Hugoton
Armada Ruth Tinkham (VS); Denver, Colo.	*Randolph Williamson (NGA); Emporia
Gilbert Maxwell Turner (VS); Pratt	William Paul Winslow (FSC); Dalton
Lloyd Jay Twibell (VS); Vesper	Merrill Briggs Wolf (CCSC); Marion
Lucille Adella Uhrig (VS); Belvue	*Earl Lloyd Woodard (NGA); Dodge City
*Walter Edward Ulm (NGA); Emporia	Robert Walker Wortham (BSC); Lerna, Ill.
Victor Vermillion (AMSC); Manhattan	*Rockford Glenn Yapp (VS); Manhattan
*Virgil Van Vermillion (NGA); Yates Center	Allan Yorke (ESC); Clearwater, Neb.
George Wagner (VS); Whiting	*Joseph Clark Younkin (NGA); Wakefield

* Under auspices of the U. S. Veterans' Bureau.

Summary of Attendance, 1923-'24

List of Students

	Agriculture		Veterinary Medicine		Engineering		Agricultural Engineering		Architecture		Civil Engineering		Electrical Engineering		Mechanical Engineering		Flour-mill Engineering		Home Economics		General Science		Rural Commerce		Industrial Journalism		Music		Public School Music		Industrial Chemistry		Total		Grand total		
	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.	Total						
Senior.....	*104	16	.....	5	14	28	45	28	4	77	19	30	10	2	10	9	.....	7	7	.....	5	287	126	413													
Junior.....	74	15	.....	9	*10	37	45	26	3	105	27	30	38	3	13	15	.....	3	3	.....	5	301	157	458													
Sophomore.....	*79	11	.....	5	15	47	86	32	.....	130	50	55	69	7	15	15	.....	7	7	.....	20	11	422	235	657												
Freshman.....	*139	12	.....	19	†40	71	182	45	8	199	111	57	112	9	39	42	.....	5	11	.....	2	46	11	792	368	1,160											
Special.....	*19	1	.....	3	2	1	4	1	.....	10	53	55	.....	.....	.....	.....	.....	4	3	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Graduate.....	*51	5	25	.....	.....	.....	.....	.....	.....	24	47	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vocational School.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nongraded Agriculture.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Engineering Trade Courses.....	.....	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Engineering Special Courses:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Auto Mechanics.....	.....	.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Blacksmithing.....	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carpenters.....	.....	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Electricians.....	.....	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Machinists.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tractor Operators.....	.....	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Agricultural Short Courses:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Farmers.....	43	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Commercial Creamery.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wheat and Flour Testing.....	*3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Housekeepers' Short Course.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Summer School.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	†519	60	82	41	**81	184	362	132	15	557	307	246	229	21	77	81	12	31	2	71	32	2,749	1,538	4,287													
Counted twice.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Net totals.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

* 1 woman. † 3 women. ** 4 women. ‡ 6 women.

The above figures include 189 men and one woman who are under the auspices of the United States War Veterans' Bureau.

Students by States and Counties, 1923-'24

Arkansas.....	10	Kansas.....	3,554	Oklahoma.....	41
Arizona.....	3	Lousiana.....	2	Oregon.....	1
California.....	4	Massachusetts.....	1	Pennsylvania.....	2
Colorado.....	11	Minnesota.....	3	South Dakota.....	1
Delaware.....	1	Missouri.....	85	Texas.....	16
District of Columbia.....	1	Montana.....	3	Vermont.....	1
Idaho.....	1	Nebraska.....	17	Virginia.....	1
Illinois.....	5	New Jersey.....	1	Wisconsin.....	1
Indiana.....	3	New Mexico.....	10		
Iowa.....	7	Ohio.....	4	Total.....	3,790

FOREIGN COUNTRIES.

Egypt.....	1	Serbia.....	1	Turkey.....	1
India.....	1	South Africa.....	4		
Mexico.....	4	South America.....	3	Total.....	22
Philippine Islands.....	4	Sweden.....	1	Grand total.....	3,812
Palestine.....	1	Switzerland.....	1		

KANSAS COUNTIES.

Allen.....	38	Greenwood.....	22	Pawnee.....	16
Anderson.....	23	Hamilton.....	4	Phillips.....	21
Atchison.....	22	Harper.....	22	Pottawatomie.....	80
Barber.....	16	Harvey.....	33	Pratt.....	31
Barton.....	29	Hodgeman.....	3	Rawlins.....	1
Bourbon.....	14	Jackson.....	32	Reno.....	65
Brown.....	39	Jefferson.....	29	Republic.....	53
Butler.....	51	Jewell.....	39	Rice.....	28
Chase.....	20	Johnson.....	26	Riley.....	1,002
Chataqua.....	16	Kearny.....	3	Rooks.....	9
Cherokee.....	11	Kingman.....	13	Rush.....	7
Cheyenne.....	6	Kiowa.....	12	Russell.....	14
Clark.....	6	Labette.....	22	Saline.....	53
Clay.....	68	Lane.....	4	Scott.....	7
Cloud.....	58	Leavenworth.....	23	Sedgwick.....	87
Coffey.....	23	Lincoln.....	20	Seward.....	15
Comanche.....	11	Linn.....	11	Shawnee.....	114
Cowley.....	28	Logan.....	6	Sheridan.....	3
Crawford.....	9	Lyon.....	38	Sherman.....	6
Decatur.....	8	McPherson.....	23	Smith.....	28
Dickinson.....	82	Marion.....	28	Stafford.....	24
Doniphan.....	10	Marshall.....	76	Stanton.....	2
Douglas.....	26	Meade.....	6	Stevens.....	2
Edwards.....	8	Miami.....	19	Sumner.....	43
Elk.....	7	Mitchell.....	37	Thomas.....	6
Ellis.....	10	Montgomery.....	36	Trego.....	7
Ellsworth.....	12	Morris.....	19	Wabauunsee.....	36
Finney.....	17	Morton.....	2	Wallace.....	4
Ford.....	16	Nemaha.....	23	Washington.....	49
Franklin.....	17	Neosho.....	32	Wichita.....	3
Geary.....	45	Ness.....	15	Wilson.....	29
Gove.....	12	Norton.....	36	Woodson.....	13
Graham.....	7	Osage.....	43	Wyandotte.....	92
Grant.....	1	Osborne.....	27		
Gray.....	3	Ottawa.....	46	Total.....	3,554

Record of Attendance, 1863-1924

COLLEGE YEAR.....	Summer school.....	Housekeeper, short course.....	Commercial Creamery, short course.....	Dairy, short course.....	Farmers' short course.....	Special.....	Preparatory.....	Subfreshman.....	Vocational school.....	Freshman.....	Sophomore.....	Junior.....	Senior.....	Graduate.....	Counted twice.....	Total.....	Graduated.....
1863-64							93			14						107	107
1864-65							90			14						113	113
**1865							112			28		1				150	150
1866-67							154			11	7	5				178	178
1867-68							146			11	10	2				168	168
1868-69							164			13	7	5				194	194
1870-71							162			22	10	3				202	202
1871-72							136			24	14	3				*217	217
**1873							103			26	10	2				183	183
1873-74							75			42	23	5				143	143
1874-75										89	16	12				150	150
1875-76										89	16	12				207	207
1876-77						1				166	61	35	11			276	276
1878-79						6				178	48	24	9			267	267
1879-80						5				227	50	19	11			312	312
1880-81						4				241	60	30	12			347	347
1881-82						2				255	82	26	18			395	395
1882-83						2				271	71	38	16			401	401
1883-84						1				303	100	44	24			438	438
1884-85										305	92	46	27			472	472
1885-86										307	105	63	28			514	514
1886-87										266	103	41	28			445	445
1887-88										343	135	50	53			563	563
1888-89										336	139	62	37			584	584
1889-90										339	110	66	43			587	587
1890-91										275	141	72	42			555	555
1892-93										276	108	89	64			572	572
1893-94										353	121	67	71			642	642
1895-96						3				321	163	69	62			734	734
1896-97						5				316	174	77	82			803	803
1897-98						8				306	177	92	65			870	870
1898-99						15				376	163	109	69			1,094	1,094
1899-1900						40				348	183	80	74			1,321	1,321
1900-01						110				396	208	120	65			1,396	1,396
1901-02						23				471	229	141	86			1,574	1,574
1902-03						87				403	206	161	114			1,605	1,605
1903-04						78				289	138	122	117			1,462	1,462
1904-05						33				373	214	145	110			1,690	1,690
1905-06						30				411	269	149	133			1,937	1,937
1906-07						48				450	357	202	148			2,192	2,192
1907-08						173				491	381	243	171			2,308	2,308
1908-09						18				456	417	236	170			2,305	2,305
1909-10						42				533	412	238	248			2,407	2,407
1910-11						87				533	461	288	261			2,523	2,523
1911-12						94				580	461	355	268			2,928	2,928
1912-13						129				654	444	432	355			3,027	3,027
1913-14						112				653	516	481	324			3,091	3,091
1914-15						120				560	575	368	333			3,314	3,314
1915-16						175				484	605	454	305			3,340	3,340
1916-17						171				422	633	471	378			3,406	3,406
1917-18						138				231	483	349	294			3,444	3,444
1918-19						199				216	810	322	254			3,952	3,952
1919-20						371				224	894	401	300			4,352	4,352
1920-21						8				280	878	602	318			4,395	4,395
1921-22						297				221	931	638	422			4,660	4,660
1922-23						163				220	1004	656	460			4,577	4,577
1923-24						161				167	1160	657	458			4,831	4,831

* Estimated.

** Calendar year.

College Enrollment, 1923-'24

THE DIVISIONS.	Men.	Women.	Total.
The Division of Agriculture	513	6	519
Graduate students	50	1	51
Seniors	103	1	104
Juniors	74	.....	74
Sophomores	78	1	79
Freshmen	138	1	139
Special students	18	1	19
Students in Farmers' Short Course	43	.....	43
Students in Creamery Short Course	7	.....	7
Students in Wheat and Flour Testing Short Course	2	1	3
The Division of Veterinary Medicine	60	.....	60
Graduate students	5	.....	5
Seniors	16	.....	16
Juniors	15	.....	15
Sophomores	11	.....	11
Freshmen	12	.....	12
Special students	1	.....	1
The Division of Engineering	893	4	897
Graduate students	25	.....	25
Seniors	124	.....	124
Juniors	129	1	130
Sophomores	185	.....	185
Freshmen	362	3	365
Special students	11	.....	11
Students in Short Course for Auto Mechanics	17	.....	17
Students in Short Course for Tractor Operators	10	.....	10
Students in other Engineering Short Courses	21	.....	21
Students in Engineering Trade Courses	9	.....	9
The Division of Home Economics .....	.....	557	557
Graduate students .....	.....	24	24
Seniors .....	.....	77	77
Juniors .....	.....	105	105
Sophomores .....	.....	130	130
Freshmen .....	.....	199	199
Special students .....	.....	10	10
Students in Housekeepers' Short Course .....	.....	12	12
The Division of General Science	659	450	1,109
Graduate students	47	19	66
Seniors	44	48	92
Juniors	83	51	134
Sophomores	148	104	252
Freshmen	280	165	445
Special students	57	63	120
The Vocational School	153	14	167
Nongraded Agriculture (U. S. War Veterans' Bureau)	96	.....	96
The Summer School	471	507	978
Totals	2,749	1,538	4,287
Counted twice	318	157	475
Net totals	2,431	1,381	3,812
The Division of College Extension .....	.....	.....	35,400
Students in Credit Courses	606	620	1,226
Students in Vocational Courses	277	21	298

Home Study Service Students

(Instruction by Correspondence)

For the year January 1, 1923, to January 1, 1924, those who took credit courses numbered 932 and those who were enrolled in vocational courses numbered 592.

In the following list, those taking college credit courses are indicated by C, those taking high-school courses by P, and those taking vocational courses by V.

Where enrollments are from Kansas the name of the state is omitted. It is given in all other cases.

Earl G. Abbott (C); Garden City
 Edith D. Abbott (C); Mound Valley
 Harold Q. Abell (C); Riley
 Mrs. Wayne W. Abernathy (P); Advance, Mo.
 V. P. Abril (V); Los Angeles, Cal.
 Julia Ackerson (C); Burlington
 Ruth Ackors (C); Ellsworth
 Edgar R. Adams (V); Manitou, Colo.
 Eula Adams (C); Wichita
 Harry L. Adams (V); Chillicothe, Mo.
 Iva M. Adams (C); Tarkio, Mo.
 Geo. C. Adair (V); Boston, Mass.
 M. F. Aiman (C); Manhattan
 Gladys M. Alderman (C); Topeka
 Alfred G. Aldridge (C); Topeka
 Mrs. Harriet W. Allard (C); Manhattan
 E. J. Allen (V); St. Louis, Mo.
 Glenn Allen (C); Burlington
 Oscar Allen (C); Wetmore
 Theodore Allen (V); Carson, N. Dak.
 L. R. Alt (C); Mankato
 Mae Altman (C); Topeka
 Howard Ames (C); Downs
 Maurine Ames (C); Moline
 Anne Amstutz (C); K. S. A. C.
 Clyde Anderson (C); Manhattan
 Eunice Anderson (C); Phillipsburg
 R. E. Anderson (P); Manhattan
 Peter C. Andres (V); Elbing
 Mervyn Andrew (P); Madison
 Mildred Andrews (C); Kearney, Neb.
 Margaret Ansdell (C); Jamestown
 Beula M. Archer (V); Grenola
 C. B. Archer (C); Manhattan
 Emmett H. Armstrong (V); Many, La.
 Leah E. Arnold (C); Manhattan
 Frank C. Artz (V); Manitou, Colo.
 Ida Ashcroft (P); Hill City
 Effie M. Aspegren (C); McPherson
 Christel Lorene Atchison (C); Waverly
 John B. Atkinson (V); Hutchinson
 Sam B. Avara (V); Alto, Tex.
 A. A. Axline (V); Wichita
 Guy W. Axtell (V); Tecumseh
 Harold B. Axtell (C); Topeka
 Velma Ayers (P); Sabetha
 Allis R. Babcock (V); Osborne
 Rose Bachura (P); Wilson
 Mildred Baer (C); Manhattan
 Alex Baker (V); Perley, Minn.
 Carl H. Baker (C); Dennis
 Vida Baker (C); K. S. A. C.
 John J. Bales (C); Manhattan
 Mildred Bales (V); Alton
 J. W. Ballard (C); Almena
 Katherine Ballentine (C); Wamego
 Margaret Bane (C); Hugoton
 Wm. Baner (V); Clay Center
 Edna F. Banes (C); Manhattan
 Wm. C. Banks (V); Hoisington
 W. J. Barber, jr. (C); Council Grove
 Edgar F. Barley (P); Pratt
 Martha J. Barner (P); Belle Plaine
 P. A. Barnes (C); Greenwood
 Jno. Barr (P); Manhattan
 Ruth L. Barraclough (P); Blue Rapids
 C. M. Barringer (C); Manhattan
 R. V. Barrington (C); Sedan
 M. C. Barrows (C); Clifton
 Elmo A. Barry (V); Kansas City, Mo.
 E. E. Bates (C); Perry
 Karl W. Bates (V); Excelsior Springs, Mo.
 Ada G. Battle (C); Fallis, Okla.
 Frank Bauley (V); Elk River, Minn.
 T. R. Baumgartner (C); Kansas City
 Edwin H. Baxter (V); Casper, Wyo.
 Theodore L. Bayer (C); K. S. A. C.
 Harold Beams (C); Belle Plaine
 Roy Beatty (P); Goodland
 D. C. Beeler (C); Manhattan
 L. F. Beeler (C); Woodbine
 Lewis J. Beeler (V); La Fayette, Ind.
 Henry F. Beelman (V); Fort Madison, Iowa
 Wynona Beeman (P); Ashland
 George W. Beers (V); Innisfail Atla, Canada
 Ruth Beeson (C); Wamego
 Marcia Beggs (C); Washington
 William E. Beil (P); Salina
 Clarence Bell (P); Junction City
 Iva Bell (P); Paola
 Winfield M. Bell (C); Kinsley
 Dora Benne (P); Hollenberg
 Alfred S. Bennett (C); Pratt
 Earl W. Bennett (V); Red Oak, Iowa
 Roy S. Bennett (C); Mulvane
 R. Benninghoven (C); Strong City
 Glen D. Beougher (C); Oakley
 W. E. Berg (V); Pratt
 John Berghouse (V); Butterfield, Mich.
 Carl Berglund (V); Vermillion, S. Dak.
 Chris Bergner (V); Pratt
 Edward Bergstrom (P); Cuba
 Alice Berry (P); St. Marys
 Godfrey G. Berry (C); Seligman, Mo.
 Frederick Besancon (V); Effingham.
 Mary Betz (C); Asherville
 Perry Betz (C); Manhattan
 Lawrence W. Beyers (C); Hutchinson
 Ernestine Biby (C); Topeka
 Georgia A. Bice (C); Manhattan
 Walter E. Biery (C); Peru
 Chas. H. Biggerstaff (P); Manhattan
 Irma K. Biggs (P); Barnard
 Cynthia Bigham (P); Fontana
 Ada G. Billings (C); Manhattan
 Fred G. Billings (C); Manhattan
 Lucia Biltz (C); Manhattan
 Juanita Binning (P); Medicine Lodge
 Chauncey Bishop (P); Leavenworth
 Francis Black (P); Manhattan
 Helen Ann Blair (C); Mulvane
 Oscar Le Blanc (V); Tacoma, Wash.
 George E. Blanchard (P); Belleville

HOME STUDY SERVICE STUDENTS—Continued.

- W. J. Blanchard (C); Cleveland, Ohio
 Robert F. Blanks (C); Burley, Idaho
 Floyd A. Blauer (P); Stockton
 Ruth Blodgett (C); Beloit
 Lloyd A. Boles (C); Madison
 W. C. Boller (C); Newton
 Albert C. Bondshu (V); Modesto, Cal.
 Marguerite Bondurant (C); Ness City
 Vera R. Book (P); Junction City
 Mary Grace Boon (C); Lansing
 Lula Booth (P); Corning
 Albert Boothe (P); Colfax, Iowa
 W. H. Borland (C); Clay Center
 Helen Bossler (C); Fredonia
 Curtis C. Bost (C); Manhattan
 A. H. Bosworth (V); Wichita
 Orille Bourassa (C); Manhattan
 Clark O. Bowen (V); Ladysmith, Wis.
 Harley J. Bower (C); Osage City
 Belle Bowman (P); Dodge City
 Cassie Bowman (P); Dodge City
 Kenneth K. Bowman (C); Baldwin
 Allen W. Boyce (C); Manhattan
 Evelyn Boyce (C); Minneapolis
 Lora Boydston (P); Eureka
 Leonard Bradbury (P); Paola
 Maurice Bradley (C); Manhattan
 Birdia A. Bradshaw (V); Jetmore
 Sadie Brainerd (C); White Water
 Frank Brandjesky (P); Manhattan
 Marie E. Brannick (C); Manhattan
 C. A. Brantengham (V); St. Joseph, Mo.
 Minnie Brasche (P); Wamego
 K. L. Breckenridge (P); Louisburg
 Verna Breece (C); Wichita
 Miriam E. Brenner (C); Waterville
 Claudie Brent (P); Alton
 C. A. Brewer (C); Webster
 Erma Britton (P); Weir
 Vernon Britton (P); Wellington
 James S. Brook (P); Wetmore
 A. Blanche Brooks (C); Manhattan
 Edwin H. Brooks (C); Brookville
 Mrs. Augusta Brown (C); Aurora, Mo.
 Elvin G. Brown (V); Larned
 F. W. Brown (V); Wichita
 Grace Brown (C); Pomona
 J. C. Brown (C); Manhattan
 Kenneth Brown (P); Perry
 Margaret Brown (P); Howard
 Ralph C. Brown (V); Blackwell, Okla.
 Walter E. Brown (V); Opal, S. Dak.
 Helen Moore Bruce (C); Carthage, Ill.
 Wesley T. Bruce (C); Clay Center
 Leslie A. Brueck (P); Paola
 Thos. W. Bruner (C); Lakin
 N. D. Bryant (C); Paducah, Ky.
 Wm. L. Bubb (V); Charles City, Iowa
 David Buchanan (P); Norton
 James D. Buchanan (V); Iola
 J. A. Buckner (V); Onslow, Iowa
 Mary Bullemore (C); Clayton
 Henry A. Bunck (V); Everest
 Christine Bruger (P); Seneca
 W. H. Burgwin (C); Manhattan
 Geo. H. Burmeister (V); Oak Park, Ill.
 Harold Burnett (P); Parker
 Maude Burnett (P); Parker
 Mrs. Jennie Burns (C); Hoisington
 Mrs. Maude Burns (P); Gordon
 Morris P. Burns (C); Fall River
 Roland Burns (V); Nash, Tex.
 Mrs. Buena Burr (P); Dodge City
 Penelope Burtis (C); Fredonia
 Augustus Wells Burton (C); Moran
 Florence M. Burton (C); Haddam
 Hartzell Burton (C); Manhattan
 Paul E. Burton (V); Armstrong, Ill.
 Charles A. Butel (V); Paola
 Clarence Butler (V); St. Joseph, Mo.
 Tressa Butler (P); Glasco
 Dolly Butts (P); Ashland
 Gladys Cailloz (C); Wamego
 Cornelia Callison (P); Palco
 J. B. Campbell (P); Manhattan
 Milford L. Campbell (P); Manhattan
 Gladys Carder (C); Langdon
 Florence Carey (C); Manhattan
 Rose Carey (C); College View, Neb.
 Dale H. Carmeon (C); Manhattan
 Lewis A. Carson (P); Severy
 John C. Carss (V); Keokuk, Iowa
 Roland M. Carter (P); Dodge City
 Adelaide Carver (C); Holyrood
 Bessie J. Case (P); Wathena
 George Case (P); Burns
 James Case (P); Wathena
 Geo. Casper, jr. (V); Alida
 D. F. Castles (V); St. Louis, Mo.
 Clarence B. Castor (P); Cheney
 Boyd Cawood (P); Wetmore
 Marian Chaffee (C); Lasita
 Cora Chalfant (P); Ellinwood
 C. B. Chambers (C); Manhattan
 Earle F. Chambers (V); Los Angeles, Cal.
 I. N. Chapman (C); Manhattan
 Eldora Chick (P); Frankfort
 N. C. Chilcott (C); Mankato
 Edna Childers (C); Wamego
 Harold S. Choguill (C); Humboldt
 William C. Choplin (V); Independence, Mo.
 Nis. Christensen (V); Kimballtown, Iowa
 Axel Christiansen (C); St. Paul, Minn.
 C. O. Chubb (C); Manhattan
 Mildred Churchill (C); Manhattan
 Frances Clammer (P); Manhattan
 W. J. Clapp (C); Manhattan
 Frank S. Clark (P); Junction City
 Gladys Clark (P); Maize
 Lois A. Clark (C); Grinnell
 Paul Clark (C); Garden City
 Roy E. Clegg (C); Altoona
 Ina L. Clements (P); Havensville
 E. E. Clevenger (V); Copeland
 Marjorie Clickner, Hutchinson
 Jay Clopton (P); Madison
 Ruth L. Clopton (P); Moran
 C. R. Clothier (C); Independence
 Charles H. Cloude (C); Manhattan
 Merle R. Clover (V); Clearwater
 Fred Cocherell (C); Manhattan
 P. W. Cockerill (C); Garnett
 Wallace E. Cockerill (P); Blue Rapids
 John Cockrill (V); Goodland
 L. I. Collins (C); Manhattan
 H. P. Compton (C); Courtland
 Minnie A. Condra (C); Westphalia
 Elmer H. Condran (V); Leslie, Ark.
 Jewell Conkel (C); Niles
 Mildred Conkel (C); Niles
 Beatrice Connor (P); Norton
 Cora M. Conner (P); Manhattan
 Mae Connery (C); Sterling
 Mae Connery (C); Bushton
 J. F. Conrad (V); Richland, Ore.
 Catherine Conroy (P); Manhattan
 Etta M. Conroy (C); Milford
 Irene Conroy (C); Manhattan
 Marguerite Conroy (P); Manhattan
 Nelle Conroy (C); Manhattan
 Nelle Conroy (P); Manhattan
 T. A. Constable (C); Minneapolis
 Helen E. Cook (P); Manhattan
 M. S. Cook (C); Dillon
 Robert Cook (V); Richland, Mich.

HOME STUDY SERVICE STUDENTS—Continued.

Wm. R. Cook (V); Dodge City
 Dale Cooper (P); Luray
 Eva Cooper (P); Edna
 J. R. Cooper (V); Preston
 Minerva C. Cooper (C); Reinbeck, Iowa
 Walter Cooper (V); Blakeman
 Geo. Corbet (C); Leona
 Catherine E. Corey (C); Blue Mound
 Pedro Cortana (V); Calahan, Cal.
 Jessie M. Cosner (P); Kimball
 Bessie Coulter (C); Wichita
 Thos. T. Counter (V); Herndon
 Ditz G. Cowels (P); Wichita
 Clayde R. Coyle (C); Axtell
 Fred F. Crawford (V); Horton
 Sig Crosson (V); Osawatomie
 Warren Crouch (V); Danville, Ill.
 Mattie F. Crow (C); Silver Lake
 Helen Crow (C); Dighton
 N. W. Crum (V); Quenemo
 Urban J. Crum (V); Sarahsville, Ohio
 Stacy S. Culligan (C); Fort Madison, Iowa.
 Gladys Culson (V); Lindsborg
 Alva A. Culwell (V); Omaha, Neb.
 Purl H. Cunningham (C); Tulsa, Okla.
 Rose M. Cunningham (C); Manhattan
 Ruth Cunningham (C); Manhattan
 Esther Curphey (P); Osage City
 Frances R. Curtis (C); Kansas City
 Gertrude Curtis (P); Ogden
 L. F. Cyr (V); Clyde
 Ina Czarnowsky (C); Pilsen
 John Dailey, jr. (V); Oskaloosa
 Dora Deen Dakin (C); Manhattan
 Mary L. Dale (P); Lyndon
 Joe Dalrymple (P); Simpson
 Edna E. Daly (P); Junction City
 Roy E. Dalziel (V); Salem, Ore.
 Ralph H. Dannen (V); Shedd, Ore.
 Earl G. Darby (C); Manhattan
 Max H. Darrow (V); Baileyville
 Clyde Davidson (P); Topeka
 Eva O. Davidson (P); Glasco
 Alberta Davis (P); Topeka
 Charles Davis (V); Edna
 Daisy Davis (C); Cawker City
 Frank S. Davis (C); Morganville
 Lawrence C. Davis (V); Leonardville
 Martha J. Davis (C); New Hampton, Mo.
 Pauline Davis (P); Ashland
 Ross H. Davis (P); Trousdale
 Walter E. Davis (V); Geuda Springs
 Augusta Day (P); Concordia
 Ruth Day (C); Longton
 Lewis B. Deal (C); Newton
 Leonard J. Deaton (P); Junction City
 Mrs. Gaylie Debus (V); Riley
 Floyd A. Decker (C); Troy
 Maude Deely (C); Clay Center
 Manly Deering (P); Clements
 Geo. B. Deem (V); La Crosse
 L. E. Deister (C); Manhattan
 Nina Deitrich (P); Junction City
 Esther Delker (V); Chapman
 Wymen D. Delp (P); Lenora
 Edna Denbo (P); Great Bend
 C. Rollins Dennen (P); Blue Hills, Neb.
 Alfred F. Dennis (P); Sabetha
 Paul Depew (P); Neodesha
 Carl H. Deppish (P); Junction City
 Lew Dervage (V); Lamont, Okla.
 Mrs. E. P. Desmarias (C); Meade
 Mrs. Eva Dewey (C); Manhattan
 Edward Dewey (V); Sherburn, Minn.
 Telesphere De Cormier (V); St. Louis, Mo.
 Chas. DeVore (P); Newellton, La.
 Dorothy DeWolf (C); Garnett
 Eleanor Diebler (P); Manhattan
 Mabel Diggs (C); Partridge
 Randal Dikeman (P); Pratt
 W. E. Dillard (V); Oskaloosa, Iowa
 Leroy O. Dobbs (V); Marshalltown, Iowa
 Ella A. Donahoe (P); Neodesha
 E. R. Dononey (C); Manhattan
 Arthur Doolen (C); Kimmundy, Ill.
 Naomi H. Dooley (P); Oketo
 Augusta Dorschuck (P); Partridge
 Mrs. Hazel Dosien (V); Bentley
 Mildred Dow (P); Moran
 Gerald R. Dowd (C); Manhattan
 Claire A. Downing (C); Independence
 Wilkins E. Downing (P); Pratt
 Marjorie M. Doyle (C); Blue Rapids
 Mima Draker (P); Deerhead
 Verda Draver (P); Waterville
 Henry Dreger (V); Gretna, Neb.
 Irwin E. Dubois (C); Peabody
 Mary E. Dudley (C); Topeka
 Thos. Dugan (P); Ashland
 Mrs. Zelda B. Dulebohn (C); Hill City
 Jack W. Dunlap (C); Scott City
 Carroll W. Dunn (P); Phillipsburg
 Paul M. Durland (P); Irving
 Delbert M. Dwelley (V); Brewer, Maine.
 Sara Dwyer (C); Topeka
 Carl A. Easley (P); Kansas City
 C. S. Ebenstein (C); Manhattan
 Elsie Eberhart (P); Topeka
 Fountain G. Edwards (V); Moscow
 H. L. Edgell (C); Leavenworth
 Milton S. Eisenhower (C); Abilene
 Sam Eitzen (V); Hillsboro
 Harold C. Elder (C); Mankato
 A. C. Eldred (V); Elgin
 Leonard Paul Elliott (C); Manhattan
 Pearl Elliott (P); Speed
 Marjorie Ellis (P); Bucklin
 John E. Ellison (V); Clarinda, Iowa
 Adelbert Elward (P); Mulvane
 Mildred Emrick (C); Omaha, Neb.
 Mrs. I. S. Engle (V); Elmo
 Martha Engle (C); Abilene
 Geo. V. Engstrand (V); Bushton
 Virgil Ensign (P); Waterville
 L. W. Ernst (C); Manhattan
 Jos. L. Erny (V); Alliance, Neb.
 Linnie Erwin (P); Pratt
 Herman C. Esau (P); Moundridge
 Irene Etzold (C); Liberal
 Chas. F. Evans (V); Wellsville
 David W. Evans (V); Fairview
 Lucile M. Evans (P); Manhattan
 E. W. Evers (V); Belle Plaine
 J. B. Ewing (C); Iola
 T. F. Fagen (V); Reading
 Arline Faley (C); Manhattan
 Ethel Fansler (P); Junction City
 Ernest N. Farnham (C); Abilene
 Wm. Fear (P); Junction City
 David Feese (C); Manhattan
 Carl Feldmann (P); Sabetha
 Robert M. Fendorf (C); Tuscumbia, Mo.
 Esther Ferguson (P); Jasper, Mo.
 Mrs. Hazel Ferguson (P); La Harpe
 Alta Fields (C); Manhattan
 Howard D. Finch (C); Manhattan
 Chas. L. Finley (V); Lincoln, Neb.
 Forest A. Fiscus (P); Severy.
 O. F. Fisher (C); Cleveland, Ohio.
 Glenn Fitch (V); Waverly
 Kenneth E. Fitch (P); Delphos
 Chas. R. Fitch (C); Miltonvale
 Daniel C. Fitzwater (V); St. Louis, Mo.
 H. V. Fleming (C); Manhattan
 Bernice Flemming (C); Manhattan
 Christine Flemming (P); Paola
 Helen Flemming (P); Norton

HOME STUDY SERVICE STUDENTS—Continued.

Nelle D. Flinn (C); Manhattan
 Sadie Flood (C); Mulvane
 Guy Flora (V); Galena
 Gertrude Flowers (C); Manhattan
 Ruth Floyd (C); Sedan
 Naomi L. Forsyth (C); Howard
 Frank J. Fortunski (V); Waterloo, Iowa
 Ruth Fowler (C); Winfield
 Alfred Fox (P); Le Roy
 Lee E. Fox (V); Larned
 Helen Franklin (P); Arkalon
 Horace G. Franklin (V); Beagle
 Neosho Frederburg (C); Council Grove
 W. D. French (C); Winchester
 Harry Frey (V); Merna, Neb.
 Bert E. Friend (C); Charles City, Iowa
 Clarence R. Fritts (V); Topeka
 H. L. Fry (V); Spearville
 Edward Fuller (V); Susanville, Cal.
 Fred Fuller (C); Ellis
 J. S. Fuller (C); Atlanta
 Mina Fulton (P); Bucklin
 Dan Furse (P); Cherryvale
 Tacitus E. Gaillard (C); Kansas City, Mo.
 Beatrice Gaither (C); Manhattan
 Isabel Gallemore (C); Manhattan
 Raymond F. Gard (C); Stafford
 Ruth E. Gardenhire (C); Luther, Okla.
 Carl Gardner (V); Smith Center
 O. D. Gardner (C); Wetmore
 R. P. Garrett (C); Manhattan
 H. P. Gaston (C); Manhattan
 Dorothy Gattton (C); Bartlesville, Okla.
 Lorenzo Gay (V); Junction City
 J. C. Geiger (C); Manhattan
 Susie Geiger (C); Brookville
 Earl Geil (C); Great Bend
 Glenn Geil (C); Great Bend
 M. R. Getty (C); Manhattan
 Glenn E. Ghorrmley (C); Solomon
 Otis Gibson (V); Americus
 Sam J. Gilbert (C); Woodston
 Virginia Gilbert (P); Norton
 Mildred Giles (P); Osage City
 Virginia Giles (C); Springfield, Mo.
 Helen Gilmore (P); Ness City
 Geo. H. Kirkpatrick (V); Spokane, Wash.
 Mildred Gillespie (C); Harper
 Margaret Gillett (C); Manhattan
 Verne Gimple (V); Montrose
 Ernest K. Glass (V); Kansas City, Mo.
 Lewis M. Glass (P); Conway Springs
 J. A. Glaze (C); Eureka.
 A. A. Glenn (C); Manhattan
 Elva Glenn (P); Densmore
 Fern Glenn (P); Winchester
 Jessie N. Glenn (P); Lecompton
 Albert A. Goering (C); Moundridge
 Herbert A. Goering (C); Moundridge
 Ray G. Gomel (C); Oakhill
 Howard Good, (V); Perry
 Arthur E. Goodwin (C); Concordia
 C. N. Gordon (V); Americus
 H. Lucile Gordon (P); Waterville
 Frank A. Gordon (V); Kersey, Colo.
 Walter Gossett (V); Independence
 Forrest M. Gottschalk (V); Roslyn, S. Dak.
 John S. Grace (V); St. Joseph, Mo.
 Alice C. Graham (V); Dallas, Ore.
 W. W. Graham (C); Manhattan
 Westley L. Graham (V); Ashley, Neb.
 Harvey S. Grammes (P); Junction City
 Lucille Gramse (C); Perry
 Clarence O. Gray (V); Poplar Bluff, Mo.
 Mrs. Harriette Greene (V); Leavenworth
 Joseph M. Gregory (V); Camp Logan, Tex.
 Dorothy Greve (C); Manhattan
 Gertrude Grieve (C); Wamego
 Lillian Griffin (P); Longton
 Edwin H. Griffith (V); Burlington, Iowa
 Glenn Griffith (P); Densmore
 Wm. H. Griffith (V); Colorado Springs, Colo.
 George Grimble (P); Turon
 Ben Grosse (C); Jamestown
 Clarence S. Grubbs (P); Lawrence
 Neva Grund (P); Wallace
 Lola Gudge (C); Wichita
 Pearl M. Gunsallus (P); Mt. Hope
 Franklin Haas (P); Nickerson
 Louise Hackborn (P); Kansas City
 James W. Haddock (V); Abilene
 Ella Hall (P); Kansas City
 Florence Hall (V); Republic
 Harry P. Hall (V); St. Louis, Mo.
 Ruth Hamblin (P); Buffalo, Okla.
 Ray B. Hammerli (C); Broughton
 Paul D. Hammontree (V); Holden, Mo.
 H. Evelyn Hanes (C); Ottawa.
 Geo. Harney jr. (C); Medicine Lodge
 Nellie M. Harper (P); Stark
 Hector W. Harris (C); Horton
 T. C. Hartly (V); Walla Walla, Wash.
 Jacob Hass (V); Hoisington
 Willard A. Haury (P); Moundridge
 Martin Hautsinger (V); Omaha, Neb.
 Leroy Haverty (V); Leavenworth
 Mrs. E. W. Hawkes (V); Collyer
 Winfield Haynes (P); Manhattan
 Harold F. Hayter (V); Rosedale
 Harry S. Hazel (P); Fort Riley
 Grace Headrick (C); Winfield
 Floyd C. Healer (C); Wichita
 Doit Hearn (V); Marshall, Okla.
 H. A. Heckert (V); Wichita
 Helen A. Hedge (C); Whiting
 Lawrence U. Hedge (P); Manhattan
 C. E. Hedges (C); Denison
 Vera D. Hedges (C); Blue Mound
 L. B. Hefling (C); Manhattan
 A. J. Heiderbrecht (P); Burrton
 Alfred M. Helgeson (V); Woodville, Wis.
 Milton Heller (V); Dillon
 Roe Heller (C); Detroit
 Flora T. Helwig (C); Kansas City
 Helen Hemenway (P); Junction City
 Alfreda Hemker (C); Great Bend
 Clyde R. Hemphill (C); Chanute
 F. E. Henderson (C); Manhattan
 Lillian G. Henderson (C); Haddam
 Alice Henley (P); Ness City
 Alda Henning (C); Burlington
 Carl Henningsen (V); Lewistown, Mont.
 John G. Henry (C); Glasco
 E. A. Hepler (C); Manhattan
 Opal Wishard Hepler (C); Washington
 Lloyd D. Herman (V); Bridgeport, Neb.
 Henry Hermon (P); Ellis
 Lora L. Herrick (C); Onaga
 Jore H. Herrin (C); Manhattan
 D. P. Hervey (C); Hutchinson
 Frank B. Heter (C); Sterling
 Earl M. Hiestand (C); Yates Center
 Chester A. Higbee (V); Mankato
 Mary Higinbotham (C); Manhattan
 Paul H. Hill (P); Spivey
 Randall C. Hill (C); Manhattan
 Joseph R. Hilligos (V); Atchison
 Douglas A. Hine (C); Americus
 Helen Hirt (P); Bucklin
 Gordona Hitchcock (V); Delhi, Colo.
 Alice C. Hoard (P); Bucklin
 H. G. Hookman (C); Manhattan
 Alfred E. Hodge (V); Topeka
 Della Hodges (C); St. George
 Edna L. Hoke (C); Manhattan
 H. S. Holden (V); Manhattan
 Lois Holderbaum (C); Kansas City

HOME STUDY SERVICE STUDENTS—Continued.

Lloyd Holland (P); Norton
 Geo. S. Holland (C); Des Moines, Iowa
 Geneva Hollis (C); Fredonia
 Irvin Holmes (C); Portis
 S. L. Holt (C); Neodesha
 Mrs. Vernon B. Holt (V); Kansas City
 R. L. Holton (V); Jamestown
 Chas. Holtwick (V); Valencia
 Alfreda Honeywell (C); Seneca
 J. W. Honeywell (C); Hunter
 George Hooper (C); Triplett, Mo.
 Earl F. Hoover (C); St. Joseph, Mo.
 J. R. Hoover (P); Fontana
 Walter L. Hoover (C); Goodhue, Minn.
 Hollis Hope (C); Garden City
 James H. Hopkins (P); Neodesha
 J. Riley Hopper (C); Manhattan
 Ruth Hopson (V); Phillipsburg
 Opal Horr (C); Louisville
 Edward Houdek (V); Dubuque, Iowa
 J. H. Houston (C); Baldwin
 L. E. Houston (C); Monte Vista, Colo.
 Ruth Houston (P); Delavan
 Paul Hovgard (C); Abilene
 Dennie Howard (P); Norton
 E. E. Howard (C); Manhattan
 W. T. Howard (C); Manhattan
 Margaret J. Howe (C); Manhattan
 H. H. Howe (C); Wakeeney
 Bert A. Howell (C); Satanta
 Helen Harper Howell (V); Kansas City, Mo.
 John T. Hoy (C); Niles
 Frances J. Hoyt (C); Junction City
 Hemen Huey (P); Wamego
 Rex R. Huey (C); Louisville
 Claude Huffman (C); Lyons
 Edith R. Hughes (P); Richland
 Geo. Hughes (P); Sabetha
 James F. Hughes (V); Hayward, Cal.
 Viola Hughes (P); Missler
 Geraldine Hull (C); Manhattan
 Geo. F. Humphrey (P); Manhattan
 Mae Humphrey (C); Denison
 Wm. J. Humpal (V); Atkinson, Neb.
 Roy H. Hun (V); Kansas City
 A. G. Hunt (C); Burdette
 Walter T. Hunt (V); Osborne
 Eugene Hunter (P); El Dorado
 May A. Hunter (C); Manhattan
 Russell F. Hunter (C); White City
 Thomas K. Hunter (C); Raymond
 Ross Hurley (P); Junction City
 Pearl Hurwitz (P); Topeka
 Edwin C. Hutchings (P); Manhattan
 Bion Hutchins (V); Mont Ida
 Maude P. Hutto (C); Manhattan
 John G. Hutton (V); Torrington, Wyo.
 Grace Hyde (P); Altoona
 Margaret Hyde (P); Kansas City
 Maxine Ireland (P); Weir
 Fred A. Irwin (C); Manhattan
 Ruth Isaac (P); Morgan
 E. A. Jackson (V); Shafer, Minn.
 Mary Jackson (C); Manhattan
 Mattie Jackson (C); Manhattan
 J. L. Jacobson (C); Kingman
 August Jansen (V); Frederick, Okla.
 Bessie Jansen (C); Frederick, Okla.
 Jeanetta James (C); Wellington
 William N. Jardine (P); Manhattan
 Mrs. E. C. Jenkins (V); Selden
 R. W. Jenkins (C); Manhattan
 Alice Jennings (C); Zeandale
 Geo. S. Jr. Jennings (C); Winfield
 Adolph G. Jensen (C); Neodesha
 Mary Jensen (C); Waterloo, Iowa
 Ralph C. John (C); Leonardville
 Abe E. Johnson (P); Manhattan
 Alma Johnson (P); Manhattan
 Bernice Johnson (C); Simpson
 Bertha B. Johnson (C); Cambridge
 C. G. Johnson (C); Linn
 Ethel Johnson (C); Marquette
 Forrest Johnson (C); Westphalia
 Francis E. Johnson (P); Burlington
 Frank Johnson (C); Wamego
 Fred E. Johnson (V); Clifton, Ariz.
 Fred L. Johnson (C); Hamburg, Iowa
 Fred R. Johnson (V); Sacramento, Cal.
 Geo. A. Johnson (V); Watsonville, Cal.
 Grace Johnson (C); Simpson
 Jessie Johnson (P); Cullison
 Julia Johnson (C); Herington
 Larry A. Johnson (P); Wichita
 Mary E. Johnston (P); Junction City
 Milo N. Johnson (C); Manhattan
 Oscar Johnson (P); Wakarusa
 Raymond J. Johnson (P); Olsburg
 Remington Johnson (P); Ellsworth
 Reuben F. Johnson (V); Clyde
 Reuben N. Johnson (C); Manhattan
 Charles Jones (P); Ashland
 Dorothy Jones (P); Wetmore
 Irma Jones (P); Hiawatha
 Nellie Jones (C); Preston
 Percival Jones (P); Dodge City
 Reece Jones (P); Lake City
 V. A. Jones (C); Palestine, Ill.
 Blanche Kabance (P); Mayetta
 Mary Kahler (C); Wamego
 H. J. Kapka (C); Bonner Springs
 George Kaylor (V); Kenton, Ohio
 Wm. M. Keach (V); Wichita
 Chester B. Keck (C); Auburn
 Mary M. Kedd (P); Pratt
 Enola Keeney (C); Lucas
 Russell Kefer (C); Manhattan
 Augusta Kegel (P); Phillipsburg
 Grace Kehr (P); Burns
 W. H. Kehr (V); Wellington, Mo.
 Beulah Keiffer (C); Manhattan
 Pauline Keith (C); Manhattan
 Florence Keller (P); Norton
 Theo. W. Keller (P); Manhattan
 Eugene E. Kelly (C); Manhattan
 Gertrude Kelly (P); White Water
 Freda L. Kennedy (P); Dodge City
 Jennie Kern (P); Centralia
 William C. Kerr (C); Manhattan
 Blanche Kershaw (C); Manhattan
 Inez Kessler (P); Maize
 Sarah Kessler (P); Maize
 R. C. Ketterman (C); Havensville
 Leland A. Kettering (C); Salina
 O. F. Kilmer (V); Belle Plaine
 Ellis Kimble (C); Garden City
 Martin L. Kimmell (V); Glide, Ore.
 Doris Kimport (P); Lenora
 Ralph E. Kimport (C); Dellvale
 Jesse D. Kimport (C); Dellvale
 C. W. King (V); Plevna
 Floyd H. King (V); Harrisburg, Tex.
 Julia King (C); Manhattan
 Lee T. King (C); Manhattan
 Ruth King (P); Junction City
 Lucille Kinnamon (C); Larned
 Ira Kirby (P); Clayton, N. Mex.
 J. K. Kirk (V); Bazaar
 Lepha Kirk (P); Melrose, N. Mex.
 R. M. Kirkhuff (C); Nickerson
 I. B. Kirkwood (C); Marysville
 F. W. Kitch (C); Manhattan
 Mary E. Kitson (P); Turon
 John Kjellen (P); Battle Creek, Mich.
 Lavina Klein (P); Sabetha
 L. E. Klein (V); Manhattan
 Elwood L. Klepinger (V); Conway

HOME STUDY SERVICE STUDENTS—Continued.

Esther Kline (P); Williamsburg
 Ruth Klostermeier (C); Manhattan
 E. A. Knoth (C); Manhattan
 Karl Z. Knox (V); Topeka
 S. F. Kollar (C); Woodward, Okla.
 Henry J. Koob (V); Hannibal, Mo.
 Jeffie Otis Kramer (C); Wichita
 Adolph C. Kratochvil (P); Blue Rapids
 Anna Krim (P); Hanover
 Fred L. Kueker (V); Wilder
 Elizabeth Kunkler (P); Holton
 Bessie Kyle (P); Osborne
 Bessie Laber (P); Ellsworth
 John W. Lacroix (P); Hiawatha
 Floyd R. Lacy (P); Goodwell, Okla.
 Willard Lahmberg (P); Moundridge
 Roberta Lake (C); Eskridge
 Venda Laman (C); Osborne
 Alson Lamb (V); Galena
 Mark G. Lammers (V); Fort Madison, Iowa
 M. Lamoreaux (C); Waterville
 Justice Landreth (C); Wichita
 Thos. F. Landrum (V); Fort Leavenworth
 Herbert A. Lang (V); St. Louis, Mo.
 Leonard Lanning (P); Sabetha
 Walter H. Lant (V); Boise, Idaho
 Irene Lanterman (P); Atlanta
 Ralph C. Lapsley (C); Burlington
 Mary Lardner (G); Fort Scott
 Howard C. Lare (C); Ottawa
 Florence Larmer (C); Webber
 Lelia M. Larrison (P); Coats
 Wm. M. Lathrop (P); Norton
 E. A. Laude (C); Manhattan
 Velma Lawrence (C); Manhattan
 Sifroy A. La Fond (V); Bradley, Ill.
 Mrs. Ethel B. La Mont (C); Oberlin
 Frank La Plant (C); Delphos
 Clara E. Leaf (C); Garfield
 Lysle D. Leach (C); Eskridge
 Ethel Learned (P); Sylvia
 Henry A. Lebsack (V); Otis
 Floyd A. Lehman (V); Halstead
 Golda Leichliter (P); Norton
 Ingovar Leighton (C); West Helena, Ark.
 Robert C. Leland (V); Forest City, Iowa
 Karl F. Lenhart (V); Clay Center
 Frank E. Lentz (C); Manhattan
 John M. Lentz (V); Gering, Neb.
 Lola Lichlyter (C); Sharon
 Ralph C. Lindenberger (V); Rantoul
 Evar Lindstrom (C); Coldwater
 Rose E. Lippoldt (V); Kinsley
 Roy H. Lippert (V); Burlington, Iowa
 Ray Lister (P); Burns
 Charlotte Little (P); Junction City
 Edward O. Lively (V); Caldwell
 Robert J. Loeffel (V); St. Louis, Mo.
 Ida L. Lohmann (P); Seneca
 C. W. Linderholm (C); Kansas City, Mo.
 Baden Long (C); Coffeyville
 Edward Longinette (V); St. Louis, Mo.
 G. M. Longley (C); Peoria, Ill.
 Chas. A. Loranger (V); Sacramento, Cal.
 Lorán G. Lord (P); Norton
 Flossie Loudenslager (P); Maize
 Harry W. Love (V); DeKalb, Ill.
 Herbert M. Low (C); Topeka
 Gladys Loy (C); Aurora, Mo.
 A. R. Loyd (C); Manhattan
 Eldon Lucrickson (P); Severy
 Pauline O. Lukins (P); Madison
 Walter H. Lutz (C); Sharon Springs
 Paul Mackey (V); Topeka
 Ivan Macy (P); Longford
 H. Brady Magers (C); Winchester
 Wilbur S. Magill (C); Manhattan
 Alma Maines (P); Paola
 Duella M. Mall (C); Green
 Patrick J. Mallon (V); St. Louis, Mo.
 Louise Mangelsdorf (C); Atchison
 Ezra Perle Mank (P); Manhattan
 Bessie Marcellus (P); Manhattan
 Viola March (P); Norton
 Frances Mardis (C); Preston
 Daniel C. Marshall (C); Manhattan
 Albert Marvin (P); Blue Rapids
 Edward Martin (P); Paola
 Faith Martin (C); Manhattan
 Helen Martin (C); Wellington
 Ruth Martin (C); Hiawatha
 Samuel Martin (V); Washington, Ind.
 Loreine Mason (V); Bucyrus
 Margaret Mason (C); Belle Plaine
 Alma Henrietta Mattson (C); Inman
 Virginia Mayfield (C); Manhattan
 Laura McAdams (C); Salina
 Arch McAvoy (V); Kansas City, Mo.
 Catherine McBride (P); Fort Riley
 Elizabeth McCall (V); Wakeeney
 W. O. McCarty (C); Ames
 Harold McCloud (P); Madison
 Sherman B. McCombs (V); St. Louis, Mo.
 Mrs. Mary McCormick (C); Ford
 Tressa O. McCulley (P); Alton
 Annetta McCoy (P); Maize
 A. E. McCullough (C); Solomon
 Dorothy McCullough (C); Horton
 Blaine R. McCurry (P); Barnard
 R. S. McDarmond (V); Winchester
 Hall McDaniel (V); Pratt
 Mrs. Ethel R. McDonald (V); Fort Riley
 Helen McDonald (C); Manhattan
 Mildred McElhone (P); South Haven
 Fred McElhinney (C); Manhattan
 Ray L. McElroy (V); Rising City, Neb.
 R. R. McFadden (C); Spearville
 Wm. Virgil McFerrin (V); Preston
 Irene McGanor (P); Manhattan
 Anna McGarvan (V); Larned
 Beulah McGarvin (P); Lake City
 Anna McGarvan (C); Larned
 Velma McGarvin (P); Lake City
 L. M. McGee (P); Ramona
 Russell McGuire (P); Garden City
 Juanita McHenry (P); Manhattan
 J. P. McInerney (V); Wilmot, S. D.
 Lev. McIntosh (P); Mulvane
 Roswell McIntosh (P); Manhattan
 Clair T. Mellvain (P); Madison
 Jack Mellvain (P); Madison
 J. O. Mellwaine (C); Hoisington
 Bernice McKee (P); Rexford
 Jesse R. McKee (C); Marysville
 Riley E. McKinney (V); Westline, Mo.
 J. M. McKinster (P); Wichita
 Ethel McLeod (P); Marysville
 George R. McMahon (V); Manhattan
 Etta McOsker (P); Turon
 Esther McStay (C); Downs
 Lucille McVery (P); Hill City
 Clifford Meade (P); Wilroads
 Lloyd E. Means (C); Lodge Pole, Neb.
 Mrs. W. F. Means (V); Hiawatha
 Louis Medsker (V); Troy
 V. G. Megill (P); Elk City
 Henry J. Melcher (C); Concordia
 Bessie Mercer (P); Clements
 Ruth Mercer (P); Clements
 Ralph G. Merriek (V); Cleveland
 C. S. Merydith (C); Meade
 Ted Meserve (P); Ellis
 Velma Meserve (C); Ellis
 Donald Messenger (C); Wichita
 Lucy Messerli (P); Turon
 Harry K. Metcalf (C); Cottage Grove, Ore.
 Ethel Meugniot (C); Wathena
 Esther Meyers (P); Girard
 Chas. Middleton (V); Maryville, Mo.
 Caroline Miek (P); Ransom

HOME STUDY SERVICE STUDENTS—Continued.

A. L. Milan (V); Cambridge
 Nellie Mildfelt (C); Clay Center
 Carl V. Miles (C); Marysville, Mo.
 J. E. Millard (V); Topeka
 Alfred Miller (V); St. Paul, Minn.
 A. Q. Miller jr. (C); Salina
 Argo W. Miller (C); Twinsburg
 Bernice Miller (C); Manhattan
 Edith Miller (C); Council Grove
 Edwin Miller (P); Junction City
 Ford S. Miller (P); New Salem
 Ernest Miller (C); Coffeyville
 Edith Miller (V); Lebanon
 Glen W. Miller (V); Orchard, Neb.
 Glenn Miller (C); Winchester
 Harold E. Miller (C); Lincoln
 Hazel Miller (C); Lincoln
 Leon Miller (V); Fowler
 Leland W. Mitchell (P); Pratt
 Marguerite Miller (C); Marion
 Seth Miller (V); Baldwin Park, Cal.
 S. E. Miller (C); Hesston
 V. R. Miller (V); Kansas City
 John Millman (V); Hecker, Ill.
 Chas. Mills (V); Belgrade, Maine
 Ethel Mills (C); Lake City
 Alice Miner (C); Smith Center
 C. E. Minner (C); Manhattan
 E. L. Misegades (C); Peru
 Russell Mitchell (V); Omaha, Neb.
 G. C. Mize (C); Salina
 Mrs. Grace T. Mize (V); Bonner Springs
 Paul Mize (V); Bonner Springs
 Wm. H. Mobley (V); Water Valley, Ky.
 Grace Moffitt (P); Wellington
 Vera Moher (P); Norton
 Julia Mohler (P); Pittsburg
 Hezekiah Molden (V); St. Joseph, Mo.
 Wm. B. Moll (V); Vining.
 Bryant C. Monks (V); Calhoun, Okla.
 Leon F. Montague (C); Cuba
 George Montgomery (C); Manhattan
 Annabelle Moore (P); Wakarusa
 C. V. Moore (C); Manhattan
 Elizabeth M. Moore (P); Anthony
 Katherine Moore (P); Howard
 Myrtle Moore (P); Sabetha.
 Ray Moore (V); Sylvia
 Tillie Moore (C); Junction City
 Earl Moorhead (P); Junction City
 James R. Moreland (C); Formoso
 William Moritz (P); Junction City
 Alyce Morgan (P); Hiawatha
 William N. Morland (C); Formoso
 Louise Morse (C); Garden City
 Gertrude Morton (V) Topeka
 Mrs. James Mosher (V); St. Francis
 Florence Moss (P); Lincoln
 Freddie Moss (P); Lincoln
 Ralph Moyer (P); Junction City
 Clyde M. Mount (P); Manhattan
 E. J. Mueller (C); Manhattan
 Major F. Mueller (C); Sawyer
 Quentin H. Mueller (P); Hanover
 Ralph A. Muir (C); Salina
 Wm. Mulhall (V); Ponace, Neb.
 Edwin Mullen (V); St. Louis, Mo.
 Iva Mullen (C); Labette.
 Earl Muller (V); Dubuque, Iowa
 D. D. Murphy (C); Manhattan
 Elizabeth Munson (C); Brookville
 Roy L. Murray (V); Council Bluffs, Iowa
 J. Kenneth Muse (C); Manhattan
 Nancy Mustoe (C); Norton
 Bernice Myers (C); Salina
 Delphia May Myers (P); Bancroft
 Ethel Myers (P); Manhattan
 Francis Myers (P); Ashland
 Frank L. Myers (C); Junction City
 Jennie Myers (P); Junction City
 Walter E. Myers (C); Eskridge
 Glen H. Natzert (C); Miller, Mo.
 Mary C. Neavitt (C); Atchison
 Mrs. Verna Needham (P); Cherokee
 Carl O. Nelson (P); Clyde
 Dorothy Lush Nelson (C); Altamont
 Esther O. Nelson (C); Minneapolis, Minn.
 Eleanor A. Nelson (C); Nettleton, Mo.
 John T. Nelson (V); Haldrege, Neb.
 Perry Nelson (V); Bagley, Minn.
 Verle E. Nelson (C); Stark
 Margaret Nettleton (C); Lenora
 Jennie Nettrouser (P); Manhattan
 Glenn Neuschwander (P); Moundridge
 Ralph H. Nevins (C); Dodge City
 L. W. Newcomer (C); Manhattan
 C. A. Newell (C); Matfield Green
 R. C. Nichols (C); Topeka
 Ralph M. Nichols, Manhattan.
 Ralph M. Nichols (C); Independence
 Charley Nielsen (P); Coldwater
 Mrs. Morris Nielson (V); Atchison
 Harold Nightengale (P); Corning
 Chas. Nitcher (P); Manhattan
 Dorothy E. Noble (C); Wichita
 Ivan N. Noble (V); Versailles, Ill.
 Merle Noble (P); South Haven
 Edith Norris (C); White Water
 Helen G. Norton (C); Manhattan
 Ruby Northup (C); Cuba
 Delma Nowels (P); Glasco
 Alger Nusbaum (P); Blue Rapids
 Mrs. W. L. Oakes (P); Manhattan
 Bess Oerke (C); Caldwell
 D. W. Ogle (V); Bartlett
 Arnold L. Ogren (V); Des Moines, Iowa
 Walter L. Oldendorph (V);
 University Place, Neb.
 Hazel Oldham (P); Spivey
 Fred Ollsteatt (V); Topeka
 Carl C. Olson (V); Angola
 Esther G. Olson (C); Stockdale
 Wayne Ordway (P); Ellis
 John E. Orr (V); Lansing
 Louis Z. Orr (V); Wellington, Colo.
 Wm. F. Orr (C); Manhattan
 Richard A. Otte (V); Sidney, Iowa
 Bertha O'Brien (C); Manhattan
 John W. O'Connor (P); Colfax, Iowa
 Frank O'Dell (V); Manchester, Iowa
 Michael O'Malley (V); Scammon
 Alpha O'Neil (C); Prescott
 Wayne S. O'Neal (P); Prescott
 Wm. R. Pabst (V); Albia
 A. R. Paden (C); Manhattan
 R. L. Palmer (C); Jewell
 Avis Paramore (P); Delphos
 Ralph Parker (V); Broughton
 Raymond Parker (V); Mulberry Grove, Ill.
 Gertrude Parrish (C); Derby
 W. T. Parry (C); Palco
 Leta Patrick (P); Delphos
 Naola Patterson (P); Erie
 Mary J. M. Patty (V); Emporia
 Earl Paul (P); Ellis
 Arnot Paxton (V); Independence
 James E. Payne, jr. (C); Manhattan
 Margaret E. Payne (C); Fontana
 William Pears (C); Clay Center
 John Pearson (C); Manhattan
 Alice M. Peceival (P); Wilson
 Perly Pederson (V); Clay Center
 Mildred Pence (C); Dunavant
 R. O. Pence (C); Manhattan
 Ellen L. Pennel (C); Admire
 W. W. Perham (C); Iola
 R. T. Periman (C); White Water
 Robert Perkins (C); Oswego

HOME STUDY SERVICE STUDENTS—Continued.

Hansel L. Perrine (V); McCune
 Hettie A. Peters (V); Garnett
 Mrs. Anton Peterson (V); Jamestown
 Carl O. Peterson (V); Hackensack, Minn.
 Esther Peterson (P); Alton
 H. L. Peterson (V); Carbon, Iowa
 M. C. Peterson (V); McIntosh, Minn.
 Philip Peterson (P); Paola
 J. W. Pettitt (V); Concordia
 Alma E. Petrasek (C); Lincoln, Neb.
 Sylvia Petrie (C); Pratt
 Stanley Pfander (P); Lebanon
 Blanch Pfeiffer (P); Holyrood
 Loyde E. Pfeiffer (V); Winona
 Marie A. Pfeiffer (P); Holyrood
 Ralph Pfeiffer (P); Centralia
 W. E. Pfindsten (P); Chanute
 Jess G. Picht (V); Ames, Iowa
 Dorothy Pickard (C); Kansas City
 Don H. Pickrell (C); Manhattan
 Charles E. Pierre (V); Stanford
 Clifford C. Pitman (P); Garrison
 Leona Pittaway (P); Hardtner
 Isa Ruth Plank (G); Lyons
 Thelma Plesse (C); Wamego
 Martin H. Polack (V); St. Louis, Mo.
 Clifford L. Pollock (V); Springview, Neb.
 Katherine Porter (V); Ottawa
 Walter C. Porter (C); Lyndon
 John Poston (P); Powhattan
 Clyde Poulton (P); Turon
 Jay B. Pounds (P); Coldwater
 Mildred E. Pound (C); Glen Elder
 James Poteet (P); Paola
 Dean Potter (C); Frankfort
 Harold E. Potter (V); Sterling
 Florence Powell (P); Delphos
 Carl N. Powley (V); Larned
 Besse M. Prather (V); Offerle
 Ernst H. Ptacek (C); Parker
 Leo D. Ptacek (C); Emporia
 M. C. Ptacek (C); Manhattan
 Besse M. Prather (V); Offerle
 Aubrey Preston (P); LaCygne
 O. L. Pretz (C); Manhattan
 Helen Priestley (C); Kansas City
 Clarence O. Price (P); Manhattan
 Ruby Pruitt (C); Goddard
 Elsie Puckey (C); Manhattan
 Sid L. Putnam (V); Admire
 Charles A. Pyle (P); Columbus
 Edna W. Pyle (C); Morrill
 Ernest F. Quick (P); Spearville
 J. J. Quinn (C); Salina
 Helen Rabe (C); Manhattan
 Irene Radford (C); Hooker, Okla.
 J. W. Radford (P); Mulvane
 E. Lee Raines (C); Manhattan
 Simeon B. Rambac (C); Kansas City
 C. G. Randell (C); Marysville
 H. M. Randell (C); Anthony
 E. G. Rasmussen (P); Cleburne
 Mrs. Mary Rasmussen (C); Cleburne
 Ruth Rathbone (C); Manhattan
 John D. Rea (V); Lincoln, Neb.
 E. M. Reckards (V); Topeka
 Charles Redding (P); Hoisington
 Gordon S. Redman (C); Kansas City, Mo.
 Edith Reece (C); Riley
 Geraldine Reed (C); Williamsburg
 Louise Reed (C); Manhattan
 Walter H. Reed (C); Manhattan
 William R. Reed (P); Cheyenne, Wyo.
 Ruth E. Reed (C); Lyons
 Virginia L. Reeder (C); Troy
 Paul Rees (C); Salina
 Meda Reese (C); Abilene
 Alice Lorraine Reever (P); Norton
 E. B. Regier (P); White Water
 Fred Regier (V); Moundridge
 Gus Regier (V); Moundridge
 Guy C. Rexroad (C); Hutchinson
 Mrs. Guy Rexroad (C); Hutchinson
 Glenn Reyner (V); Mt. Washington, Mo.
 Eman L. Rezabek (V); Dorchester, Neb.
 L. V. Rhine (C); Wamego
 A. B. Rice (V); Tekamah, Neb.
 Orval Richards (P); Wamego
 Verne Richardson (P); Hanover
 Ruth Richmond (P); Parsons
 Dorothy Richwine (P); Savonburg
 Walter Rickel (P); Gridley
 Wayne A. Rickey (V); Oklahoma City, Okla.
 Doris I. Riddell (C); Salina
 U. L. Riley (C); Maitland, Mo.
 Glenn A. Rixon (C); St. John
 Helen Roberts (C); Phillipsburg
 Frank Robertson (V); Wichita
 Robert S. Robertson (V); Lorenzo
 Mrs. Will Robins (V); Dodge City
 Ruth Robinson (C); Manhattan
 Myrna Rockwell (P); Manhattan
 Anna B. Rodewald (C); Randolph
 W. W. Rodewald (C); Randolph
 John L. Roe (V); Norman, Okla.
 John E. Roediger (V); St. Louis, Mo.
 Fred Roefke (P); Waterville
 Vern Rogers (P); Smith Center
 Laree Rolph (P); Concordia
 Louis Romer (P); Admire
 Floyd Romine (P); Osage City
 F. W. Rommell (V); Rozel
 Leonard Root (C); Independence
 Harvey G. Roots (C); Seneca
 Mayetta Roper (C); Barnes
 Emis Rosetta (P); Osage City
 Renna Rosenthal (C); Topeka
 Albert A. Ross (V); Perry
 John P. Ross (C); Mullinville
 Alice M. Rowley (C); Clyde
 George Roy (V); Wilsey
 Mona Rudy (P); Manhattan
 Christine E. Rugh (C); Abilene
 Harvey Russell (C); Topeka
 Harry Ruth (V); Cherokee
 W. C. Rutherford (V); Fresno, Cal.
 T. E. Sabin (V); Topeka
 Marie Sanders (P); Junction City
 Roy E. Sauer (C); Sylvia
 J. F. Savage (P); Spearville
 Archie Saylor (C); Emporia
 Edward D. Sayro (V); Morrill, Neb.
 Henry Schaefer (V); Davenport, Iowa
 Henry Schaefer (V); Oswego, Wis.
 Louise Schinder (C); Kansas City
 Edward Schlatter (V); Shively, Ky.
 Rachel Schlaegel (P); Olsburg
 Lawrence Schrimper (V); Marion, Iowa
 Paul J. Schulte (C); Westphalia
 Jesse C. Schubert (V); Woodbine
 Ella Schrupf (C); Cottonwood Falls
 Paul J. Schulte (C); Pittsburg
 Lona P. Schulthess (C); Manhattan
 Cecil L. Schuman (V); Council Bluffs, Iowa
 Mrs. J. H. Schnackenberg (V); Anthony
 Christine A. Schermerhorn (P); Wilson
 Charles Schroeder (V); Gem
 Blanche Scott (P); Wilmot
 E. S. Scott (C); Manhattan
 Ethel Scott (C); Burlington
 Emma Scott (C); Kirwin
 Lee A. Scott (C); Pleasanton
 Margaret Scott (C); Abilene
 Susie Scott (C); Madisonville, Ky.
 Winfield W. Scott (C); Topeka
 Sylvia Scritchfield (C); Westmoreland
 Wm. R. Seaney (V); Robinson, Ill.
 R. M. Sears (C); Eureka

HOME STUDY SERVICE STUDENTS—Continued.

Michael Sebring (V); Wamego
 Harold L. Sebring (C); Manhattan
 Helen Sedivy (C); Oketo
 Eva Seiber (V); Miami, Tex.
 John W. Seuser (P); Hoisington
 Ruby Seward (C); Leon
 Olive H. Shaw (C); McPherson
 R. J. Shaw (C); Manhattan
 Mildred Shaughnesey (P); Axtell
 W. R. Sheff (C); Effingham
 Dorothy Sheetz (C); Manhattan
 Thalia M. Sheets (P); Stockdale
 C. L. Shellenberg (C); Burdick
 Ralph Shideler (C); Girard
 Robert T. Shideler (C); Manhattan
 Evelyn Shields (P); Lebanon
 Arvell Shipley (P); Sitka
 Bernice Shoebrook (C); Horton
 Fred Shore (P); Kismet
 Mae Schultz (V); Wichita
 Rachel Siefkin (C); Wichita
 Lowell E. Signer (P); Howard
 Della Donna Silkett (C); Kirwin
 R. B. Sims (V); Lenexa
 Forest O. Sisk (V); Lawson
 Lois Sitterley (P); Manhattan
 Edward Slade jr. (V); Stafford
 Lois A. Slater (P); Glasco
 Harry H. Slyter (P); Paola
 Orville Small (P); Wilson
 Aubrey C. Smart (C); Ames, Iowa
 Mrs. C. A. Smith (C); Raymond
 C. I. Smith (V); Linwood
 Esther Smith (P); Hiawatha
 Mollie M. Smith (C); Lane
 Robert H. Smith (C); Redfield
 Treva Smith (P); Bucklin
 Vern Smith (V); Preston, Minn.
 Esther Snodgrass (C); Manhattan
 Bessie Snyder (C); Logan
 Rhea M. Somers (P); Altoona
 Wm. S. Somers (V); Des Moines, Iowa
 Shirley B. Sorenson (V); Cohagen, Mont.
 Harold M. Souders (P); Wichita
 Beth Southwick (C); Hoisington
 Herbert Spain (P); Clements
 Bernice Spaulding (P); Osborne
 Chas. W. Spauhorst (V); Jefferson City, Mo.
 Wm. S. Speer (C); Olathe
 L. A. Spindler (C); Garnett
 Lillie M. Squire (C); Harper
 George E. Stacey (P); Farmington
 Elsie F. Staib (P); Turon
 Francis W. Stanbrough (V); Des Moines, Iowa
 Dorothy Stanley (P); Kingman
 H. H. Stanley (V); Richmond
 Prudence Stanley (C); Manhattan
 A. R. Stark (C); Goodland
 Fred Stark (V); Wellington
 Beatrice Starr (C); Milton
 Henry A. Statter (V); Burlington, Iowa
 Chas. J. Stauber (C); Woodward, Okla.
 Florence M. Stebbins (C); Ellis
 Ralph W. Steed (V); Nesson City, Mich.
 Richard P. Steiner (C); Barclay
 Jesse T. Stenner (V); Kansas City
 Alva Stephens (P); Neodesha
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 Amye Stevens (P); Benedict
 Rachel Stewart (C); Winchester
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 Orin Walter Stevens (V); Omaha, Neb.
 Lee Stickley (P); Moran
 John Stielow (P); Russell
 Ira D. Stiles (V); Republic
 Olive M. Stiles (P); Parker
 Fred C. Stoeckbrand (C); Woodson
 Gladys Stocker (C); Concordia
 Samuel H. Stone (V); Medford, Ore.
 Wm. A. Stone (V); Lexington, Mo.
 W. E. Stone (C); Saffordville
 Will W. Storman (V); McQueen, Okla.
 Wilbur Etrand (P); Blue Rapids
 Virgil B. Strange (P); Blue Rapids
 Charles S. Stratton; Rosedale
 Leonard L. Strobel (V); Pratt
 Ino. W. Stuart (V); Ruble, Mo.
 Ivan O. Stuejord (V); Hays
 Viola Stump (C); Wauaka, Tex.
 O. E. Stumbo (V); Iola
 Carl L. Sullivan (V); Oakland, Cal.
 Giles Sullivan (C); Manhattan
 Grace Summers (C); Beloit
 Frank J. Sus (V); Columbus, Neb.
 Esther H. Swanson (C); Manhattan
 Carl O. Swanson (V); Alcester, S. Dak.
 Jack Swarm (P); Norton
 Opal J. Swarens (C); Hutchinson
 M. B. Swartz (C); Hiawatha
 Dena Ellis Sweet (P); Cheney
 Zephyr Sweetland (V); Valley Center
 Helen Swehla (P); Wilson
 Stanley C. Swenson (P); Manhattan
 Harriett Tarbell (P); Le Roy
 Bertha A. Taylor (C); Hiawatha
 Frank S. Taylor (V); Columbus
 W. H. Teas (C); Manhattan
 Louis Tegtmeier (V); Bemidji, Minn.
 Wilma L. Telfer (P); Garrison
 H. H. Theiss (C); Manhattan
 Lor Thiele (C); Hanover
 Chas. A. Thiessen (V); Ravenna, Neb.
 Elwin Thoes (P); Alma
 Ruby A. Thomas (C); Manhattan
 Aileen Thompson (C); Partridge
 Clarence Thompson (P); Bucklin
 Francis T. Thompson (P); Raton, N. Mex.
 J. W. Thompson (V); Round Valley, Neb.
 Josephine M. Thorn (C); Beattie
 Harold L. Thuma (C); Manhattan
 Leona Thurow (C); Moscow
 Mildred Thurow (C); Moscow
 Warren I. Thurston (P); Mound City
 Beatrice Jane Thyer (C); Blue Mound
 Marion Tilley (P); Irving
 Eva Timmons (C); Riley
 Mrs. Alberta Boyd Titt (C); Wichita
 Chester D. Tolle (C); Manhattan
 Lawrence Tonn (V); Haven
 Elizabeth Torrence (P); Holton
 May Towne (P); Osborne
 Rees Townsend (P); Centralia
 Otis C. Twaddle (V); Bardolph, Ill.
 Sarah E. Tracy (C); Manhattan
 Rena Alice Travis (C); Garrison
 Estella F. Traxler (P); Waterville
 Esther Trazler (P); Blue Rapids
 R. L. Von Treba (C); Oswego
 Josephine Tredway (C); La Harpe
 Josephine Trindle (C); Hugoton
 Miller H. Troup (C); Abilene
 Florence True (C); Perry
 Charles L. Turley (C); Hutchinson
 Alice Turner (P); Manhattan
 Alice Turner (C); New Lexington, Ohio.
 Bessie Turner (P); Milton
 Merl A. Turner (V); Bartlesville, Okla.
 Rowena Turner (C); Chanute
 W. E. Turner (C); Waterville
 Joe G. Tustison (C); Yates Center
 Wilma Tuxhorn (P); Inman
 Nina Uglow (C); Ames
 C. F. Ulrich (C); Manhattan
 Harold J. Ulrich (V); Marquette
 Goldie Unruh (P); Pawnee Rock
 Helen M. Urban (P); Wilson

HOME STUDY SERVICE STUDENTS—*Concluded.*

Jess Vague (P); Osborne
 Manual Valdes (C); Manhattan
 S. R. Vandenberg (C); Cedar Falls, Iowa
 Lou Vandeventer (C); Elgin
 Edna Vernilya (C); Attica
 Mildred Vickery (P); Sabetha
 Mrs. Donald Vincent (C); Topeka
 Lola B. Vincent (C); Amarillo, Tex.
 Louis Vinke (P); Manhattan
 Paul A. Vohs (C); Osawatometie
 Ferdinand Volland (P); Topeka
 Nellie Voss (P); Almena
 Ethel Van Gilder (C); Manhattan
 Helen Van Gilder (C); Manhattan
 J. L. Van Gilder (C); Manhattan
 Elna Von Riessen (C); Marysville
 Grace Van Trees (C); Wellsville
 Loren Van Valkenburgh (P); Blue Rapids
 Rufus Van Zandt (V); Lewesville, Tex.
 Robert C. Wade (P); Mayfield
 Lauena G. Wadley (P); Lebanon
 Don H. Wageman (C); Colony
 Thelma Wages (P); Milan, Mo.
 Mary Waggoner (P); Paola
 Florence Wainner (P); Pratt
 Clarence Walker (P); Manhattan
 Edwin H. Walker (V); Formoso
 Harry D. Walker (V); Shelbina, Mo.
 Ida Walker (C); Manhattan
 Martha W. Walker (C); Lillis
 Ralph Walker (P); Junction City
 Willard M. Walker (V); Lowry, Mo.
 Leola Wallace (C); Villisca, Iowa
 Jerome Walsh (V); Independence
 W. R. Walsh (V); Postoria, Ohio
 Raymond B. Walter (C); Wakefield
 Lucy Walters (P); Huron
 Mary Walters (P); Neodesha
 Frank Walz (V); Hays
 Ruth Warlick (P); Manhattan
 Robert L. Washington (V); Jefferson City,
 Mo.
 Adelaide Waters (C); Lanham
 Dorothy Waters (C); Manhattan
 Mabel Waters (V); Alta Vista
 Nora Waters (C); Axtell
 Emery N. Watkins (C); St. Joseph, Mo.
 Edward Watson (C); Manhattan
 Margaret Watson (C); Manhattan
 Wendell Watson (P); Lincoln
 Curtis Watts (C); Winfield
 Verle Webb (P); Jetmore
 H. G. Webber (C); Manhattan
 Arthur D. Weber (C); Manhattan
 R. M. Weber (V); Martin City
 Harry R. Wege (C); Great Bend
 G. O. Weidenbach (C); Wichita
 W. W. Weidlein (V); Longton
 Carl Weingartner (C); Oklahoma City, Okla.
 Aliee Wells (P); Paola
 Alvin Wells (C); Pittsburg
 Lawrence E. Wells (V); Los Angeles, Cal.
 Bessie H. Welch (P); Waterville
 Doris Welsh (P); Topeka
 Lula G. Welsh (P); Buffalo
 Erich A. Wendt (V); Johnson
 Robert J. Weeks (P); Enterprise
 Wilma Wenz (C); Ames
 D. Clinton West (C); Lawrence
 Ruth Whearty (C); Flush
 Geo. S. Wheeler (C); Denver, Colo.
 Harold Whisamore (P); Oswego
 Frank Whitecomb (V); West Point, Neb.
 Albert C. White (V); Boise, Idaho
 Naomi White (P); Stark
 Raymond White (C); Winfield
 Susanna Whitten (C); Thomasville, Mo.
 Thelma White (C); Smith Center
 Adaline W. Whittaker (V); Wichita
 W. R. Wicks (V); Beaver City, Neb.
 Chas. Wiegert (V); Leigh, Neb.
 Barbara Wiedenmann (P); Hepler
 Maude Wiershing (P); El Dorado
 Lucille A. Wilcox (C); Miltonvale
 Fred Williams (C); Manhattan
 George Williams (V); Winnsboro, Ia.
 Leslie P. Williams (C); Delphos
 Nina Williams (P); Hunter
 R. E. Williams (V); Great Bend
 Ralph Williams (P); Dodge City
 Viola Williams (C); Partridge
 Carl W. Willis (P); Horton
 Carl W. Willis (V); Horton
 Claud Wilson (P); Milford
 Earl J. Wilson (C); Assaria
 Ella Wilson (C); Luray
 Mildred W. Wilson (C); Pomona
 Otis Wilson (C); Manhattan
 Thelma Wilson (P); Hutchinson
 Jessie H. Winder (C); Waldo
 J. C. Wingfield (C); Manhattan
 Paul R. Wise (C); Clearwater
 Miriam F. Withrow (C); Wichita
 Ruth Wise (C); Clearwater
 Ethel G. Wollen (C); Garnett
 Lloyd P. Wollen (C); Glasco
 Glenn Wood (C); Milan
 Wm. R. Woodring (C); Topeka
 Doris Woodruff (P); Miltonvale
 J. J. Woodworth (V); Crisfield
 Edna S. Woody (P); Paxico
 Charles Kenneth Womer (P); Leavenworth
 Roswell Womer (C); Manhattan
 Lennel Wright (C); Wichita
 Mildred Wright (C); Washington
 Meekee Wright (P); Rover, Mo.
 T. C. Wright (C); Tuscumbia, Mo.
 Vernon W. Wunnenberg (V); Sperry, Iowa
 Wm. W. Wylie (P); Topeka
 Cleo Zimmerman (P); Abbyville
 Anthony Zlatnik (V); Delia
 Walter E. Zoellern (V); Omaha, Neb.
 Ted Yoakem (P); Clements
 Fred Young (P); Bartlesville, Okla.
 Glover E. Young (V); Mollala, Ore.
 Marguerite Young (C); Clay Center
 Inez Youngquist (P); Blue Rapids
 Edward Younker (V); Liebenthal

Student Organizations

The Students' Self-governing Association

Officers

Guy Charles Bartgis, *President*
 Harold Leeton Gillman, *Vice President*
 Doris Ione Riddell, *Secretary*
 Gerald Roderick Dowd, *Treasurer*

REPRESENTATIVES, THE EXECUTIVE COUNCIL

<p><i>Senior Class:</i> Alice Marston Maurice Marion Williamson</p> <p><i>Junior Class:</i> Margaret Corby Gerald Roderick Dowd</p> <p><i>Sophomore Class:</i> Robina Marian Manley E. R. Lord</p> <p><i>Freshman Class:</i> Helen Elise King Hoyt Purcell</p> <p><i>Men's Pan-hellenic Council:</i> Wilber Doane Cole</p> <p><i>Women's Pan-hellenic Council:</i> Doris Ione Riddell</p>	<p><i>Intersociety Council:</i> Margaret Elizabeth Raffington Roy Clinton Langford</p> <p><i>Y. W. C. A.:</i> Bernice May Flemming</p> <p><i>Y. M. C. A.:</i> Paul Anthony Vohs</p> <p><i>Girls' Loyalty League:</i> Ruth Evangeline Leonard</p> <p><i>"K" Fraternity:</i> Arthur Raymond Stark</p> <p><i>W. A. A.:</i> Sylvia Lenora Russell</p> <p><i>Federation Coöperative Clubs:</i> Jennie La Rue Fisk</p> <p><i>The Vocational School:</i> Elmer Le Roy Canary</p>
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COMMITTEE CHAIRMEN

<p><i>School Spirit:</i> Arthur Raymond Stark</p> <p><i>Finance:</i> Paul Anthony Vohs</p> <p><i>Discipline:</i> Maurice Marion Williamson</p>	<p><i>Social Affairs:</i> Wilber Doane Cole</p> <p><i>Points:</i> Alice Marston</p> <p><i>Calendar:</i> Bernice May Flemming</p>
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First College Band

<p>Roy Bainer Bethard Charles Bogue John Thomas Brooks Gerald George Brown Ralph Elmore Brown Otto Richard Coburn John Herbert Coolidge Donald K. Corby John Francis Costelle Clayton Merle Davis Joseph Edgar Durham Paul Maynard Durland Harry Emanuel Erickson Albert Arthur Goering Howard K. Gloyd Joe Douglas Haines William Jones Hartgroves Walter Dietrich Hemker Maurice L. Hill Austin Clair Hoffman</p>	<p>Theodore Thomas Hogan Fred F. Lampton James Waggoner Lansing John Clyde Lentz Wayne Matour McClelland Harold Hartwell McNeely Charles Edgar Moorman Richard Allan Moorman Ralph Parkinson Moyer Irvin Leslie Peffley Myron E. Russell Howard Dean Skaggs William Wesley Trego Alexander Van Pelt Harold M. Weddle Loyd Vernie Wimer Clell Burns Wisecup Duane Everett Wollner Lawrence Ewalt Woodman Francis M. Ziegler</p>
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Second College Band

<p>Foley Tyra Alvis Paul L. Anderson Everett Harlan Andreson Vernon G. Asher Harold Benton Axtell Harris Franklin Blackburn Verne Wendell Boyd William Brown Clifford Rarick Carter Arnold Bernard Cash</p>	<p>Loyd Charles Cassel Cyril John Cregan Burton Eugene Dalrymple Glenn Albert Durland Duard Enoch Ralph Wilson Evans Earl V. Farrar Lawrence Stewart Farrell Carl Faulconer Guy H. Faulconer</p>
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THE COLLEGE BAND—*Concluded.*

Gerald E. Ferris	William Harold Newhard
Willis Harold Flamm	Theodore A. Newlin
Ernest Lovel Florea	Robert Harlan Perrill
Otis Fred Fulhage	Loren W. Pew
Lloyd A. Gates	Elvin Theodore Plowman
Ervin Douglas Gray	John J. Province
James Smith Griffes	Frank L. Richardson
Lowell N. Harter	Irvin R. Ricklefs
Earl Lomas Hinden	Maynard Harold Solt
Howard Mack Hobbs	Clifford Harry Strom
Howard L. Holt	Clinton Leonard Stalker
Gilbert Lawrence Hug	Curtis E. Stevens
Arthur Amos Jackson	Ward Wesley Taylor
Wesley H. Johnson	Gilbert K. Terpening
Leonard E. Kelly	Kenneth K. Vanderbelt
William K. Lockhart	Adolph George Weingart
Roy McCoy	Charles W. Withey
Ward V. Mead	Irwin I. Wright
William Hosea Messenger	Claude N. Yanle
Carl O. Nelson	Jacob Glenn Yawger

College Orchestra

Frances Allison	Wayne Matour McClelland
Elizabeth Anderson	A. Monahan
Berthard Charles Bogue	Richard Allan Moorman
Nancy Brenneman	Ralph Parkinson Moyer
Gerald George Brown	Ira Paul Price
Frank Charles Eaton	Jean Rankin
Harry Emanuel Erickson	Aileen Rhodes
Carl Faulconer	Myron Russell
Wilbert Garold Fritz	Herbert Henry Schwardt
Robert Bruce Gordon	Howard Dean Skaggs
Dorothy Hall	Roger Cletus Smith
Joseph Lowell Hall	Lucile Stalker
Ethel Hassinger	Grace Steininger
Josephine Heath	Dorothy Stiles
Lucile Heath	Elizabeth Van Ness
Mary Jackson	Clell Burns Wisecup
Harry King Lamont	Lawrence Ewalt Woodman
Ira Kaulf Landon	John W. Young
Julian Lenau	Harold Parker Wheeler, <i>Director</i>

College Male Quartet

Albert Arthur Goering	Ralph Ulysses Blackledge
Harry Robert Wilson	Floyd Dewey Strong

Men's Glee Club

Ralph Ulysses Blackledge	John Oliver McIlwaine
Edwin Lewis Brower	Wayne E. McKibben
Edgar Davis Bush	William Joseph Mathias
Arnold Bernard Cash	William Earle Meyers
Grovenor Cecil Charles	William Taylor Miller
Clarence Hart Chase	John Ross Moyer
Charles Robert Clothier	Robert Harlan Perrill
Albert Ehrlich	Harold George Rethmeyer
Willis Harold Flamm	Clifford Sawyer
Albert Arthur Goering	Myron H. Soupen
Herbert Albert Goering	Shelden Batchelder Storer
Russell Wayne Good	Floyd Dewey Strong
Lawrence Hedge	Ralph Lee Tweedy
William Nelson Hornish	Harry Robert Wilson
Arthur Amos Jackson	Charles William Stratton,
Walter Alfred Johnson	<i>Accompanist</i>
Virgil Fletcher Kent	Otis Irvin Gruber, <i>Director</i>
Irvin Bernell Kirkwood	

Girls' Glee Club

Florence Aldrich
Ruth Althoff
Esther Ankeny
Eslie Arbuthnot
Margaret Corby
Berenice Elliot
Lucile Evans
Marjorie Flemming
Donna Green
Myrtle Haver
Bernice Hedge
Marjorie Hubner
Alletta Jackson
Gladys Loy
Mildred Loy
Mildred Michener
Marjorie Moody

Berenice O'Daniels
Marian Randles
Virginia Reeder
Aileen Rhodes
Berenice Rogers
Laura Russell
Orpha Russell
Dorothy Sanders
Flora Scott
Winifred Scott
Lucile Stalker
Vernie Theden
Edna Unruh
Winifred West
Lavina Waugh, *Accompanist*
Edna M. Ellis, *Director*

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