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CALENDAR

1919

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COLLEGE CALENDAR

1919.

First term begins Wednesday, September 17.
Entrance Examinations, September 15, 16, 17.
Registration, September 17, 18.
Recitations begin September 19, 8 a. m.
Opening Exercises, September 19, 10 a. m.
Thanksgiving Day, a holiday.
Christmas holidays begin Saturday, December 20, noon.

1920.

Christmas holidays end Monday, January 5, at reveille.
Recitations resumed, Monday, January 5, 8 a. m.
Second term begins Saturday, January 24.
Registration for second term, January 21, 22, 23, 24.
Washington's Birthday, February 22, a holiday.
Texas Independence Day, March 2, a holiday.
San Jacinto Day, April 21, a holiday.
Commencement sermon, Sunday, May 23.
Exhibition of departments and of work of Students, May 24.
Commencement Day, May 25.

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J. R. KUBENA.....*Fayetteville.*
W. A. MILLER.....*Amarillo.*

TERMS EXPIRE 1923.

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H. A. BREIHAN.....*Bartlett.*
JOHN T. DICKSON.....*Paris.*

TERMS EXPIRE 1925.

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R. L. YOUNG.....*Houston.*
W. S. ROWLAND.....*Temple.*

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*On leave, 1918-19.

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MURRY A. MILLER, M. A.,
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W. A. STONE, S. B.,
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*On leave, 1918-19.

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Assistant Professor of Textile Engineering.

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Assistant Professor of Military Science and Tactics, and Tactical Officer.

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Assistant Professor of Military Science and Tactics, and Tactical Officer.

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Assistant Professor of Military Science and Tactics, and Tactical Officer.

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Assistant Professor of Military Science and Tactics, and Tactical Officer.

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Instructor in Farm Crops.

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E. W. GARGES, C. E.,
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Instructor in Chemistry.

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Instructor in Drawing.

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Instructor in Animal Husbandry.

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H. S. WHITLEY,
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CHARLES DECKER,
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J. C. HYLAND, First Sergeant, U. S. Army, Retired.
Tactical Instructor.

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Tactical Instructor.

HORACE M. COOK, Sergeant, U. S. Army,
Tactical Instructor.

WILLIAM H. FOSTER, First Sergeant, U. S. Army,
Tactical Instructor.

GEORGE SCHULICK, First Sergeant, U. S. Army,
Tactical Instructor.

FRANK LANGENBACHER, First Sergeant, U. S. Army,
Tactical Instructor.

SUMMARY OF TEACHING STAFF OF MAY 1, 1919.

Professors	32
Associate Professors	27
Assistant Professors	29
Instructors	31
	119
Absent on leave	4
	115

THE SCHOOL OF AGRICULTURE.

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WILLIAM BENNETT BIZZELL, M. A., D. C. L.,
President.

E. J. KYLE, M. S. A.,
Dean.

CHARLES FURYEAR, M. A., C. E., LL. D.,
Dean of the College.

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Professor of English.

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HUGH CASSIDAY, A. M.,
Associate Professor of Biology.

T. J. CONWAY, B. S.,
Associate Professor of Poultry Husbandry.

W. L. STANGEL, B. S.,
Associate Professor of Animal Husbandry.

N. L. T. NELSON, Ph. D.,
Associate Professor of Biology.

T. A. ROUSE, B. S.,
Associate Professor of Animal Husbandry.

THE SCHOOL OF ENGINEERING.

FACULTY.

WILLIAM BENNETT BIZZELL, M. A., D. C. L.,
President.

J. C. NAGLE, M. A., M. C. E.,
Dean.

CHARLES PURYEAR, M. A., C. E., LL. D.,
Professor of Mathematics.

C. P. FOUNTAIN, A. M.,
Professor of English.

E. J. FERMIER, M. E.,
Professor of Mechanical Engineering.

J. B. BAGLEY, B. A.,
Professor of Textile Engineering.

F. C. BOLTON, B. S.,
Professor of Electrical Engineering.

A. MITCHELL, B. C. E.,
Professor of Drawing.

C. C. HEDGES, A. B., Ph. D.,
Professor of Chemistry and Chemical Engineering.

H. E. SMITH, M. E.,
Professor of Steam Engineering.

C. B. CAMPBELL, Ph. D.,
Professor of Modern Languages.

R. L. MORRISON, C. E.,
Professor of Highway Engineering.

A. C. LOVE, B. S., C. E.,
Professor of Railway Engineering.

O. W. SILVEY, A. M., Ph. D.,
Professor of Physics.

F. B. CLARK, M. A., Ph. D.,
Professor of Economics.

J. C. NAGLE, M. A., M. C. E.,
Professor of Civil Engineering.

J. J. RICHEY, C. E.,
Professor of Structural Engineering.

J. F. McDONALD, A. M.,
Professor of History.

E. B. LaROCHE, B. Arch.,
Professor of Architecture and Architectural Engineering.

C. H. MULLER, Colonel, U. S. Army,
Professor of Military Science and Tactics.

R. F. SMITH,
Associate Professor of Mathematics.

W. H. THOMAS, B. Lit.,
Associate Professor of English.

O. B. WOOTEN, B. S.,
Associate Professor of Electrical Engineering.

R. D. BRACKETT, A. B.,
Associate Professor of English.

H. R. BRAYTON, A. B., M. S.,
Associate Professor of Chemistry.

E. E. McADAMS, B. S.,
Associate Professor of Civil Engineering.

A. E. WOOD, M. S.,
Associate Professor of Chemistry.

E. OSCAR RANDOLPH, M. S.,
Associate Professor of Geology.

G. A. GEIST, B. S.,
Associate Professor of Free-hand Drawing.

ROY M. GREEN, M. Sc.,
Associate Professor of Civil Engineering.

W. G. JAMES, B. S.,
Associate Professor of Electrical Engineering.

I. J. SHEPHERD, M. E.,
Associate Professor of Electrical Engineering.

MACK MARTIN, M. E.,
Associate Professor of Mechanical Engineering.

THE SCHOOL OF VETERINARY MEDICINE.

FACULTY.

WILLIAM BENNETT BIZZELL, M. A., D. C. L.,
President.

M. FRANCIS, D. V. M.,
Dean.

CHARLES PURYEAR, M. A., C. E., LL. D.,
Dean of the College.

M. FRANCIS, D. V. M.,
Professor of Veterinary Anatomy.

C. P. FOUNTAIN, A. M.,
Professor of English.

O. M. BALL, M. A., Ph. D.,
Professor of Biology.

J. C. BURNS, B. S.,
Professor of Animal Husbandry.

C. C. HEDGES, A. B., Ph. D.,
Professor of Chemistry and Chemical Engineering.

C. B. CAMPBELL, Ph. D.,
Professor of Modern Languages.

J. W. RIDGWAY, M. S.,
Professor of Dairy Husbandry.

R. P. MARSTELLER, D. V. M.,
Professor of Veterinary Medicine and Surgery.

O. W. SILVEY, A. M., Ph. D.,
Professor of Physics.

S. W. BILSING, B. S., M. A.,
Professor of Entomology.

R. F. MILLER, M. S.,
Professor of Animal Husbandry.

C. H. MULLER, Colonel, U. S. Army,
Professor of Military Science and Tactics.

W. H. THOMAS, B. Lit.,
Associate Professor of English.

R. C. DUNN, D. V. M.,
Associate Professor of Veterinary Medicine and Surgery.

THE AGRICULTURAL EXPERIMENT STATION.

WILLIAM BENNETT BIZZELL, M. A., D. C. L.,
President.

B. YOUNGBLOOD, M. S.,
Director.

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*STATION STAFF.

Administration:

B. YOUNGBLOOD, M. S., *Director.*
A. B. CONNER, B. S., *Vice-Director.*
J. M. JONES, A. M., *Assistant Director.*
CHAS. A. FELKER, *Chief Clerk.*
A. S. WARE, *Secretary.*
W. T. BRINK, B. S., *Executive Assistant in Charge of Library and Publications.*
————, *Technical Assistant.*

Veterinary Science:

**M. FRANCIS, D. V. M., *Chief.*
H. SCHMIDT, D. V. S., *Veterinarian.*
D. H. BENNETT, V. M. D., *Veterinarian.*

Chemistry:

G. S. FRAPS, Ph. D., *Chief; State Chemist.*
S. E. ASBURY, M. S., *Assistant Chemist.*
S. LOMANITZ, B. S., *Assistant Chemist.*
FRANCES SUMMERELL, B. S., *Assistant Chemist.*
WALDO WALKER, *Assistant Chemist.*

Horticulture:

H. NESS, M. S., *Chief.*
W. S. HOTCHKISS, *Horticulturist.*

Animal Industry:

J. M. JONES, A. M., *Chief; Sheep and Goat Investigations.*
J. C. BURNS, B. S., *Animal Husbandman in Charge of Beef Cattle Investigations (on leave).*
P. V. EWING, M. S., *Animal Husbandman in Charge of Swine Investigations.*
C. M. HUBBARD, B. S., *Assistant Animal Husbandman.*
W. L. MAYER, *Poultryman.*
W. A. DOUBT, *Dairyman.*

Entomology:

F. B. PADDOCK, M. S., *Chief; State Entomologist.*
H. J. REINHARD, B. S., *Entomologist.*
W. E. JACKSON, B. S., *Entomologist.*

Agronomy:

A. B. CONNER, B. S., *Chief.*
A. H. LEIDIGH, B. S., *Agronomist; Soils.*
H. H. LAUDE, M. S., *Agronomist; Rice.*
E. W. GEYER, B. S., *Agronomist; Farm Superintendent.*
§RACHEL E. HOLMES, B. S., *Scientific Assistant; Seed Analyst.*

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*As of April 1, 1919.
**In cooperation with School of Veterinary Medicine, A. and M. College.
§In cooperation with Bureau of Plant Industry, United States Department of Agriculture.

Plant Pathology and Physiology:
J. J. TAUBENHAUS, Ph. D., *Chief.*

Forestry:
E. O. SIECKE, M. F., *Chief; State Forester.*

Plant Breeding:
E. P. HUMBERT, Ph. D., *Chief.*

Feed Control Service:
F. D. FULLER, M. S., *Chief.*
JAMES SULLIVAN, *Executive Secretary.*

Farm and Ranch Economics:
H. M. ELIOT. M. S., *Chief.*

Soil Survey:
‡W. T. CARTER, B. S., *Chief.*
J. F. STROUD, *Soil Surveyor.*
T. M. BUSHNELL, B. S., *Soil Surveyor.*
————————, *Soil Surveyor.*

Substations.

No. 1, Beeville, Bee County:
I. E. COWART, M. S., *Superintendent.*
No. 2, Troup, Smith County:
W. S. HOTCHKISS, *Suprintendent.*
No. 3, Angleton, Brazoria County:
E. B. REYNOLDS, M. S., *Superintendent.*
No. 4, Beaumont, Jefferson County:
A. H. PRINCE, B. S., *Superintendent.*
No. 5, Temple, Bell County:
D. T. KILLOUGH, B. S., *Superintendent.*
No. 6, Denton, Denton County:
C. H. McDOWELL, B. S., *Superintendent.*
No. 7, Spur, Dickens County:
R. E. DICKSON, B. S., *Superintendent.*
No. 8, Lubbock, Lubbock County:
R. E. KARPER, B. S., *Superintendent.*
D. L. JONES, *Scientific Assistant.*
No. 9, Pecos, Reeves County:
J. W. JACKSON, B. S., *Superintendent.*
No. 10 (Feeding and Breeding Substation), College Station, Brazos County:
J. W. JENNINGS. B. S., *Superintendent.*
No. 11, Nacogdoches, Nacogdoches County:
G. T. McNESS, *Superintendent.*
†No. 12, Chillicothe, Hardeman County:
A. B. CRON, B. S., *Acting Superintendent.*
V. E. HAFNER, B. S., *Scientific Assistant.*
No. 14, Sonora, Sutton-Edwards Counties:
E. M. PETERS, B. S., *Superintendent.*

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‡In cooperation with Bureau of Soils, United States Department of Agriculture.

†In cooperation with Office of Forage Crops, United States Department of Agriculture.

THE ENGINEERING EXPERIMENT STATION.

THE EXTENSION SERVICE.

WILLIAM BENNETT BIZZELL, M. A., D. C. L.,
President.

CLARENCE OUSLEY,
Director.

T. O. WALTON,
Acting Director.

S. C. HOYLE,
Editor.

J. F. HAIRSTON,
Executive Secretary.

Specialists:

W. B. LANHAM, *State Agent.*
J. B. BEERS, *Assistant in Cotton Classing.*
HARMON BENTON, *Agronomist.*
B. F. BROWN, *Farm Economist.*
JOHN C. BURNS, *Animal Husbandman.*
M. W. COLL, *Sheep and Goat Specialist.*
W. F. CRADDOCK, *Assistant in Marketing.*
*E. O. EDSON, *Poultry Husbandman.*
L. E. EPPLE, *Veterinary Inspector, in Charge of Hog Cholera Control.*
C. M. EVANS, *Agent in Dairying.*
J. A. EVANS, *Pecan Specialist.*
G. D. EVERETT, *Garden Specialist.*
*C. J. FOSTER, *Special Agent.*
M. E. HAYS, *Horticulturist.*
LILLIAN HAZLE, *Poultry Specialist.*
*A. H. HOLLINGER, *Scientific Assistant.*
EDWIN HOUSTON, *Swine Specialist.*
F. W. KAZMEIER, *Poultry Husbandman.*
HUGH B. KILLOUGH, *Farm Management Specialist.*
H. L. McKNIGHT, *Specialist in Rural Organization.*
W. T. MAGEE, *Sheep Specialist.*
CHAUNCEY MERWIN, *Special Agent in Organization.*
E. A. MILLER, *Sweet Potato Storage Specialist.*
J. C. OLSEN, *Farm Engineer.*
H. B. PARKS, *Entomologist.*
WALTON PETEET, *Specialist in Marketing.*
A. K. SHORT, *Agronomist.*
CORNELIA SIMPSON, *Canning Specialist.*
*A. P. SWALLOW, *Special Field Agent Truck Crop Insects.*
J. LYNN THOMAS, *Extension Dairy Husbandman.*
C. S. TRIMBLE, *Dairy Manufacturing Specialist.*

Farm Demonstration Work:

M. T. PAYNE, *State Agent.*
J. F. BAGWELL, *District Agent.*
A. W. BUCHANAN, *District Agent.*
G. W. ORMS, *District Agent.*
E. GENTRY, *District Agent.*
D. N. BARROW, *District Agent.*

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*Employees of the U. S. Department of Agriculture.

GEO. A. SMITH, *District Agent.*
J. R. EDMONDS, *District Agent.*
R. W. PERSONS, *District Agent.*
T. B. WOOD, *District Agent.*
GEO. W. JOHNSON, *District Agent.*
W. S. SYMONDS, *District Agent.*
R. O. TACKETT, *District Agent.*
H. H. WILLIAMSON, *Assistant State Agent.*
C. C. FRENCH, *State Pig Club Agent.*
C. L. BEASON, *Boys' Club Specialist.*
W. B. COOK, *Boys' Club Specialist.*
H. W. ACKER, *Boys' Club Specialist.*

Home Demonstration Work:

MISS LAURA F. NEALE, *State Agent.*
MRS. DORA R. BARNES, *District Agent.*
MISS ELOISE BERRY, *District Agent.*
MRS. BESS MASON HIGGINBOTHAM, *District Agent.*
MISS KATE LEE HENLEY, *District Agent.*
MISS ALMA MERWIN, *District Agent.*
MISS MARY JESSIE STONE, *District Agent.*
MISS INEZ ALDERSON, *Home Economics Specialist.*
MRS. MAGGIE W. BARRY, *Special City Agent.*
MISS M. HELEN HIGGINS, *Rural Organizer.*
HENRY A. CLAPP, *Canning Specialist.*

Negro Demonstration Work:

E. L. BLACKSHEAR, *Assistant State Agent.*
R. L. SMITH, *District Agent.*
J. H. FORD, *District Agent.*
A. T. WOOD, *District Agent.*
MRS. M. E. V. HUNTER, *District Agent.*

ADMINISTRATION OF STATE LAWS.

Feed Control Law.

Administered by the Director of the Agricultural Experiment Station.

Fertilizer Law.

G. S. FRAPS, Ph. D.,
State Chemist.

S. E. ASBURY, M. S.,
Assistant State Chemist.

DONA NEWLAND,
WHITMAN FULLER,
Laboratory Assistants.

H. R. SMITH,
Inspector.

Foul Brood Law.

F. B. PADDOCK, B. S.,
State Entomologist.

Forestry Law.

E. O. SIECKE, B. A., B. S.,
State Forester.

OTHER OFFICERS OF THE COLLEGE.

B. SBISA,
Supervisor of the Subsistence Department.

S. G. BAILEY,
Secretary to the President,
Secretary to the Board of Directors.

W. L. DRIVER,
Physical Director.

D. X. BIBLE,
Football Coach.

D. V. GRAVES,
Baseball Coach.

CHARLES FIRTH,
Secretary, Young Men's Christian Association.

F. G. MOORE, B. S.,
Assistant Secretary, Young Men's Christian Association.

FRANK E. BURKHALTER, Ph. B., B. A.,
Publicity Agent.

R. K. CHATHAM,
Manager, Cadet Exchange Store.

MRS. LOUIS WERMELSKIRCHEN,
Assistant Librarian.

H. A. WIDDECKE,
Accountant.

PAT NEWTON,
Cashier.

PART II

GENERAL INFORMATION.

GENERAL INFORMATION.

LOCATION.

The College is situated at College Station, in the county of Brazos, and is 350 feet above sea level. The Houston & Texas Central and the International & Great Northern Railroads run through the grounds, daily trains stopping at the stations, about 650 yards from the Academic Building. Students and visitors are advised to take trains arriving in the daytime.

College Station is a money order postoffice. Letters intended for persons at the College should not be directed to Bryan. At College Station there are telegraph and express offices.

HISTORICAL SKETCH.

The Agricultural and Mechanical College of Texas, like the land grant institutions in other States of the Union, owes its origin to an act of Congress approved July 2, 1862. This act donated public lands to the several States and Territories which might provide colleges for the benefit of agriculture and the mechanic arts, and directed the Secretary of the Interior to issue land scrip to the States in which there was not the requisite quantity of public land. The act further directed that the money derived from this source should constitute a perpetual fund, the principal of which should remain forever undiminished, and the interest of which should be inviolably appropriated by each State to the endowment, support and maintenance of at least one technological college, whole leading subject should be, without excluding other scientific and classical studies, and including military tactics, to teach branches of learning pertaining to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life. It was further provided that the provisions of the act should be formally accepted by the State Legislature. By joint resolution approved November 1, 1866, the Legislature of Texas accepted the provisions of the Congressional legislation, and accordingly there was issued to Texas scrip for 180,000 acres of public land, which was sold for $174,000. This amount was invested in Texas 7 per cent gold frontier bonds. At the time of the opening of the College there was an addition to the fund of accrued interest amounting to $35,000 which was invested in 6 per cent State bonds.

In an act approved April 17, 1871, the Legislature provided for the establishment of the Agricultural and Mechanical College. A commission to locate the College was created by the Legislature. After careful investigation, the Commission accepted the proposition of the citizens of Brazos county, and located the institution on a tract of 2416 acres of land in that county. Finally, the constitutional convention of 1876 constituted the College a branch of the University of Texas, and, in accordance with the terms of the Federal legislation, designated it as an institution for instruction in agriculture and the mechanic arts and the nat-

ural sciences connected therewith. The convention further provided that the Legislature should have the right to levy taxes for the maintenance and support of the Agricultural and Mechanical College.

The College was formally opened for the reception of students October 4, 1876. By means of financial aid voted by Congress and of appropriations made by the State Legislature, there has been developed a considerable foundation at the College for instruction, for investigation, and for extension.

GOVERNMENT.

The government of the College is vested in a Board of nine directors, appointed by the Governor for terms of six years.

ADMINISTRATION.

The immediate regulation and direction of the affairs of the College are delegated by the Board of Directors to the President and the Faculty.

ORGANIZATION.

The College comprises the Schools of Agriculture, of Engineering, of Veterinary Medicine; the Agricultural Experiment Station, the Engineering Experiment Station, the Extension Service, and the Summer Session.

DEPARTMENTS.

The College has now in operation twenty-seven departments of instruction, which are listed under the caption "Courses of Instruction by Departments."

MILITARY ORGANIZATION AND DISCIPLINE.

All military instruction is under the immediate charge of the Professor of Military Science and Tactics.

The officers and non-commissoned officers are selected from the Senior and Junior classes. Their appointments are dependent upon the active and soldierly performance of their duties, their sense of duty and responsibility, and their general good conduct and class standing.

The main objects of the military instruction are three, as follows:

1. To develop the student physically through drill and other exercises.

2. To develop him mentally by requiring him to perform the duties imposed upon him, which demand tact, thought, and initiative.

3. To build character by insisting on proper submission to discipline, which entails self-control, and by insisting on the student's meeting the responsibilities which are placed upon him.

The finished product should be a man of robust health, correct carriage, strong character, with a proper regard for constituted authority.

Students are not allowed to leave the College grounds either to visit neighboring towns, or their homes, without first securing a furlough from the Commandant of Cadets or from the President.

When a student overstays a furlough which extends through the Christmas holidays or the summer vacation, his name will be dropped from the rolls.

For improper conduct, or failure to keep up with his studies, a student may at any time be required to withdraw from College.

Graduates of the College may be given the opportunity by the War Department of taking a competitive examination for commissions as Second Lieutenant in the regular army; they may obtain commissions as officers in the organization of native troops in the Philippine Islands.

RESERVE OFFICERS' TRAINING CORPS.

The Act of Congress of June 3, 1916, known as the National Defense Act, provides for the stablishment in civil educational 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 educational institutions for reserve officers. The system of instruction herein prescribed presents to these students a standardized 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."

Three Units of the Reserve Officers' Training Corps have been established in this College; namely, Infantry, Artillery, and Signal Corps.

Upon entering, cadets will be required to select the branch of the service in which they desire to take instruction.

In general, all students are eligible for the Infantry and Artillery Instruction. The Signal Corps requires such a knowledge of electricity that only students pursuing the Civil Engineering or Mechanical Engineering course are eligible without a great deal of extra electrical instruction.

BENEFITS AND OBLIGATIONS.

Members of the R. O. T. C. will receive the benefits mentioned below.

(*a*) *Freshmen, Sophomores, Special, and Two-Year Students.*

Each student of these classes will be furnished commutation ($14) of uniform for one uniform if used during an entire session.

When this uniform, or any article of it, has been worn out of ordinary wear and tear, and condemned, it will be replaced without expense to the student.

Extra commutation of $9.00 will be given those who attend training camps ordered for cadets.

The student incurs no obligation except that of properly caring for his uniform and equipment.

(*b*) *Juniors and Seniors.*

In order to continue in the R. O. T. C. during his junior and senior years, the student must have the recommendation of the President and the Commandant.

The student who continues in the R. O. T. C. during his junior and senior years will receive the following benefits:

1. He will receive the uniform referred to above, on the same terms.

2. He will be furnished commutation of subsistence, estimated to amount to nine dollars a month, provided he executes an agreement to continue in the R. O. T. C. during the remainder of his college course, and to take the courses of camp training during such period, prescribed by the Secretary of War.

The camps referred to above involve no expense on the part of the students.

3. After graduation he will be eligible for appointtment 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 the period of six months, with pay at the rate of $100 per month, with the usual allowances.

EXEMPTION FROM MILITARY DUTY.

Mature men who enter with advanced standing in a considerable number of subjects may, for reasons satisfactory to the Faculty, be excused from military duty. This privilege is intended to apply particularly to men who have had considerable experience in teaching or in other professional work.

METHOD AND SCOPE OF INSTRUCTION.

In all courses the fundamental idea is education in practical science. With this idea in view, instruction is given in English, history, economics, mathematics, physics, chemistry and in other studies which lie at the foundation of a sound education and furnish the gest preparation for the more technical studies of the several courses. Instruction is given by the use of text-books, by lectures and recitations; also by practice in the shop, field, laboratory, and drawing room. These practical exercises have a high educational value, and serve a useful purpose in fixing and rendering clear the ideas presented in the class room; they have also a practical value; for they are, in great measure, examples of just such problems as the graduate will encounter in the pursuit of his calling. For convenience of instruction, the classes are subdivided into sections of suitable size. Unannounced written exercises and tests are given at the discretion of instructors. Regular written examinations are held at the end of each term.

NON-RESIDENT LECTURERS.

At intervals throughout the session, men who have attained prominence in some branch of agriculture or engineering or in other lines are invited to address the students with the view of enabling them to see more closely the relation between their college instruction and the work they will be called up to do after they enter upon their professional careers.

TRIPS OF INSPECTION.

At suitable times during the session trips of inspection, under the direction of some member of the teaching staff, are made to points of

special interest. These trips have a high instructional value, and students of the upper classes are encouraged, though not required, to take them.

ELECTIVE STUDIES.

Elective studies are to be chosen by the student under the advice and direction of a member of the Faculty designated for the purpose, and subject to schedule. The choice of electives for any year must be made by April 15 of the preceding year. The right is reserved to withdraw any course not required for graduation, if it should be chosen by fewer than five students.

ABSENCES.

When a student is absent from recitation a considerable number of times, his absences are taken into account in making up his term grade, unless the work missed is satisfactorily made up before the time set for the examination.

In any theory subject if a student's absences, when not due to sickness or to military duty, exceed one-eighth of the number of recitations scheduled for the subject, he will not receive a passing grade in that subject.

FEE FOR CHANGING COURSES OR TAKING UP NEW SUBJECTS.

For changing from one course to another at any time after the beginning of the term there will be a fee of three dollars. For taking up a new subject later than two weeks after the beginning of a term there will be a fee of one dollar.

REPORTS.

In order to keep parents systematically informed concerning the progress of their sons, reports, showing class standing and record of conduct, are sent out from the Dean's office at the end of each term. A preliminary report is sent out soon after December 1.

HEALTH.

The buildings of the College are situated on the crest of a wide divide, with sufficient slope in every direction to insure proper drainage. The health of the student body, as shown by the daily records of the institution, is all that could be expected at any loction in the State.

The work of sanitation is carried on throughout the entire year, with especial reference to the eradication of mosquitoes, flies and other disease-bearing agencies.

Drinking water is supplied by wells varying in depth from 300 feet to 1300 feet.

The barracks are inspected daily, and are kept neat and clean throughout. The rooms are well lighted and comfortable.

Drill, shop and field practice, work and outdoor athletic sports furnish sufficient and varied exercise and contribute very much to the maintenance of health and proper physical development.

There is no endemic disease at the College; most of the sickness is the result of indiscretion on the part of the student, or is due to the introduction of some mild epidemic disease, such as measles or mumps.

ATHLETICS.

The usual forms of athletic sports are encouraged. The College is a member of the Southwest Intercollegiate Athletic Conference. The general rules of eligibility of this organization have been adopted by the Faculty. The Faculty Committee on Athletics is entrusted with the general oversight of athletics.

BAND.

An attractive feature is a regularly organized cadet band. Under the direction of a leader employed by the College, it furnishes music for occasions of social and military importance, gives open-air concerts in season, leads the regiment in marching to dinner, and plays at guard mounting and dress parade.

RELIGIOUS AND MORAL CULTURE.

There is religious service in the chapel every Sunday for the corps of cadets and the residents of the campus. A Sunday school for Bible study, attendance at which is voluntary, affords additional help in the way of ethical training. Every effort is made through lecture and personal example to develop and protect good morals in the young men attending the institution.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association occupies a handsome building, in which ample provision is made for the meetings of the Association, for Bible study, for social gatherings, and for games. In the basement there is a well appointed swimming pool.

THE LIBRARY.

The Library contains approximately 15,000 volumes, including between 1500 and 2000 bound public documents, and exclusive of the files of the Federal and State Agricultural Bulletins. While the Library has hitherto been modeled chiefly along reference lines, a very good reading Library has now been accumulated, and the careful selection of new books keep the collection well abreast of contemporary thought. With the exception of books of general reference, current periodicals, and books temporarily reserved by certain departments for required reading, all books are loaned for home use for a period of two weeks, with the privilege of renewal for the same length of time.

The Library subscribes to over one hundred standard magazines, reviews, and technical journals, besides the leading newspapers of the State and some journals of national prominence. Files are kept of some of the most important of these periodicals.

The Library is a United States designated depository and receives copies of all Federal publications. A card index is maintained of all publications of the United States Department of Agriculture, and of the State Experiment Stations.

The Library is open on week-days and holidays from 9 a. m. to 1

p. m., from 2 to 6 p. m., and from 7:30 p. m. to 10 p. m. The Sunday hours are from 2 to 5 p. m.

PUBLICATIONS.

The following publications are issued by the College:

The Bulletin of the Agricultural and Mechanical College of Texas.—There is a semi-monthly publication which includes the bulletins of the Texas Engineering Experiment Station, the Catalogue of the College, and the announcement of the Summer Session.

The Reveille.—This is a small sheet issued daily during the regular session, which carries official notices and other announcements.

Bulletins of the Agricultural Experiment Station.—These bulletins are issued from time to time and contain reports of the results of the investigations of the Station.

The Alumni Quarterly.—The object of this publication is to keep the alumni informed as to the progress and activities of the College.

Extension Service Bulletins.—The Extension Service publishes from time to time bulletins on subjects of popular interest in the fields of agriculture and home economics.

In addition, there are issued twice a month an *Extension Service News Letter* of seasonal advice, and numerous circulars from time to time covering both matters of general agricultural interest and matters of unexpected development.

Student Publications.—The students of the College publish *The Battalion,* a weekly devoted to student activities and interests. The Senior Class publishes an Annual, *The Longhorn.*

The Young Men's Christian Association publishes at the opening of the session a *Handbook* giving information of value particularly to new students.

EXPULSIONS.

At a joint session of the Board of Regents of the University of Texas and the Board of Directors of the Agricultural and Mechanical College, held at College Station, Texas, from June 30 to July 1, 1896, the following order was made:

"It is ordered that hereafter, when any student shall be dismissed or expelled from either of the branches of the University of Texas on account of any immoral or other conduct which shall render him an unfit character to be matriculated in any of such branches, it shall thereupon be the duty of the branch so expelling or dismissing such student to immediately notify the other branches of their action, whereupon such other branches shall refuse to receive such student for matriculation, or even for examination, should he apply therefor, until the branch which has so expelled or dismissed him has rescinded or reconsidered its former action, and recommended such student for admission into such other branch at which he may apply."

GRADUATION.

A diploma of the College, with the degree corresponding to the course of study pursued, will be granted students who satisfactorily complete one of the regular courses.

No degree will be conferred without a residence of at least one year at the College. The diploma fee is $5.00.

HONORS.

At the end of each session students who have during the year received no term grade below B and have no deficiency in "Practice" are announced as "Distinguished."

CADET EXCHANGE—BOOKS AND OTHER SUPPLIES.

The College runs an exchange store for the purpose of supplying necessary articles to students at the lowest possible cost. The store carries in stock books, stationery, drawing instruments, regulation articles of the uniform, toilet articles, etc. These goods are sold at prices just sufficient to cover cost and operating expenses.

STUDENT LABOR.

The Legislature provides a fund by which a limited number of industrious young men may defray a part of their expenses by working for the College at such times as their regular duties will permit.

The rate of pay is made to depend upon the character of the work, and the manner in which it is performed. A student should not count upon earning more than $40 a session.

CHANGES IN ANNOUNCEMENTS.

The announcements made in this Catalogue are based upon present conditions, and are subject to change without notice.

BUILDINGS.

The physical plant of the College includes nine dormitories, an academic building, a Y. M. C. A. building, a mess hall, an assembly hall, an agricultural and horticultural building, a chemical and veterinary building, a civil engineering building, an electrical engineering building, two experiment station buildings, a mechanical engineering building, a textile engineering building, a hospital, a veterinary hospital, a serum laboratory, a farm implement building, a dairy barn, a stock judging pavilion, a power plant, a laundry, a sewerage system, barns and outhouses, and residences for instructors and officers, with a total valuation of approximately $2,000,000.

ACADEMIC BUILDING.

The Academic Building, completed in 1914, is located on the highest part of the Campus and occupies the site of the original Main Building, which was erected in 1876 and destroyed by fire May 27, 1912. It is 89 feet wide and 260 feet long and four stories high. It provides class and lecture rooms for the departments of architecture, drawing, economics, English, history, and mathematics, and quarters for the administrative offices, and the library; certain other departments have been assigned temporary quarters in this building. The building is constructed of brick and reinforced concrete, and is fireproof.

BERNARD SBISA HALL.

This is a one-story, fireproof building erected in 1912, to replace the Mess Hall destroyed by fire in October, 1911. It is named in honor of Bernard Sbisa, Supervisor of Subsistence. The dining room has a seating capacity of over 1200, and the appointments of the building are modern in every respect.

Y. M. C. A. BUILDING.

The Y. M. C. A. building, completed in 1914, occupies one of the best locations on the Campus. The building proper is "T" shaped in plan, 89 feet across the facade and 111 feet from front to rear. It is two stories high with the front part surrounded by a wide piazza that forms a portion of the basement story. A barber shop, bowling alleys, locker rooms, shower and swimming pool occupy the basement space. The lobby, auditorium, and secretary's office occupy the first floor, and offices, class rooms and secretary's living rooms the second floor. The building is harmonious, architecturally, with the more recent College buildings, being a twentieth century adaptation of Renaissance *motifs*. The erection of this building was made possible by the gifts of many friends of the College, supplemented by a large contribution from Mr. John D. Rockefeller.

GUION HALL.

This building was erected in 1918, and is named in honor of Judge John I. Guion, a former President of the Board of Directors. It is a

modern college auditorium, seating nine hundred and sixty on the main floor and nine hundred and forty in the balcony. The building is the terminating feature of the south end of Military Walk, balancing Bernard Sbisa Hall on the north end. Its classic facade of six large columns gives a stately effect. The auditorium contains a large stage, seating as many as a hundred people, dressing rooms for men and women, and space for a modern pipe organ.

HOSPITAL.

The Hospital was erected in 1916. It is two stories and basement high, 116 feet long by 82 feet wide where its dimensions are greatest. The construction is fireproof except for the doors and windows of the wards; openings into the stair tower and elevator shaft are guarded by approved metal doors and windows.

The administration department includes a waiting room, two examining rooms, a record room, a locker room, a dispensary, a laboratory, an operating suite (surgeons' and nurses' "scrubups," sterilizing and anesthetizing and operating rooms), blanket warmers, an X-ray room, a library, and storerooms. There is an employes' dining room, a complete kitchen with supply rooms and refrigeration, and diet kitchens with dumb waiter service, steam tables and electric ranges for each floor. There are also living quarters for the staff and attendants.

The College Hospital is the first hospital building in the world to be equipped with showers throughout. There are nineteen, all provided with anti-scalding devices, those for patients being automatically regulated to discharge water of a constant pressure. There is but one permanently installed tub.

AGRICULTURAL AND HORTICULTURAL BUILDING.

This building, erected in 1899, accommodates the agricultural and horticultural departments of the College, furnishing rooms for class instruction, laboratory investigations, museum purposes, butter and cheese making, pasteurizing milk, seed storeroom, photographic room, and the necessary offices for the accommodation of these departments. This building is 160 feet long and 77 feet wide, two stories high, and covered with slate. It contains twenty-seven rooms, fitted with apparatus and machinery for the instruction of students in the several branches of agriculture and horticulture.

STOCK JUDGING PAVILION.

The Stock Judging Pavilion, built in 1917, is a fireproof building 200 feet long by 100 feet wide, containing a 160-foot by 60-foot display ring surrounded by reinforced concrete circus seats for 1600 spectators. Additional seats of the same character can be erected in the four corners and will provide 240 more sittings. The roof is of cement tile, supported by the steel trusses which are carried on steel columns placed back of the seating sections between them and the wall aisles, thus providing unobstructed view for the entire audience.

The space underneath the seating sections is completely utilized.

There are three class rooms with attached offices, waiting rooms, locker and toilet rooms, a washing room, a killing room with refrigeration, quarters for the custodian and ten box stalls for show stock.

DAIRY BARN.

The dairy barn, built in 1916, is a one-story hollow tile building, situated west of the railroad tracks on the principal axis of the campus. It is 200 feet long by 34 feet wide, with a wing in rear 34 feet by 33 feet. The main part is a single room unobstructed by posts, and is used for milking only. There are stalls for 98 cows, which stand in rows back to back. A trolley carrier, suspended from the roof and running the length of the building, is used for handling the milk, which is taken through a screened passageway to a separate building of the same type of construction at the south end, where it is cooled, separated and prepared for use, and where all utensils are sterilized after each milking.

The floor of the milking room is of concrete and is washed out with a hose twice daily. All doors and windows and the openings into the ventilator running the length of the roof are screened. Conditions are ideal for the production of certified milk.

The wing in the rear contains offices, showers, supply and feed rooms.

CIVIL ENGINEERING BUILDING.

This building, erected in 1909, and used to house the departments of Civil Engineering and Physics, contains eight lecture rooms, five laboratories, five drawing rooms, and several offices and storerooms.

The building is 125 feet wide and 73 feet deep; it has a basement and three stories, is heated by steam and is fireproof.

ELECTRICAL ENGINEERING BUILDING.

This building, erected in 1912, and used to house the departments of Electrical Engineering and Mechanical Engineering, contains thirteen lecture rooms, four laboratories, two drawing rooms, and several offices and storerooms.

It has a basement and three stories; is 125 feet wide by 103 feet deep; is heated by hot water, and is fireproof.

MECHANICAL ENGINEERING BUILDING.

This building is situated north of the Academic Building and partly houses the Department of Mechanical Engineering. It consists of two distinct parts: First, the one containing the carpenter shop, and section rooms; second, that containing the blacksmith shop, machine shops, wood-turning room, and experimental laboratory. The first mentioned part is a two-story part, having the carpenter shop on the first floor and the other rooms on the second floor. The second part of the building is a one-story structure, containing the departmental equipment belonging to the work therein cared for; also an additional steam engine which furnishes the power for the shops.

TEXTILE BUILDING.

This building, erected in 1904, is constructed of smooth red brick, according to the plans of an expert mill engineer, and is an excellent example of modern cotton mill construction. The construction is of the slow-burning type generally accepted by American engineeers as the most satisfactory for cotton manufacturing.

The building is two stories high, 50 feet wide and 180 feet long. The first floor is occupied by the carding and spinning and warp-preparation machinery, and the professor's office. The second floor is occupied by the weaving and cloth-finishing machinery and by the designing and class rooms, and the offices of the instructors in weaving.

The building is heated throughout by a Webster vacuum system of steam heat, and a complete sprinkling system for fire protection has been installed. The plumbing in the building is perfectly sanitary and typical of the best cotton mill practice.

VETERINARY HOSPITAL.

The Veterinary Hospital, erected in 1908, contains a clinic room, 36x36 feet, eight box stalls, four tie stalls, two rooms for dogs, a large colic stall, feed room, medicine room, janitor's room, etc. The building is floored with concrete, with traps from each stall to the sewer, thus permitting the proper isolation of contagious diseases and the thorough disinfection of each stall. An automatic flush tank serves to keep the building in a sanitary condition.

CHEMICAL BUILDING.

This building, erected in 1902, is 138 feet long and 130 feet deep. It is built of brick and contains two stories and a basement. It contains the offices, class rooms, laboratories, and storerooms of the department of Chemistry and Chemical Engineering.

FRANCIS HALL.

This building was completed in 1918 to provide laboratories and class rooms for the School of Veterinary Medicine. It is of fireproof construction, 140 feet long and contains three stories and a basement. The first floor contains an office, a library, an amphitheater, an animal room, an apparatus room, a laboratory for anatomy, histology and embryology, and a laboratory for the Department of Medicine and Surgery. The second floor contains an office, a class room, a storeroom, a laboratory for physiology and one for pharmacology. The third floor is devoted to pathological work. There are two offices, apparatus room, post-mortem room, preparation room and two laboratories, one of which is devoted to pathology and bacteriology for College work; the other to pathological problems involved in Experiment Station work.

Each floor is served by a small elevator, and has the usual toilet facilities. On each floor there are constant temperature rooms. One of these is the "hot" room, which is intended to maintain a reasonably constant temperature from 90° to 110° F. The other is the "cold" room, which is equipped with brine coils to provide a temperature from

30° to 50° F. The basement is used entirely for storage and the service pipes and apparatus.

The entire building is supplied with hot and cold hydrant water, rain water, steam heat, high pressure steam for the auto claves, gas, electricity, compressed air and vacuum. The laboratory furniture is of special design manufactured by the Kewaunee Manufacturing Company.

SERUM LABORATORY.

The serum laboratory, built in 1917, is a one-story fireproof building 100 feet long with an average width of 32 feet. It is arranged for the manufacture of hog cholera serum. It contains observation pens, preparation rooms, killing, hyper-immunizing and bleeding rooms, defibernating rooms, laboratories, storage and packing rooms, offices and toilets.

RESEARCH CHEMISTRY BUILDING.

This building, erected in 1909, is 115 feet wide and 61 feet deep; it has a basement and two stories, is heated by steam, and is fireproof.

It is occupied by the divisions of Chemistry, Entomology, Plant Pathology and Physiology of the Experiment Station.

RESEARCH ADMINISTRATION BUILDING.

This building, erected in 1918, is occupied by the Administration and Research Divisions of the Experiment Station. It is modern and fireproof, and is one of the most complete research laboratories devoted to Experimental Station work in the country. Offices are conveniently arranged for the Director and his staff, with a conference room adjoining. Other well arranged offices are provided for the heads of the various divisions and their assistants. A large room is given to the needs of a library. The various laboratories are equipped with electricity, gas, air, steam, and water for experimental purposes; and in connection with each is a large fireproof vault for storage of valuable data. Non-vibrating balance tables are provided in the laboratories. The basement provides ample space for the storage of supplies and materials. Above the basement there are three stories; a freight elevator runs from basement to top floor.

GATHRIGHT HALL.

This building was erected in 1876, and is named in honor of Thomas L. Gathright, the first President of the College. It is used temporarily for offices for the Extension Service, and for other purposes.

Dormitories.

PFEUFFER HALL.

This is a dormitory, erected in 1887, and contains twenty-five rooms. It is named in honor of George Pfeuffer, a former President of the Board of Directors.

AUSTIN HALL.

This is a dormitory, erected in 1888, and contains twenty-five rooms. It is named in honor of Stephen F. Austin.

ROSS HALL.

This is a dormitory, erected in 1892, three stories high, with forty-one rooms. It is named in honor of former President L. S. Ross.

FOSTER HALL.

This building was erected in 1899, and is named in honor of former President L. L. Foster. It is a dormitory and consists of three separate parts; the central part is four stories high and contains nineteen rooms; the two ends are three stories high and contain eighteen rooms each.

GOODWIN HALL.

This dormitory was erected in 1908 and is named in honor of Hon. G. I. Goodwin. It contains eighty-two rooms and is equipped with a steam heating system and modern toilet facilities.

MILNER HALL.

This building was erected in 1911 and is named in honor of former President R. T. Milner. It is a dormitory containing one hundred and two rooms. The building is four stories high; there are no connecting stairways between the several floors, but each story has separate entrances so as to divide the building into four distinct parts, without interfering with the ventilation in any part of the building. Each story has four shower baths and ample toilet facilities. Every room is provided with water, electric light and hot water heat.

The building is constructed of reinforced concrete and brick, and is practically fireproof.

LEGETT HALL.

This building was erected in 1911, and is named in honor of K. K. Legett, a former President of the Board of Directors. It is a dormitory and in every respect a duplicate of Milner Hall.

HARVEY MITCHELL HALL.

This building was erected in 1912, and is named in honor of a former citizen of Bryan who was largely instrumental in having the College located in Brazos county.

It is a dormitory, having a basement and three stories, and contains eighty-six rooms, each one having an outside exposure. Each story has shower baths and ample toilet facilities. Every room is provided with water, electric light, and hot water heat.

The building is constructed of reinforced concrete and brick, and is practically fireproof.

BIZZELL HALL.

This is a modern, three-story dormitory erected in 1918, and is named in honor of President W. B. Bizzell. It is built in two sections: the lower floors being connected by a covered passageway. It contains sixty-six rooms, and ample toilet and bathing facilities on each floor of

both sections; every room is provided with running water, electric light and steam heat.

The building is of concrete and brick, and is practically fireproof.

SEWERAGE SYSTEM.

The College is provided with a system of sewers, to which are connected the various dormitories, the academic building, the agricultural and horticultural hall, the steam plant, the hospital, the mess hall, and the residences. The outfall of the system is three-fourths of a mile from the nearest College building and nine-tenths of a mile from the nearest recitation hall or dormitory.

GROUNDS AND GARDEN.

The garden, orchard, barnyards and campus are included in the enclosure to the east of the railroad stations. The campus consists of some twenty-five acres of lawn, shrubbery and flowers.

The orchard, vineyard, nursery and garden are located north and east of the academic building.

FARM.

The farm proper comprises about three hundred and fifty acres, and has the necessary barns, silos and outhouses. The pastures contain in the neighborhood of one thousand acres, and furnish grazing for the College herds.

EQUIPMENT.

AGRICULTURAL EDUCATION.

The Department of Agricultural Education is located on the third floor of the Academic Building. The section room has been converted into a model laboratory. Here may be found for exhibition and for demonstration the most desirable tools, implements, and equipment for teaching high school agronomy, horticulture, farm mechanics, dairying, and animal husbandry. Agricultural material of various kinds is on display to suggest what the teacher of agriculture may prepare. Another room is equipped with devices for visualizing agriculture. Numerous educational and agricultural charts and slides are available for the use of students and teachers. A department library of books and bulletins is being built up. The newest and best books on agriculture and education are added from time to time. About ten thousand bulletins, carefully classified and catalogued, assist the teaching staff and the students in their study of the problems of agricultural education.

AGRICULTURAL ENGINEERING.

This department is well equipped with apparatus for lecture room, demonstration and laboratory experiments. Through the courtesy of a number of Texas branch houses and manufacturers of farm implements, the laboratory is equipped with all the modern tilling, seeding, harvesting, and fertilizing machinery that is in use on Texas farms today. The equipment includes several different types of feed grinders and crushers, seed cleaning and grading machines, centrifugal and piston pumps, hydraulic rams and farm lighting plants. The farm motors' laboratory contains more than twenty different types of gas engines as well as a steam engine and two farm lighting plants. The farm machine laboratory is equipped with approximately thirty thousand dollars' worth of farm implements, all loaned to the College by the various manufacturers. In addition, the department has eight types of tractors, and a supply of tractor-drawn implements. The Auto-Mechanics laboratory contains about thirty different makes of automobiles, with a large supply of magnetos, carburetors, electrical devices and other similar apparatus. The irrigation and drainage laboratory is equipped with surveying instruments, and a quantity of tiling, irrigation, drainage and terracing apparatus.

On the Agricultural Engineering farm there will be found tools and equipment for the carrying on of the various farm operations, giving the student ample opportunity for practical experience.

AGRONOMY

The Agronomy department has a laboratory for each of the following divisions: Soils, farm crops, and farm management, including cost accounting.

The soils laboratory is equipped with the improved apparatus necessary for laboratory instruction in all phases of soil fertility work, including a centrifuge, shaking machine, Briggs filter, electric air pump,

torsion balances, chemical balances, drying ovens, hot plates, compound microscopes, evaporimeters, soil capillary tubes, soil samplers and all of the smaller equipment and chemicals for a modern soils laboratory.

For soil survey instruction, the department has five plane tables equipped with alidades; also other miscellaneous equipment for this work.

The farm crops laboratory is equipped with a Brown-Duvel moisture tester, standard seed testers, grain sampling tubes, compound microscopes, dissecting sets, hand lenses, torsion balances, insect-proof and rat-proof grain bin and much miscellaneous equipment. Type samples and specimens of all the important grains, and grain and forage crops are kept in stock for study.

The farm management and cost accounting laboratory is equipped with suitable tables and chairs for working up farm management data and for the work in cost accounting. The equipment also includes two adding machines and a good collection of farm records and account books and farm management charts.

The department has a modern greenhouse 67x25 feet, equipped for soil fertility, farm crops and plant-breeding work. For field study the department has 35 acres of land devoted to demonstration and experimental work in crops and soils. All of the important types and varieties of farm crops adapted to this section are grown for field study.

The department maintains a rather complete technical library in which will be found practically all of the standard works and journals pertaining to agronomy, as well as the Experiment Station bulletins and reports.

ANIMAL HUSBANDRY.

The Animal Husbandry department is equipped with the following breeds of live stock: Standard Bred, Thoroughbred, Morgan, and Percheron breeds of horses; Shorthorn, Hereford, and Aberdeen-Angus breeds of cattle; Shropshire, Hampshire, Southdown, and Rambouillet breeds of sheep; and Duroc-Jersey, Poland-China, Berkshire, and Tamworth breeds of hogs. These breeds are represented by registered breeding animals in the case of horses, and by both registered breeding animals and market animals—steers, wethers, and barrows—in the case of cattle, sheep, and hogs, respectively.

The department is provided with a fireproof building for class work. This building contains offices, lecture rooms, a meat room, box stalls, a students' dressing room with shower baths adjoining, and an arena 60x160 feet for live stock judging.

On the Animal Husbandry farm there are four barns, viz., a horse barn, a beef cattle barn, a sheep barn, and a hog barn. The land on which the hogs and sheep are kept is divided into small fields and pastures, thus permitting forage crop and pasturage rotation for these animals.

ARCHITECTURE AND ARCHITECTURAL ENGINEERING.

The department has a number of signed drawings and color renderings. a fair library of valuable books, several thousand plates in ring books, a lantern and slides, and a number of well chosen casts—to all of which additions constantly are being made. Students of architecture

have, of course, access to the equipment of other departments in which they are taking work.

BIOLOGY.

The department in its various branches is thoroughly equipped with apparatus for lecture room and for laboratory use. There are six laboratories—one zoological, three botanical, one bacteriological and one research. All are amply provided with tables and other general apparatus.

For the use of elementary classes, the department is provided with 45 standard 2-power microscopes, with their usual accessories; charts and models of plants and animals; a fairly good collection of prepared specimens, and a herbarium of about 3000 mounted plants. A small greenhouse has lately been acquired. For experimental work and demonstration in the class room, there is an excellent equipment of instruments of precision, largely of French and German make. For the use of more advanced workers there are 10 high power microscopes of the best makes; 3 Leitz binocular dissecting microscopes; Reickert and Minot microtomes; imbedding ovens; a large and a small incubator; two steam sterilizers; analytical balances; and a full equipment of glassware, chemicals, stains, and similar materials.

The library contains about 250 books of reference and several thousand separates, bulletins and special papers. The leading journals of botany, zoology, bacteriology and mycology are also available to the student.

CHEMISTRY AND CHEMICAL ENGINEERING.

The department has the usual laboratory facilities, including a vacuum system for rapid filtration, a compressed-air system for use with blast lamps and a ventilating system. The laboratories are supplied with hydrant, cistern and distilled water. Each student is assigned to a lock-desk containing the necessary equipment. The large lecture room, with raised seats, has a seating capacity of one hundred and thirty. The museum occupies a large, well lighted room.

There is a separate room for technical analysis and one for advanced industrial chemistry. The latter is not yet fully equipped. The former is provided with vacuum and compressed air systems, colorimeters, calorimeters, refractometers, Lovibond tintometer, combustion furnaces, gas burettes and other special apparatus used in technical analysis. The laboratory has the usual equipment for work in physical chemistry.

The department as a good reference library.

The department of Chemical Engineering has been presented with a very valuable collection of minerals and rocks by Mr. F. W. Steber of Dallas, which will form a nucleus around which a representative geological museum of Texas rocks and mineral products will be built. This collection consists of many of the rarer rock-forming minerals as well as a representative collection of the more important ores, especially Texas ores. The rock specimens include a great variety of igenous and metamorphic rocks, thin sections for microscopic examination, and a number of typical sedimentary rocks.

CIVIL ENGINEERING.

The department occupies a portion of the Civil Engineering Building and has five recitation rooms, two drafting rooms, library room, offices, a good roads exhibit room, and an instrument room. In the basement, the department has a general testing room, a hydraulic and road materials testing laboratory, a bituminous materials testing laboratory, a cement laboratory, and storeroom. As soon as the new building for the Physics department shall have been completed the Civil Engineering department will have more room available, with correspondingly better facilities for instruction work.

For the field work, the equipment consists of a well assorted lot of transits and engineers' levels for general work; also for more precise work in city surveying and leveling and for simple triangulation. Also surveyors' compasses, terracing levels, plane tables, aneroid barometers, range poles, rods, chains, chain tapes, metallic tapes, surveyors' pins, axes, etc. For the drafting room and other office work there are drawing tables, reckoning machines, two universal drafting machines, planimeters, slide rules, calculating instruments, protractors for general and special use, and a sufficient supply of T squares, etc.

In the general testing laboratory there is one machine of 100,000, one of 50,000 and one of 20,000 pounds capacity, a 50,000 inch-pounds torsion machine and a rattler for testing paving brick. With the exception of the 20,000-pound machine these are all power-driven.

The hydraulic laboratory contains weirs, pressure gauges, hook gauges, water meters, measuring tanks, impulse wheels, hydraulic ram, centrifugal pumps, pitot tubes, current meters, nozzles, and other apparatus for hydraulic measurements. The centrifugal pumps are connected to a pressure tank in order that they may be forced to pump against various heads.

In the cement laboratory are moulds for shaping briquettes for tension tests, moulds for compression tests, cement testing machines, sieves for testing the fineness of cement and sand, Vicat and Gillmore's needles for testing time of setting, damp closet, balances, pans and other appliances used in testing the qualities of cements.

The road materials testing laboratory is completely equipped with the most modern machines for testing non-bituminous road materials. This equipment includes a diamond core drill, diamond saw, grinding lap, Dorry hardness machine, Page impact machine for toughness test, Deval abrasion machine, ball mill, cementing-value briquette-forming machine, cementing-value impact testing machine, brick rattler, stone and sand sieves, sieve agitator, balances, and other miscellaneous equipment.

There is also a well equipped laboratory for the study of bituminous pavements and paving materials, which laboratory affords a means of instruction in the present day methods of constructing bituminous roads and in the study of materials used for this purpose. It also offers opportunity for co-operative work with the cities and towns of Texas in the investigation of their pavements and available paving materials.

A road exhibit room is also maintained for the benefit of students and visitors. In this room are shown models of road sections and sur-

faces made of various materials available in Texas. Samples of gravel, rock, asphalt, and road soils, together with photographs, charts and maps of road work in the State complete the exhibit.

The department library and reading room contains engineering books, periodicals, blue prints, photographs, etc., and is kept constantly open for the use of students during the session.

DAIRY HUSBANDRY.

The creamery and laboratory of this department occupy the entire south end of the ground floor of the Agricultural Building.

The creamery equipment comprises all necessary machinery for operating a regular commercial creamery, and includes ammonia compressor for providing artificial refrigeration, power churns, ripening and pasteurizing vats, starter cans, and ice cream freezer.

The laboratory includes such equipment as glassware, Babcock testers, centrifuges and separators.

The department controls a complete dairy farm, the operations of which are devoted to the growing of feed crops for the dairy herd, and includes 593 acres of land, of which 225 are under cultivation, the remainder being devoted to pasturage.

All modern machinery is used by this department, including breaking plows, cultivators, gasoline tractors, and harvesting machinery.

The herd consists of 135 animals, including cows, calves, and bulls, of which there are 37 pure-bred Jerseys, 22 pure-bred Holsteins, and 7 pure-bred Ayrshires. The milking herd usually includes about 70 cows, which are housed in a modern dairy barn constructed of tile and concrete and furnished throughout with modern barn equipment.

DRAWING.

The department is located on the fourth floor of the Academic Building. It occupies four large drawing rooms, two recitation rooms, offices, etc., all of which are especially well ventilated, heated and lighted.

The department is fully equipped with necessary furniture, models, plaster casts, life-size statues, etc.

For illustrative purposes there is in use in the department all modern apparatus for the draftsman, such as electric blue printing machine, universal drafting machine, pantograph, ellipsograph, etc.

A reference library of the best works on drafting, illustrating, etc., is kept in the department for the convenience and use of students.

ELECTRICAL ENGINEERING.

The electrical engineering laboratories comprise a storage battery room, two adjoining machinery laboratories, a measurements laboratory, a standardizing room, a photometric laboratory, a telephone laboratory, an instrument room, a workshop and storage rooms.

The electrical laboratories are supplied with 2300 volt, three-phase, 60-cycle power from the College power station. Alternating current at 110 and 220 volts is obtained through transformers. Direct current is supplied by two motor-generator sets located in the machinery laboratory. The smaller set consists of a 2300-volt, 50-horse power in-

duction motor direct connected to a 35 kw., 125-volt, compound wound direct current generator. The largest set consists of a 2300-volt, 100-horse power synchronous motor direct connected to two 35 kw., 250-volt, Dobrowolsky, three-wire direct current generators, so arranged that they may be operated independently or connected in series for obtaining 500 volts. A 3-panel switchboard controls the above equipment and the feeders to the 6-panel switchboard used for the distribution of power within the machinery laboratories and to the switchboards located in the other laboratories. Throughout all laboratories the distribution of power is controlled by a plug-and-socket system, thus securing absolute flexibility.

The storage battery room contains a 60-cell lead storage battery, and a 110-cell Edison storage battery, with a mercury arc rectifier for charging. The batteries are connected through suitable control to the main distributing board.

The equipment of the machinery laboratories is as follows: Two Westinghouse 323-A street car motors mounted on a single shaft with prony brake attachment and equipped with both a hand controller and a master controller operating an electro-pneumatic system; one 250-volt and one 500-volt direct current motor; one 5-horse power, 110-volt, direct current series motor with interpoles; one 1½-horse power shunt generator; three 6 kw. compound wound machines; three 4 kw. compound wound machines; one 5 kw. direct current machine with four slip rings; two 5 kw. compound wound direct current generators with interpoles; one 7½-horse power compound wound motor with interpoles; one 7½-horse power Reliance variable speed motor; one 10 kva three-phase generator with six slip rings; one 20 kva rotary converter with six rings; one 8 kva converter; one 10 kva three-phase generator driven by a set of two 10-horse power, three-phase induction motors, arranged for cascade operation; one motor generator set consisting of a direct current motor and a 3 kva alternator with six rings for single phase, two or three-phase; one 2-horse power Century singlephase motor. The high tension laboratory contains a 100 kva 200,000-volt transformer with regulators for varying the voltage, a 125 cm. spark gap, a crest voltmeter with a number of auxiliary devices.

The electrical measurements laboratory has a full equipment of the apparatus needed for the study of the fundamentals of electrical measurements. The equipment includes the following: various types of wheatstone bridges; a Kelvin double bridge; a Cary-Foster bridge; magnetometers, dynamometers; portable, semi-portable and wall galvanometers; astatic galvanometers; universal tangent galvanometer; calorimeters; sechometer; influence machine; electro-static apparatus; spark coils; apparatus for testing magnetic qualities of iron and steel; standard resistances; standard cells; physical balances; universal shunts; resistance boxes; variable inductances and capacities; portable storage batteries, and various minor equipment.

The standardizing room is equipped with a Leeds and Northup potentiometer and its accessories; Weston standard laboratory voltmeter, and milli-voltmeter with shunts; a Kelvin balance; Westinghouse precision ammeter, voltmeter, and wattmeter; and standard resistances and standard cells. In this room there are also a three-vibrator oscillagraph with photographic attachment, and a motor generator set consisting of

a direct current motor direct connected to a set of four alternators giving a fundamental wave and the third, fifth and seventh harmonies, so arranged that any desired phase relation may be obtained between each of the harmonies and the fundamental.

The photometric laboratory has two dark rooms for photometric work proper. The equipment includes a station photometer; an illumination photometer; a Sharp-Miller photometer; a Flicker photometer; an integrating photometer consisting of a Ulbricht sphere two meters in diameter, with accessories, especially adapted for arc light photometry; rotating apparatus; a number of incandescent lamp candle power standards; and a collection of various arc lamps, and a number of units representing various indirect and semi-indirect lighting systems. There is also a room for the demonstration and comparison of various light sources and systems.

The telephone laboratory is equipped with a switchboard for central energy operation, a switchboard for magneto operation, and a Strowger automatic switchboard with complete equipment for operation. There are also numerous telephones and a large collection of transmitters, receivers, induction coils, generators, bells, jacks, drops, keys, relays, retardation coils. condensers, repeating coils, lamps, etc., obtained from the Automatic Electric Co., Kellogg Co., Western Electric Co., and other manufacturers. The Bryan Telephone Company operates a complete switchboard, which is used to give local and long distance service from various stations on the campus. This exchange is available to the students in electrical engineering for test. In connection with this laboratory, the department maintains a complete wireless telegraph station of sufficient capacity to reach a number of commercial plants in the State. This equipment is available for study both from an engineering and an operating standpoint.

Through the generosity of the Otis Elevator Company, a complete motor-driven elevator winding-engine equipment of the most modern type, complete with all automatic switches, regulators, controllers, etc., has been donated and installed in the laboratory for test and demonstration purposes.

The department also has a number of frames of dynamos and motors and cores of transformers that are used by the students in learning to wind and repair these machines.

The equipment for the students in electrical engineering is augmented by the fact that the direct connected generators in the powerhouse, their exciters and measuring instruments, and the motors used to operate the Textile School, machine shop and other laboratories are available for tests as practical operating plants after the students have performed the required experiments on the machines located in the laboratory.

Students are urged to read the literature pertaining to their work, and for this purpose the department library is available. A reading table is maintained, on which are kept the current copies of a number of technical magazines. The technical books in the general library are also available to the students.

ENTOMOLOGY.

The department of Entomology maintains two laboratories, one of which is equipped with dissecting and compound microscopes, and the other with compound microscopes. In addition, the department maintains an insecticide laboratory equipped with the more important insecticides and spray machines, powder guns, etc.

The department has several insect models illustrating the anatomy of the more common insects, together with a series of charts illustrating the life histories of insects. This equipment is supplemented by a baloptican and several hundred lantern slides illustrating the anatomy and life history of the most important insects.

The equipment of the work in apiculture consists of a wax press, honey extractors and the various types of beehives.

A library is maintained which comprises two hundred and eighty volumes of technical books on Entomology. This library contains full sets of the Transactions of the American Entomological Society, Genera Insectorum, Journal of the New York Entomological Society, Entomological News, The Canadian Entomologist, and Psyche.

In addition a reading table is maintained on which are kept the recent publications on economic entomology and apiculture.

HORTICULTURE.

The class-room work in horticulture is considerably strengthened by practical exercises in orchards, gardens, and laboratory.

There are now growing on the horticultural grounds orchards containing the standard varieties of peaches, pears, plums, pecans, persimmons, grapes, figs, blackberries, and dewberries.

In addition to the commercial gardens where vegetables are grown for use at the Mess Hall, there is a plat of ground that has been set aside on which a great variety of vegetables are grown under the direct supervision of the student.

There is now being planted, in co-operation with the American Rose Society, a rose garden, which, when completed, will contain about eight hundred varieties. There is also to be found on the horticultural grounds a rather complete collection of ornamentals.

The department has a very complete line of spraying machinery in which are to be found several makes of bucket, knapsack, barrel and power sprayers.

The collection of lantern slides owned by the department, which are used for illustrating different subjects, especially those in landscape art, is growing rapidly, there being now over nine hundred.

For work in plant propagation, in forcing early vegetables and in plant breeding, the students have the use of one of the finest greenhouses to be found in the Southwest.

MECHANICAL ENGINEERING.

In the carpenter shop are excellent double work benches of special design, equipped with quick-acting vises, and the saws, planes, chisels, etc., ordinarily found in a carpenter's kit, each student having a set

of edge tools assigned to him alone. Supplementing these are a number of special tools in the tool room.

The pattern shop equipment consists of twenty pattern maker's benches each equipped with vises, drawers, lockers, and outfit of hand tools; and in addition there is an assortment of special tools in the tool room, as well as a large number of small turning lathes, two large pattern maker's lathes, circular saw, band saw, gig saw, surface planer, jointer.

The foundry is equipped with one dozen bench molding stands with all necessary shovels, riddles and small tools, a number of floor molding kits, flasks of all kinds, a core machine, a core oven, a squeezer, a Coombs gyratory riddle, a brass furnace with all necessary accessories, a No. 1 Whiting cupola with electric-driven blower for blast and a Clark blast meter for measuring the amount of air supplied. The other accessories for this cupola are also included in the equipment.

A very complete set of hand and bench tools constitute the equipment of the sheet metal workshop.

The forge room equipment consists of one 250-pound steam hammer, emery wheels, forty new forges, all having power blast and exhaust, and a number of hand forges, the necessary anvils, tongs, and other small tools usually found in a forge shop. Besides oil and water baths, the equipment includes a pyroscope for observing the temperature of metals.

In the machine shop the equipment is now very satisfactory. It consists of a full line of lathes, grinders, milling machines, automatic machines. The equipment has been recently increased by the addition of a long lathe with extra size hollow spindle for work on shafting, and five other lathes of most up-to-date design. Another line of the lathes is a most approved type of motor-driven, geared-head precision machine, and is typical of the best of its kind. The automatic machine is one of the most highly specialized machines for the rapid production of duplicate small parts. The tool room contains a large assortment of taps, dies, drills, reamers, chucks, and other machine accessories, as well as the small tools for laying out work and accurately and properly measuring the same; calipers, micrometers, steel scales, punches, surface plates. Electric portable drills and grinder are also included in the equipment.

The engineering laboratory contains steam engines, gasoline engines, steam turbines, steam and power pumps, fans, water motors, a hot-air engine, condensers, air pump, injectors and a full line of indicators, gauges, pyrometers, thermometers, tachometers, speed indicators, weirs, pitot tubes, prony brakes, platform scales, etc., for conducting tests as outlined in course 403. A register-indicator-record venturi-meter has been installed for use in connection with boiler feed measurement.

In addition, the laboratory has the use of all apparatus of the power plant, consisting of simple and compound engines, pumps of several different kinds; also the boilers of well known makes and different types. The equipment of the steam plant makes available larger engines, condensers, air compressors, air lift pumps, etc., for instruction purposes.

For the class-room instruction there are numerous full-size wooden

and metal models of different kinds of engines, also sections of actual air-brake equipment and other appliances and fittings for railway and power plant equipment.

Besides the above mentioned equipment might be mentioned the fact that manufacturers have in some instances deposited or donated for the use of the department a number of standard appliances, which prove valuable to the student.

MILITARY SCIENCE AND TACTICS.

The department has full equipment for Infantry, Field Artillery, and Signal Corps, as follows:

Infantry.—One thousand sets infantry equipment, model 1910, each set consisting of: bacon can, condiment can, meat can, canteen, canteen cover, pack carrier, cup, fork, haversack, knife, pouch, first aid, and spoon; 1000 rifles, Enfield, model 1917 (latest model), 1000 bayonets and scabbards, model 1917; 1000 belts, cartridge, caliber 30, model 1912; 20 rifles, gallery, caliber 22, model 1903; 20 revolvers, Smith & Wesson, caliber 45, model 1917; 200 holders, cartridge, for gallery practice, caliber 22; 200,000 ball cartridges, caliber 30; 10,000 cartridges, blank, caliber 30; 60,000 cartridges, gallery, 22; 10,000 cartridges, dummy, caliber 30; 50,000 cartridges, pistol ball, caliber 45.

Gallery range indoors; pistol range; rifle range; 10 targets equipped to fire the regular army course from 100 to 1000 yards; range finders.

Field Artillery.—One 3-inch battery, complete, consisting of four 3-inch guns, 8 caissons, 10 limbers, 2 battery and store wagons, 2 store limbers, battery reel cart, 105 horses, 4 mules, harness and saddle equipment for all horses, and all accessories, spare parts, and tools. Also included in the equipment are one 4.7-inch rifle, with limber and caisson, one 155 mm. Howitzer, with limber and caisson, one 155 mm. rifle, with limber and caisson, and one each of the American, British, and French 75 mm. guns with limbers and caissons. The artillery equipment also includes 4 Browning machine guns, 4 Browning automatic rifles, and a complete supply of fire control instruments, such as B. C. telescopes, range finders, aiming circles, trench periscopes, prismatic compasses, sitogoniometers, and an assorted supply of smaller instruments, including drawing instruments, slide rules for field artillery computations, compasses, and stop watches.

Signal Corps.—Telephone: 5 telephone switchboards, 22 field telephones, 6 buzzer phones, telephone cables, cable splicing equipment.

Telegraph: 46 Field buzzers, telegraph relays, telegraph repeaters, 1 Morse register, 2 telegraph switchboards, complete buzzer equipment for 200 men.

Miscellaneous: Signal bomb equipment, signal rockets, 28 signal projectors, 2 wire reel carts, 7 hand and breast reels, outpost and field wire, signal flags, acetylene signal lanterns.

Radio: 1 large radio receiving set, 48 crystal detector radio receiving sets, 13 vacuum tube detector sets, 42 radio transmitting sets, damped wave, 2 airplane radio transmitting sets, 18 airplane radio receiving sets, 16 undamped wave radio transmitting sets, 16 undamped wave radio

receiving sets, 24 two stage amplifiers, 34 ground telegraph sets, 2 radio telephone sets, 2 radio direction finders, 1 decremeter, 18 wave meters, 4 audibility meters, 19 portable antenna sets, 36 phantom antennae, 300 storage batteries, assorted dry cells, a large supply of inductances, condensers, ammeters and other accessories.

PHYSICS.

The Department of Physics occupies fifteen rooms in the Civil Engineering Building, including three class rooms with facilities for giving demonstrated lectures, four laboratories, four offices, shop, and storerooms. These are supplied with alternating and direct current, water, gas, and electric lights.

Mechanics of Solids, Liquids, and Gases: Apparatus for determining moment of inertia, centrifugal force, acceleration, mechanical and electrical equivalent of heat, Young's Modulus, etc.; micrometer and vernier calipers, rotators, U. S. Standard Measures, air pumps, cathetometer, chronograph, balances, and many simple and compound machines.

Heat: Conductometers, thermopiles, expansion apparatus, various types of thermometers, and numerous calorimetric outfits.

Light: Polariscope, spectrometer, vernier microscope, Nicol's prisms, projection lantern, optical bench, Hartl discs, heliostat, gratings, lenses and mirrors.

Meteorological Instruments: Standard and maximum-minimum thermometers, Fortin and aneroid barometers, barograph, thermograph, hygrometer, anemometer, etc.

Sound: Sonometers, tuning forks, organ pipes, and wave motion apparatus.

Electrostatics: A large static machine and accessories.

Current Electricity: Various types of batteries, rheostats, bridges, galvanometers, induction coils, telephone and telegraph fixtures, mercury arc and electrolytic rectifiers; ammeters, voltmeters, and motors for both alternating and direct current; and an X-ray outfit.

The workshop is supplied with motor-driven planer, rip saw, and drill press; soldering outfit, stock materials, and the usual metal and woodworking tools.

TEXTILE ENGINEERING.

For yarn manufacture there is ample equipment necessary to produce carded or combed yarns, and with it machines for making chain or slashed warps of either single or double yarns.

In the weaving room there are ten hand looms for the weaving of short fancy patterns. There are fourteen Northrop looms, which are entirely automatic and two plain looms for ordinary plain goods. There are two ordinary dobby looms, with box motion to insert four colors for filling; one dobby loom for weaving terry towels; one dress goods loom, with dobby and boxes for making a seven-colored pattern; one loom for weaving narrow Jacquard dress goods, and one with Jacquard loom for weaving table covers.

The finishing machinery is for ordinary ducks, sheetings or drills, and consists of an inspecting machine, railway sewing and rolling machine, a brushing and calendering machine, and a cloth-folding machine.

PART III

ADMISSION, EXPENSES.

ADMISSION.

Requests for entrance blanks, and all commuications in regard to admission should be addressed to The Registrar, Agricultural and Mechanical College of Texas, College Station, Texas.

ADMISSION TO FOUR-YEAR COURSES.

GENERAL REQUIREMENTS.

Age, Health, Character.—The applicant for admission must be at least sixteen years old and physically able to perform the duties of a cadet. He must be free from contagious or infectious disease. If he comes from another college, he must present a certificate of honorable dismissal.

Vaccination.—The applicant for admission must present a certificate signed by a physician, in one of the forms given below:

1. ....., Texas, ...191....

This is to certify that.....has had smallpox.

(Signed) .....M. D.

2. ....., Texas, ...191....

This is to certify that.....has been successfully vaccinated at two different times, the dates being.....
.....

(Signed) .....M. D.

3. ....., Texas, ...191....

This is to certify that.....has been successfully vaccinated within the last five years.

(Signed) .....M. D.

4. ....., Texas, ...191....

This is to certify that I have today vaccinated.....
.....

(Signed) .....M. D.

SCHOLARSHIP REQUIREMENTS FOR ADMISSION TO THE FOUR-YEAR COURSES.

The scholarship requirements for admission to the Freshman Class are expressed in terms of units.

Definition of a Unit.—A unit represents a year's study in any subject in a secondary school, constituting approximately a quarter of a full year's work. It implies 36 weeks of high school study of five class periods a week at least forty minutes in length.

NUMBER OF UNITS REQUIRED.

(NOTE.—The methods by which the required units may be obtained are indicated on pages 63 to 65.)

Full Admission.—For full admission to the Freshman Class the applicant must present fifteen approved units of high school credit, of which the six units in List A, below, are prescribed. The remaining nine must be chosen from List B.

Conditional Admission.—The applicant who presents the six units in List A and enough approved units from List B to make a total of at least thirteen units may be admitted conditionally. Conditions must be removed within two years either by examinations or by extra work in the College. In removing conditions by college work a course carrying three term-hours credit per week for one year will count as the equivalent of one unit.

LIST A. PRESCRIBED UNITS.

English	3 units
Algebra	2 units
Plane Geometry	1 unit

LIST B. ELECTIVE UNITS.

English (4th unit)	1 unit	Science:	
Mathematics:		Biology	1 unit
Solid Geometry	½ unit	Botany	1 unit
Trigonometry	½ unit	Chemistry	1 unit
Advanced Arithmetic	½ unit	General Science	1 unit
History and Civics:		Physics	1 unit
Ancient History	1 unit	Physiography	½ unit
M. and M. History	1 unit	Physiology	½ unit
English History	1 unit	Zoology	1 unit
American History	½ or 1 unit	*Vocational Subjects:	
Civics	½ unit	Agriculture	1 to 4 units
Economics	½ or 1 unit	Bookkeeping	1 unit
Sociology	½ or 1 unit	Drawing	½ to 2 units
Foreign Languages:		Com. Arithmetic	½ unit
Latin	2 to 4 units	Com. Law	½ unit
French	2 to 4 units	Com. Geography	½ unit
German	2 to 4 units	Manual Training	½ to 2 units
Spanish	2 to 4 units	Stenography and Typewriting	1 or 2 units

Special Requirements.—1. In the School of Engineering, students not presenting Solid Geometry for entrance will be required to take that subject as an extra study in the first term of the Freshman year. Special classes will be formed for that purpose.

2. In the School of Agriculture, students not presenting Physics

*Not more than 4 units of Vocational work will be accepted for admission.

for entrance will be required to take Physics as an extra study during the Freshman year.

3. Freshmen who are required to take an extra study may be required to postpone one of the regular studies of the Freshman year. For this reason prospective students are urged to include Solid Geometry and Physics in their high school course.

METHODS OF ADMISSION TO THE FOUR-YEAR COURSES.

The units required for admission to the Freshman Class may be secured:

(a) By certificate of graduation from an affiliated school.
(b) By examination.
(c) By State teacher's certificates (in part).

(A) *By Certificate of Graduation from an Affiliated School.*

Admission to the Freshman Class by certificate will be granted to graduates of affiliated schools who present credentials certifying to their age, character, scholarship and graduation, *provided the subjects certified have been approved by the State Department of Education and cover the entrance requirements.* This certificate must give in detail, concerning each subject which the applicant has studied in the school, the length of time in weeks, the number of recitations per week and the grade or mark indicating his proficiency. Blank certificates may be had upon application to the Registrar.

If the number of units to which the certificate entitles the holder is less than the number required for admission, the deficiency must be made up by examination.

In the matter of admission to the Freshman Class by certificate, no credit will be given for work done in an affiliated school unless the applicant is a graduate of the school.

It is of the highest importance that the applicant send his certificate, properly filled out, to the Registrar in advance. If this cannot be done he should bring it with him at the opening of the session. Without the certificate he cannot be admitted, and valuable time will be lost if he has to send for it after reaching College Station.

Affiliated Schools.

Texas high schools, rated as First Class by the State Department of Education, and approved private secondary schools, are automatically affiliated with the Agricultural and Mechanical College of Texas, and their graduates will be credited with the subjects they have completed in which the schools are affiliated.

Graduates of Second Class and Third Class high schools will receive credit for the subjects they have completed which have been approved for affiliation purposes by the State Department of Education; but in order to enter the Freshman Class, they must pass examination in other subjects sufficient to obtain the number of units required for admission.

The College will admit also, without examination, such graduates of schools fully affiliated with the State universities of other States as comply with the requirements for admission indicated above.

On February 8, 1917, a committee representing all the institutions of higher learning in the State was appointed for the purpose of correlating the high schools with the colleges and universities. The committee has adopted standards and prescribed rules for the inspection, classification and affiliation of high schools, and will establish a basis whereby the largest degree of co-operation may be realized between and among the State's institutions of higher learning and other similar institutions, consistent with the performance of their individual functions. The work of inspection, classification and affiliation of high schools will be under the direction of the State Department of Education. Under the terms of the agreement signed by the representatives of the higher institutions the classification assigned any high school by the State Department of Education will hereafter be the basis of affiliation of high schools with the higher institutions.

(B) *Admission by Examination.*

Any or all of the scholarship requirements may be met by passing the entrance examinations.

The Spring entrance examinations will be held on May 12, 13, 14, and 15, under the supervision of the State Department of Education. These examinations will be conducted in each county by the county superintendent, and the papers will be sent to the State Department of Education to be graded. On the basis of these papers Uniform Entrance Certificates will be issued. These certificates will be accepted for admission to any Texas College, provided the subjects certified cover the entrance requirements of the college to which application for admission is made. Further information regarding the Spring entrance examinations may be obtained from the State Department of Education, Austin.

Fall entrance examinations will be held at the College September 15, 16, and 17, 1919, under the supervision of the College authorities, and will cover all the subjects required or accepted for admission, as outlined above.

SCHEDULE OF FALL ENTRANCE EXAMINATIONS.

Hour.	September 15.	September 16.	September 17.
8–10	Algebra, Agriculture.	Plane Geometry, Physiography.	Solid Geometry, Trigonometry.
10–12	Botany, English.	Physics, Latin.	American History, Bookkeeping.
1–3	Ancient History, Physiology.	M. & M. History, Typewriting.	English History, Stenography.
3–5	Civics, Chemistry.	French, Manual Training.	German, Spanish, Drawing.

(C) *Admission by State Teacher's Certificate.*

Applicants holding a first grade State teacher's certificate will receive credit for eight and one-half units; three in English, two in algebra, one in plane geometry, one in ancient history, one in mediaeval and modern history, one-half in civics. The remaining units necessary for full or conditional admission must be made up by examinations.

Applicants holding a permanent State teacher's certificate will receive credit for twelve and one-half units; three in English, two in algebra, one in plane geometry, one-half in solid geometry, one-half in trigonometry, one in ancient history, one in mediaeval and modern history, one-half in civics, three without specification of subject.

ADMISSION TO ADVANCED STANDING.

Admission to advanced standing may be secured by examination or by transfer of credits from another college of approved standing. The applicant for advanced standing by transfer must present a certificate of preparatory work covering the entrance requirements of this College, of the work done in the institution from which he comes, and of honorable discharge.

It is highly important that this certificate be sent in advance.

Credits given by transfer are provisional and may be cancelled at any time if the student's work in this College is unsatisfactory.

ADMISSION OF STUDENTS FROM STATE NORMAL SCHOOLS.

Students attending the State Normal Schools during and after the session of 1913-14 will receive credit as follows:

On completion of the second year, students will be given fifteen entrance units.

On completion of the third or four year, students will be given fifteen entrance units as provided for at the end of the second year; and college credits, in so far as the courses completed in the third and fourth years are equivalent to similar subjects in the course taken in this College.

As in the case of students from other colleges, all credits are provisional and may be cancelled at any time if the student's work in this College is unsatisfactory.

SPECIAL STUDENTS.

Young men over twenty years of age, who cannot satisfy all the requirements for admission and are not candidates for a degree, may be permitted to enter the College upon submitting satisfactory evidence that they are prepared to profit by the studies they desire to take. This evidence must be submitted on the official entrance blank and must be accompanied by a statement showing (1) the applicant's experience; (2) a plan of study, enumerating the subjects he desires to take, and (3) the purpose or end expected to be accomplished by his study.

Before completing registration a special student must show, by a test in English composition, that he has an adequate command of the English language.

In order to be admitted to the work of any department, a special student must secure the consent of the head of the department; and his course of study, as a whole. must be approved by the Dean of the College.

Special students are subject to the rules and regulations governing regular students, including the prescribed theoretical and practical military training.

A special student who may desire to become a candidate for a degree must satisfy the entrance requirements and obtain the consent of the Dean of the College.

It is the theory of special classification that students should be particularly strong and well prepared to do thorough work in the studies selected. A high standard of scholarship will, therefore, be required of all who are thus classified.

REQUIREMENTS FOR ADMISSION TO THE TWO-YEAR COURSES.

1. An applicant for admission to a two-year course must be at least eighteen years of age.

2. For admission to the two-year course in Industrial Education the requirements are the same as for the regular four-year courses.

3. For admission to other two-year courses the candidate must present a certificate showing the satisfactory completion of the ninth grade of a classified school, or its equivalent. He must also present satisfactory certificates in regard to health, character and vaccination, as in the case of candidates for admission to the four-year courses. *The completion of one of these two-year courses does not prepare the student for admission to a four-year course.*

DESCRIPTION OF SUBJECTS ACCEPTED AS ENTRANCE UNITS.

ENGLISH.

English a.—Language. Spelling, punctuation, grammar, sentence and paragraph structure; reading and practice in writing compositions based on the student's personal experience. A working knowledge of the language rather than a memory of definitions is required. 1 unit.

English b.—Rhetoric and Composition. The topics which are treated in standard high school text-books on rhetoric. Themes on subjects chosen from the student's reading. 1 unit.

English c.—Literature. The reading and study of English classics, as prescribed in the standard course of study in affiliated schools. The student's knowledge of these classics will be tested but will in every case be regarded as of less importance than the ability to write good English. 1 unit.

NOTE.—*English a, b,* and *c* are required. The above division into units is for the purpose of showing the ground to be covered and is not intended to imply that they are to be studied in that order. The work in language and composition ought to extend over all four years of the High School course and be a part of every subject taught.

FOREIGN LANGUAGE.

French a.—Pronunciation, grammar, with exercises, including irregular verbs. One hundred to one hundred and fifty pages of easy French prose. 1 unit.

French b.—Grammar and composition. Two hundred and fifty to three hundred pages of French prose. 1 unit.

German a.—Pronunciation, memorizing of easy colloquial sentences, elementary grammar with exercises. One hundred pages of easy German prose. 1 unit.

German b.—Grammar, translation into German of easy prose. One hundred and fifty to two hundred pages of easy stories and plays. 1 unit.

Spanish a.—Pronunciation, grammar, with exercises. One hundred to one hundred and fifty pages of easy Spanish prose. 1 unit.

Spanish b.—Grammar, translation into Spanish of easy prose. One hundred and fifty to two hundred pages of easy prose. 1 unit.

LATIN.

Latin a.—Grammar, easy translation. 1 unit.

Latin b.—Caesar's Gallic War, I-IV. Composition and syntax. 1 unit.

Latin c.—Cicero, six orations. The following are recommended: the orations against Catiline, for the Manilian Law, and for Archias. 1 unit.

Latin d.—Virgil's Aeneid, I-VI. 1 unit.

Three units credit may be given where the amount of work done in Cicero and Virgil is more than the amount indicated above.

HISTORY.

History a.—American history. 1 unit.

History b.—Ancient history. 1 unit.

History c.—English history. 1 unit.

History d.—Medieval and modern history. 1 unit.

State adopted texts.

CIVICS.

Civics. ½ unit.

State adopted text.

MATHEMATICS.

Algebra. The four fundamental operations for rational algebraic expressions; factoring, determination of highest common factor and lowest common multiple by factoring; fractions, including complex fractions, and ratio and proportion; linear equations, both numerical and literal, containing one or more unknown quantities; problems depending on linear equations; radicals, including the extraction of the square root of polynomials and of numbers; exponents, including the fractional and negative; quadratic equations, both numerical and literal; simple cases of equations with one or more unknown quantities that can be solved by the methods of linear or quadratic equations; problems depending on quadratic equations; the binomial theorem for posi-

tive integral exponents; the formulas for the nth term and the sum of the terms of arithmetical and geometric progressions, with applications.

It is assumed that pupils will be required throughout the course to solve numerous problems which involve putting questions into equations. Some of these problems should be chosen from mensuration, from physics, and from commercial life. The use of graphical methods and illustrations, particularly in connection with the solution of equations, is also expected. 2 units.

Mathematics b.—Plane Geometry. As much as is contained in standard text-books, including the proof of original propositions and the solution of numerical problems connected with plane figures. 1 unit.

Mathematics c.—Solid Geometry. The proof of propositions concerning the relation of lines and planes in space and abundant exercises in mensuration problems connected with solids and surfaces. ½ unit.

Mathematics d.—Plane Trigonometry. Definitions of the trigonometric functions of angles of any magnitude as ratios and a thorough drill on the fundamental relations. The solution of triangles with special emphasis and abundant practice, both with and without logarithms. ½ unit.

SCIENCE.

Science a.—Botany. The study of types from the chief divisions of the plant kingdom, including a training in the underlying principles of morphology, physiology and classification. One-third to one-half of the total assignment should be devoted to laboratory work. Laboratory note books containing a record of the work and experiments of the student should be submitted. 1 unit.

Science b.—Chemistry. A study of the more common elements and their compounds. One-half to two-thirds of the total assignment should be devoted to laboratory work. The student's laboratory note book should be submitted. 1 unit.

Science c.—Physics. The general principles of physical science especially those of mechanics, heat, electricity, and magnetism. One-third of the total assignment should be devoted to laboratory work. The student's laboratory note book should be submitted. 1 unit.

Science d.—Physiography. Any standard high school text. ½ unit.

Science e.—Physiology. Any standard high school text. ½ unit.

VOCATIONAL SUBJECTS.

The subjects of agriculture, bookkeeping, drawing, manual training, will be accepted provided they have been administered with the same degree of thoroughness as other accepted subjects.

ADVISERS FOR FIRST-YEAR STUDENTS.

Each student on entering College will be assigned to a member of the teaching staff, who will act as his adviser and give him helpful

counsel in matters pertaining to his work or to any feature of his college life.

REGISTRATION.

Upon arrival at the College, young men intending to enter will report at once to the Commandant's office for full information in regard to registration.

SESSION.

The session begins on the third Wednesday in September, and extends through thirty-six weeks.

Wednesday and Thursday, September 17 and 18, will be devoted to the registration of students. Recitations will begin Friday, September 19.

REGISTRATION FEE.

Every student is required to register when he first enters the College and thereafter at the beginning of each term.

Upon registering for the first time he is charged a registration fee of three dollars. He pays this fee only once unless his connection with the College should later be severed; in that case he must pay the registration fee again in order to re-enter.

LATE REGISTRATION.

All students, except those registering for the first time, who do not complete their registration on the days set for that purpose, will be charged a fee of three dollars for late registration.

In the case of irregular and special students, registration is not complete until their assignment cards are returned, properly signed, to the Registrar.

EXPENSES FOR THE SESSION

The fixed charges are:

Trust fund, payable on entrance	**$ 5 00**	
Incidental fee, payable on entrance	**8 00**	
Medical fee, payable on entrance	**8 00**	
Maintenance fee, First Term, payable on entrance	**115 00**	
		$136 00
Maintenance, Second Term, payable January 24		**115 00**
		$251 00

Other necessary expenses are:

Uniform, payable on entrance at the fiscal office, about	**$ 48 00**	
Books, from $15 to	**20 00**	
		$ 68 00
Total		**$319 00**

For Freshmen in the engineering courses, drawing instruments, about $15 00

The student will need at entrance at least $215 00.

Payment should be made by bank exchange, money order, or in cash. Personal checks will not be accepted.

The trust fund is to pay for property damaged or destroyed, and will be returned to the parent if there is no charge of this kind against the student, or if he is not otherwise indebted to the College. If charges amounting to fifty per cent of the trust fund deposit are made against a student during the session, he will be required to make an additional deposit covering the total charges made against him.

The incidental fee is used for sundry incidental expenses, such as printed forms, examination books, etc.

The medical fee covers the professional services of the College Surgeon and the hospital staff.

Incidental, medical, and registration fees will in no case be refunded.

Maintenance includes board, fuel, laundry, light, room rent, single bedsteads, mattress, tables, washstands, chairs.

Each student is required to keep on hand a supply of bed clothing for single beds, towels, etc. For winter he should provide himself with an overcoat and a mackintosh.

Students are required to take their meals at the Mess Hall.

The deposit of $48 for uniform is not required of Juniors and Seniors who are not members of the R. O. T. C.

It is estimated that uniforms necessary for the four years will cost about $160. The government allowance in commutation of uniforms for the four years is estimated at about $160.

Payment for each term must be made in advance. A student entering during a term will be charged maintenance for the remainder of that term only.

A student once entering for a term, and having paid of that term, or the balance of it, forfeits all claim to said payment in case of voluntary withdrawal from the College before the expiration of said term, except in case of sickness disqualifying him for the discharge of his duties for the rest of the term. When such sickness takes place at the College, it must be attested by the College Surgeon before the student can receive the balance of his maintenance fund.

The expenses of a graduate student are $8.00 for medical fee, with charge for maintenance as above.

Day students pay $21, to cover trust fund, incidental fee, and medical fee as above.

UNIFORM.

Every cadet must keep on hand in good condition: 1 regulation olive drab woolen blouse, 2 pairs of olive drab woolen breeches, 1 regulation olive drab cap, 1 regulation hat, 4 regulation shirts, 4 regulation white shirts, 6 standing white collars, 2 pairs tan leather shoes, 4 pairs white gloves, 1 regulation black bow cravat, 1 regulation belt, 1 pair regulation leggins, 2 olive drab woolen shirts, 2 pairs olive drab cotton breeches, 1 set collar ornaments, 1 working suit, and an ample supply of underwear.

PART IV

COURSES OF STUDY.

COURSES OF STUDY

There are ten regular Courses, extending through four years; nine of them lead to the degree of Bachelor of Science, the particular Course pursued being specified in the diploma; the Course in Veterinary Medicine leads to the degree of Doctor of Veterinary Medicine; and there are graduate Courses and short Courses as shown below.

REGULAR COURSES.

I. Course in Agriculture.
III. Course in Mechanical Engineering.
IV. Course in Civil Engineering.
V. Course in Electrical Engineering.
VI. Course in Textile Engineering.
VIII. Course in Chemical Engineering.
IX. Course in Architecture.
XI. Course in Veterinary Medicine.
XII. Course in Agricultural Education.
XIII. Course in Industrial Education.

GRADUATE COURSES.

(A) Graduate Courses leading to the degree of Master of Science, in Agriculture, or in Agricultural Education.
(B) Graduate Courses leading to the degrees of Chemical Engineer, Civil Engineer, Electrical Engineer, Mechanical Engineer.

TWO-YEAR COURSES.

XIV. Course in Industrial Education (Collegiate).
(C) Course in Agriculture.
(H) Course in Textile Engineering.
(M) Course in Agricultural Engineering.
(N) Course in Engineering.

SHORT WINTER COURSE.

Course in Buttermaking.

EIGHT WEEKS' COURSE.

Course in Automobiles and Tractors.

THE SCHOOL OF AGRICULTURE.

COURSES OF STUDY.

In the School of Agriculture there are offered the following Courses:

REGULAR FOUR-YEAR COURSES.

Course in Agriculture.
Course in Agricultural Education.

TWO-YEAR COURSES.

Two-year Course in Agriculture.
Two-year Course in Agricultural Engineering.

SHORT COURSES.

Course in Buttermaking.
Eight weeks' course in Automobiles and Tractors.

COURSE IN AGRICULTURE.

The regular four-year course has as its main object the preparation of young men for the business of farming, for the pursuit of scientific investigation along some line of agriculture, for becoming county demonstration agents, or extension workers, and for teaching in the high schools and agricultural colleges. It also affords excellent preparation for young men who intend to follow business pursuits. Systematic training is given in the sciences of biology, chemistry, entomology and geology, which are fundamental to the study of scientific agriculture, and in technical subjects, covering the main divisions of agriculture, including agricultural engineering, agronomy, animal husbandry, dairy husbandry and horticulture. In this course the work of the Freshman and Sophomore years is prescribed. As shown in the curriculum, the work in the Junior and Senior years is arranged so as to provide for a choice by the student of one of ten groups of studies. This arrangement affords the student a wide range of subjects from which to choose his major work, permitting him to specialize in agricultural chemistry, agricultural education, agricultural engineering, agronomy, animal husbandry, biology, dairy husbandry, entomology, horticulture, or in landscape art.

As will be noted, certain studies are common to all the groups; and in each group a part of the work is elective; see list A, page 87. The choice of groups is to be made by April 15 of the Sophomore year.

FOUR-YEAR COURSE IN AGRICULTURAL EDUCATION.

The purpose of the Course in Agricultural Education is to prepare men to teach agriculture in secondary schools and to administer and supervise vocational agriculture such as is carried on under the Smith-Hughes Act. The fundamental principles in the main divisions of agriculture, and a minimum of professional training and practice teach-

ing are required. Considerable opportunity is given the student by means of the electives for choice of subjects. In case of students transferring from other institutions and entering the course in Agricultural Education, the electives are not limited to the courses offered by the School of Agriculture. Such credit and classification will be given as the facts may warrant. This course leads to the degree of Bachelor of Science (B. S.) in Agricultural Education.

Under the requirements of the State Board of Vocational Education, the course for the training of teachers of vocational agriculture under the provisions of the Smith-Hughes Act must contain at least forty term-hours of technical agriculture, and fifteen term-hours of professional subjects, as prescribed in the curriculum, including supervised teaching of secondary vocational agriculture. Graduates of approved institutions having satisfactory training in the sciences underlying the study of agriculture will be awarded the degree of Bachelor of Science in Agricultural Education on satisfying the requirements of the State Board for Vocational Education as noted above, after at least one year's residence.

TWO-YEAR COURSE IN AGRICULTURE.

This course is intended for young men who wish to spend one or two years in preparing to go back to the farm and apply the more important scientific methods of farming which have been worked out in recent years. To this end the course is made highly practical and technical, and includes in abbreviated form much of the technical work required in the four-year course. In the first year, the studies are all prescribed; in the second year, they are elective. The electives must be chosen under the advice and direction of the Dean of the School of Agriculture. Students who have had approved farm experience will, upon completion of this course, be awarded certificates.

TWO-YEAR COURSE IN AGRICULTURAL ENGINEERING.

Special machinery and equipment are playing an important part in the development of the agricultural interests of the State.

This course is designed, primarily, to meet the needs of students who have not completed their high school training and who wish to specialize in the engineering side of agriculture. It will especially fit students for the technical side of the farm implement and equipment business. Students who have an apitude for mechanics and who are interested in agriculture, will find this course well suited to their needs.

EIGHT WEEKS' COURSE IN AUTOMOBILES AND TRACTORS.

This is an intensely practical course, planned with the object of preparing men to become operators of tractors and of tractor-drawn farm machinery; or to become automobile and motor truck mechanics.

All students will spend approximately one week in each of the following subjects:

Motors, chassis, diagnosing motor trouble, electric equipment.

At the end of the fourth week the student will choose between Group 1, automobiles and motor trucks, and Group 2, tractors and farm

power machinery; and will spend approximately one week on each of the subjects listed under his group.

Group 1.—Vulcanizing, auto truck driving, motor trucks, garage work on cars.

Group 2.—Tractor care and repair, tractor plowing, tractor belt work and dynamometers, farm power machinery.

A specialist is in charge of each division of work as shown above. In addition to the work given by the regular instructors, specialists, representing eight different tractor companies, are sent to the College for a short time to teach the students the care, operation, and repair of their particular machines.

The department subscribes to the best tractor and automobile magazines, and the latest available information is constantly kept before the student.

Admission Requirements.—In order to enter this course the applicant must be at least eighteen years of age; he must have a grammar school education, and must present a certificate from some reliable person, showing that he is in good standing in the community from which he comes.

Expenses.—The fixed charges are:

Incidental fee	$ 2 50
Medical fee	2 50
Maintenance, including board, lodging, laundry.	45 00
Laboratory fee	50 00
Total	$100 00

Registration dates and beginning of new terms are as follows: June 23, 24; September 17, 18; November 12, 13; January 14, 15; March 10, 11; May 5, 6.

Opening Dates.—Students should notify the Registrar of their intention of entering school some time in advance.

SHORT COURSE IN BUTTERMAKING.

This is a ten-day practice course offered by the Dairy Husbandry department in Creamery Buttermaking, including practical instruction in the ripening and pasteurizing of cream and in churning. The fundamentals of creamery arithmetic and creamery bookkeeping are also included in this course. It is offered especially for buttermakers or "helpers," who have had some practical experience in the creamery, and who desire to supplement such experience with study.

The course will begin the second Monday in January of each year.

For further information in regard to this course, address

PROFESSOR OF DAIRY HUSBANDRY,
College Station, Texas.

THE SCHOOL OF ENGINEERING.

COURSES OF STUDY.

In the School of Engineering there are offered the following courses:

REGULAR FOUR-YEAR COURSES.

Course in Architecture.
Course in Chemical Engineering.
Course in Civil Engineering.
Course in Electrical Engineering.
Course in Mechanical Engineering.
Course in Textile Engineering.
Course in Industrial Education.

TWO-YEAR COURSES.

Two-year Course in Industrial Education.
Two-year Course in Engineering.
Two-year Course in Textile Engineering.

COURSE IN ARCHITECTURE.

The course in Architecture is designed to give the student a thorough training in the art and the science of designing and constructing buildings, while preparing him to become upon graduation of immediate usefulness as an architect's assistant.

The course in Architecture is arranged in two groups in the Senior year: Group 1, Architectural Design; Group 2, Architectural Engineering.

During the first three years the course is identical for the two classes of students; each receives a broad foundation in both design and construction.

While students are prepared for work as professional Architects and Architectural Engineers, the training is found admirable as a foundation for those wishing to take up contracting, superintending, or the business of selling building materials. Students having a definite aim along any of these lines will be given work during their Senior year calculated to be beneficial to their particular needs.

The Architectural Club, composed of students and Faculty members, meets twice each month.

COURSE IN CHEMICAL ENGINEERING.

This course is designed to prepare young men for technical work in those industries in which raw materials undergo a chemical change in the process of manufacture. Many fields are open to students trained in applied chemistry, and inquiries are continually being received asking for men capable of filling important positions in different industries. Some industries important to the present and future development of this State are those dealing with cottonseed products, sugar, leather, petroleum, cement, ceramics, and iron and steel. The analyt-

ical chemistry given in the course is sufficient to enable the graduate to engage in the work of a commercial plant or to enter an industrial plant as a control chemist. The control chemist repeatedly analyzes and evaluates the raw material used in the manufacture as well as the intermediate and finished products. It is through such control that industries of this kind have been made scientific. Pure food laws and other legal enactments calculated to protect the people against fraud have, of late years, greatly accentuated the importance of this work. At the same time enough work is given in general engineering practice to enable the graduate who enters the works as a control chemist to come in time to a full understanding and mastery of the industry in which he is engaged.

The fifth year's work, leading to the degree of Chemical Engineer, is designed to facilitate the transformation of the control chemist into the manager of an industrial plant, capabale of adapting chemical processes of varying conditions and improving upon them as occasion demands.

COURSE IN CIVIL ENGINEERING.

The course in Civil Engineering has for its object the preparation of young men for entrance upon professional practice in the fields of surveying, highway construction and maintenance; municipal engineering, as related to street location, paving, water supply, sewerage, sewage disposal, street railroads, etc.; railway location, construction and maintenance; construction of levees and other protection works to guard against damage by overflows; irrigation and drainage engineering, the construction of canals and reservoirs; the design and construction of bridges, steel buildings, and masonry structures.

A thorough grounding in the underlying principles of engineering is given, together with the application of these principles to as many special lines as time will permit. Attention is given to drafting, to the preparation of contracts and specifications, estimates of cost, and to supervision of engineering work. The course is divided into two groups: (1) General civil engineering, and (2) highway and municipal engineering.

The course in general civil engineering is designed for the student who desires training in such subjects as will fit him for entrance into any one of a number of civil engineeering lines after graduation.

Graduates in the highway and municipal engineering group are prepared for service in the highway departments of States, counties, road districts, city engineering departments, with consulting engineers, contractors engaged in road and pavement construction, road machinery supply houses, waterworks and sanitary engineers and contractors, etc.

A well equipped laboratory for the study of bituminous pavements and paving materials affords not only a means of up-to-date instruction for students, but opportunity for co-operative work with cities in the investigation of their pavements and available paving materials. Connected with it is an excellently equipped testing laboratory for non-bituminous road materials.

The fifth year's work, leading to the degree of Civil Engineer (C. E.), offers opportunity for more advanced study in some of the branches of Civil Engineering than can be had within the limits of the four-year

course. Every student who can afford the time and money is urged to follow his four-year course, when possible, with the more technical work of the fifth year.

COURSE IN ELECTRICAL ENGINEERING.

The course in Electrical Engineering is designed to give the student a thorough training in the underlying principles of direct and alternating current phenomena and of electric measurements. It provides training in subjects fundamental to the general practice of the engineering profession, in the theory of electricity, and in the application of the theory to practical problems in many branches of applied engineering.

The work of the first three years of the course is intended to cover most of the fundamental principles of engineering. This is followed in the Senior year by a more detailed study of the applications of these principles. The applied subjects are taught with two objects, the first and more important of which is to impress more firmly on the student's mind the principles already learned. The second object is to give the student specific information about some branch of electrical engineering.

The rapidly increasing number of electrical plants and circuits for power transmission, lighting, transportation, telephoning, and telegraphing demands men who are prepared to design, construct and operate them. The studies in the course outlined have been carefully selected with this demand in view.

A Signal Corps Unit of the Reserve Officers' Training Corps has been established at the College and electrical engineering students who elect to become members of this unit have an opportunity to receive thorough instruction in telephone, telegraph and radio engineering in addition to their other engineering work. For use in the Signal Corps work, the government has supplied a complete assortment of modern equipment.

A branch of the American Institute of Electrical Engineering has been organized among the students and affords the means of keeping students in touch with the latest development in the electrical field.

COURSE IN MECHANICAL ENGINEERING.

The course in Mechanical Engineering is designed with a view of giving the student such training as will fit him to design, construct, and erect machinery, power and industrial plants, equipment, etc., and to manage or to operate the same with the greatest economy of labor and materials.

It is not possible to give the student that skill in the shops and that experience in the laboratories which come with long service in practical work, but the aim is to give him the power to understand and apply the underlying principles which are involved in all problems met with in practical engineering.

When it is remembered that there is a steam power plant or other mechanical equipment connected with practically every industrial enterprise it is apparent that the graduates from the course in Mechanical Engineering should find a large field for their activities in the industrial development of the State. The training at the College, followed by a few years contact with the practical work, should fit one to take charge

of the operation or of the management of almost any industrial enterprise whether strictly mechanical engineering or involving other activities as well.

COURSE IN TEXTILE ENGINEERING.

The object of this course is to prepare young men for entering the field of cotton manufacturing. The unprecedented development of the cotton milling industry in the South has brought about an era of prosperity and created a strong demand for educated young men in this industry. The State of Texas offers excellent advantages for the manufacture of cotton goods in its vast supply of raw material, intelligent labor, and excellent climatic conditions, and it is believed that cotton manufacturing will develop as rapidly as skilled and capable managers familiar with local conditions are to be had. The studies outlined have been selected with a view of giving theoretical and practical training in the manufacture of cotton goods as thorough as is possible in the time available.

COURSE IN INDUSTRIAL EDUCATION.

The four-year course in Industrial Education has for its main purpose the preparation of teachers of related subjects as prescribed for industrial education under the Smith-Hughes Act. Graduates of this course will be prepared not only to teach related subjects but to teach the regular shop work ordinarily given in the high schools of the State, to teach shop work under the Smith-Hughes Act in schools of cities having a population less than 25,000, and to direct or supervise industrial education in large city school systems. The course requires contact with a wide range of trades through its shop work and a liberal education in science, mathematics, history, English, etc. Thorough preparation in the art of teaching and supervising is afforded. The wide range of electives permits the student to specialize in some trade, or to do more extensive work in a wide field.

TWO-YEAR COURSE IN INDUSTRIAL EDUCATION.

The purpose of this course is to train teachers of related subjects under the Smith-Hughes Act, and manual training teachers. The entrance requirements and standard of work are the same as in the four-year course in Industrial Education. The completion of this course will entitle the student to credit for two years of work toward the degree of Bachelor of Science in Industrial Education.

TWO-YEAR COURSE IN ENGINEERING.

This course is intended for those who are unable to take a four-year course but who wish to prepare themselves for positions of responsibility along engineering lines.

The course is designated particularly for young men who have had some practical experience in a power house or in electrical work and who wish to add to their theoretical knowledge of the fundamentals of steam engineering and electricity. The entrance requirements are made

low to allow any deserving applicant to enter but any additional preparation or training will enable him to profit more from his course.

TWO-YEAR COURSE IN TEXTILE ENGINEERING.

The two-year course in Textile Engineering is intended for young men who wish to take up the work of cotton manufacturing and cannot spend more than two years in preparation.

The aim is to prepare young men for responsible positions in a cotton mill after a short term of apprenticeship. A limited number of students taking this course will be given employment during their vacant periods in operating the equipment of the department, which is turning out a commercial product. In this way students are encouraged to devote a good deal more time to the operation of the machinery, which should better fit them for their career in the mill and at the same time help to pay their expenses in college. Certificates will be given students who complete the work as outlined.

THE SCHOOL OF VETERINARY MEDICINE.

COURSE IN VETERINARY MEDICINE.

This course has for its object the systematic training of young men in all matters pertaining to diseases of domestic animals.

The Freshman and Sophomore years are, in large measure, devoted to those physical and biological studies that contribute so much to an understanding of the problems of health and disease. The Junior and Senior years are almost entirely devoted to studies of a technical nature.

Those who expect to engage in ranching, dairying or some other branch of animal industry, will find the course of great value to them in preventing serious losses from disease or mismanagement of their animals. Those who possess a biological mind will find it an interesting life study, and such men are in great demand in matters of public health or as investigators in Experiment Stations. Those who pursue the course from commercial motives will find its rewards are similar to those of any other form of human endeavor in that these will always be in proportion to the intelligence and energy displayed by the individual.

When it is recalled that the value of domestic animals in Texas is about five hundred million dollars, it becomes apparent that men informed on such matters will be of great value to the State.

GRADUATE COURSES.

Administration.—The regulations concerning graduate studies and all matters relating thereto are administered by the Committee on Graduate Studies.

Advanced Degrees.—The College offers graduate courses leading to advanced degrees as follows: Master of Science (M. S.), Chemical Engineer (Ch. E.), Civil Engineer (C. E.), Electrical Engineer (E. E.), Mechanical Engineer (M. E.).

Admission.—In order to be admitted to a course of study leading to an advanced degree, the candidate must satisfy the following requirements:

1. He must be a graduate of this College or of some other institution approved by the Faculty.
2. His undergraduate record must be such as to satisfy the committee that he is qualified by native ability and by training to pursue graduate studies with profit and with credit.

Application should be made in advance to the chairman of the committee, and in case the candidate comes from another institution, his application must be accompanied by a complete transcript of his undergraduate record.

Registration.—Graduate students must register at the beginning of each term at the office of the Registrar.

Studies.—(a) For the degree of Master of Science, the candidate must choose a major subject, and, in a different department, or departments, one, or two minor subjects; his choice to be subject to the approval of the heads of departments concerned and of the committee. He must devote to the major subject two-thirds, and to the minor subject, or subjects, one-third, of his time for one year. The equivalent of two years of undergraduate work in French or German is required.

(b) For the advanced degrees in engineering, the courses of study are shown under "curricula."

Residence.—Advanced degrees will not be conferred except after a residence of at least one year at the College. For candidates engaged in teaching or other regular employment, the period of residence will be increased to such extent as the committee may determine.

The residence requirement may be satisfied by residence during four summer sessions of eight weeks each.

Amount of Work.—The amount of work required for an advanced degree is reckoned as the equivalent of the student's full time for one academic year.

Quality of Work.—In order to be allowed to go on with his course a graduate student must give continued satisfaction in his work.

Thesis.—The candidate must submit a thesis, which shall be based upon his work in the department in which he takes his leading subject. Its title must be submitted to the committee for approval by November 15. In matter and style the thesis must be acceptable to the head of the department in which it is written and to the committee. It must show that the candidate has the ability to do independent work; and,

by correct citation of authorities, must show that he has satisfactory acquaintance with the literature of his field.

The thesis must be typewritten on paper 8½ inches by 11 inches; two weeks before commencement it must be presented to the committee in completed form, ready for binding. Before the degree is conferred, a bound copy for the College library must be deposited with the chairman of the committee.

Examinations.—The candidate must pass satisfactory examinations upon the work of his course. These examinations may be oral or written, or both, and shall be open to the committee and to members of the Faculty.

Reports.—Heads of departments will make reports to the Registrar at the end of each term on all graduate work done in their respective departments; and such other reports on the progress of their graduate students as the committee may request.

Special Committee.—The instructors under whom a graduate student takes work shall constitute a special committee to direct and advise him concerning his work and to represent him before the Cmomittee on Graduate Studies. The instructor in charge of the leading subject shall be chairman of the special committee in each case.

Graduation.—When a candidate has to the satisfaction of the Committee on Graduate Studies completed the requirements for an advanced degree he will be recommended to the Faculty for his degree. The diploma fee is $5.00.

GRADUATE SCHOLARSHIPS.

For the session 1919-20 the College offers twenty graduate scholarships, each carrying a stipend of $200, payable in eight installments. They are open to graduates of approved institutions who desire to do advanced work in Agriculture or in Engineering. The holder of a scholarship must maintain a uniformly high standing in his work and must render the College such service as may be required of him, not to exceed six hours a week.

Applications for scholarships must be addressed to the President, who will refer them to the proper committee for recommendation. They must be accompanied by a complete transcript of the applicant's undergraduate record and by a letter of recommendation from the President or other officer of his college.

WORKING FELLOWSHIPS IN THE EXPERIMENT STATION.

A graduate student holding an appointment to a working fellowship in the Agricultural Experiment Station may choose his major subject for the degree of Master of Science in Agriculture under the head of a division in the Experiment Station; his minor subject or subjects must be chosen in one of the departments of instruction in the College. In this case the work of his major subject shall take the form of active participation in research work on some problem under investigation by the Station.

The holder of such a fellowship shall spend at least two years upon his graduate work.

CURRICULA.

THEORY, PRACTICE, TERM-HOUR.

In the curricula shown on the following pages, the time devoted each week to the several subjects is expressed in clock-hours. The hours devoted to "theory" (which includes recitations and lectures) are indicated in the column headed "Th.," the hours devoted to "practice" (which includes work in laboratory, shop, drawing room or field) are indicated in the column headed "Pr."

A "term-hour" is one clock-hour of "theory" or two clock-hours of "practice."

Notes.—1. In addition to the work shown in the several curricula,

(a) All first-year students are required to take Physical Training, three hours a week.

(b) Students taking English are required to attend conferences with their instructors.

(c) Military drill, two hours a week is required of all students during their first two years, and of Juniors and Seniors who are members of the R. O. T. C.

(d) In the four-year agricultural and engineering courses all students are required to attend an assembly not oftener than once a month.

2. Junior and Senior courses in Military Science, theory, are required of members of the R. O. T. C.; they are not open to other students.

3. In view of the fact that the class of 1921 did not have Entomology in the Sophomore year, certain modifications in the published curricula will be made in respect to Entomology for that class.

I.—COURSE IN AGRICULTURE.

FRESHMAN YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Agronomy 101 Crop Production	3	2	Animal Husbandry 102 Market Types	0	4
Animal Husbandry 101 Market Types	0	4	Biology 102 General Botany	2	4
Biology 101 General Botany	2	4	Chemistry 102 Inorganic	3	3
Chemistry 101 Inorganic	3	3	Dairy Husbandry 102 Dairying	3	2
English 103 Rhetoric and Composition	3	0	English 104 Rhetoric and Composition	3	0
Military Science 101, or 103	1		Military Science 102, or 104	1	
Textile Engineering 101 Cotton Classing	0	2	*Textile Engineering 102 Cotton Classing	0	2
	12	15		12	15

SOPHOMORE YEAR.

Animal Husbandry 201 Farm Poultry	2	2	Animal Husbandry 202 Breed Types	2	2
Biology 201 Zoology	1	4	Biology 202 Zoology	1	4
Chemistry 209 General Geology	3	2	Chemistry 206 Organic	3	2
English 201 Literature	2	0	Chemistry 210 Agricultural Geology	2	2
English 203 Composition	1	0	English 202 Literature	2	0
Entomology 201 General	2	2	English 204 Composition	1	0
Horticulture 201 Plant Prop. and Orcharding	3	2	Horticulture 202 Vegetable Gardening	3	2
Military Science 201, or 203	1		Military Science 202, or 204	1	
	15	12		15	12

Required in all groups.

JUNIOR YEAR.

Agronomy 301 Soils	4	2	Agronomy 302 Farm Crops	4	2
Chemistry 309 Agricultural Chemistry	3	4	Economics 306 Fundamental Principles	3	0
English 301 Argumentation	1	0	English 302 Argumentation	1	0
	8	6		8	2

SENIOR YEAR.

Economics 407 Rural Economics	3	0	Agronomy 402 Farm Management	3	4
English 401 Public Speaking	1	0	Economics 410 Rural Sociology	3	0
			English 402 Public Speaking	1	0
	4	0		7	4

*Students who do not present Physics as an entrance credit will be required to take Physics 106, and to postpone Textile Engineering 102 to a subsequent year.

LIST A.

Electives common to all groups.

JUNIOR AND SENIOR YEARS.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Agricultural Education 401.. Methods of Teaching	3	0	Agricultural Education 402.. Adm. of H. S. Agriculture	3	0
Agricultural Engineering 301. Farm Machinery	2	2	Agricultural Engineering 304. Drainage	2	2
Agricultural Engineering 401. Tractors	1	4	Agricultural Engineering 306. Farm Motors	2	4
English 321 ..... Literature	3	0	English 322 ..... Literature	3	0
English 403 ..... Public Speaking	3	0	English 404 ..... Public Speaking	3	0
Forestry 301 ..... Principles of Forestry	3	0	Forestry 402 ..... Sylviculture	2	2
History 307 ..... Europe Since 1815	3	0	History 308 ..... Industrial History	3	0
History 305 ..... Citizenship	3	0	Mil. Science 302, 304, 402, or 404	3	
Mil. Science 301, 303, 401, or 403	3		Mod. Language 312, 314, 316. French, German, or Spanish	3	0
Mod. Language 311, 313, 315. French, German, or Spanish	3	0	Mod. Language 422, 424, 426. French, German, or Spanish	3	0
Mod. Language 421, 423, 425. French, German, or Spanish	3	0			

GROUP 1. AGRICULTURAL CHEMISTRY.

JUNIOR YEAR.

Chemical Engineering 303.... Physical Chemistry	3	4	Agronomy 304 ..... Soil Mapping	0	3
Dairy Husbandry 301..... Market Milk	2	0	Chemical Engineering 304.... Sanitary Chemistry	3	4
*Elective	3		Chemical Engineering 306... Microchemical Methods	1	2
			*Elective	3	
	8	4		7	9

*To be chosen from List A.

SENIOR YEAR.

Animal Husbandry 401..... Animal Nutrition	3	2	Agronomy 408 ..... Advanced Soils	2	2
Chemistry 421 ..... Advanced Agricultural	2	8	Chemistry 406 ..... History of Chemistry	1	0
*Elective	6		*Elective	6	
	11	10		9	2

*To be chosen from the following:

Biology 415 ..... General Bacteriology	1	6	Biology 416 ..... Agricultural Bacteriology	1	6
List A			List A		

GROUP 2. AGRICULTURAL EDUCATION.

JUNIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Agricultural Education 301... Educational Psychology	3	0	Horticulture 307 ..... Introduction to Landscape Art	2	0
*Elective	6		Agricultural Education 302... Methods of Teaching	3	0
			*Elective	6	
	9	0		11	0

*To be chosen from the following:

Agricultural Engineering 315. Farm Shop	1	6	Agronomy 306 ..... Plant Breeding	2	2
Agronomy 305 ..... Genetics	2	2	Animal Husbandry 302..... Animal Breeding	2	2
Horticulture 303 ..... Principles of Fruit Growing	3	2	Biology 302 ..... Rural Sanitation	2	4
Agricultural Education 303... Administration of Schools	3	0	Agricultural Education 304... High School Problems	3	0
List A			List A		

SENIOR YEAR.

Agricultural Engineering 411. Farm Machinery	2	2	Agricultural Engineering 406. Farm Motors	2	4
Animal Husbandry 409..... Animal Nutrition and Feeding	3	2	Agricultural Education 402... Adm. of High School Agr.	2	2
Agricultural Education 405.. Vocational Education	3	0	*Elective	3	
*Elective	6				
	14	4		7	6

*To be chosen from the following:

Agronomy 403 ..... Cost Accounting	0	4	Animal Husbandry 404..... Live Stock Management	2	4
Animal Husbandry 403..... Advanced Judging	1	4	Dairy Husbandry 402..... Milk Production	3	2
Entomology 407 ..... Economic	3	2	Agricultural Education 404... Agricultural Ext. and Dem.	3	0
Agricultural Education 403... Rural Education	3	0	Agricultural Education 410... Supervised Teaching	3	0
Agricultural Education 409... Supervised Teaching	3	0	List A		
List A					

GROUP 3. AGRICULTURAL ENGINEERING.

JUNIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Agricultural Engineering 301. Farm Machinery	1	4	Agricultural Engineering 302. Repair of Farm Machinery	0	4
Agricultural Engineering 309. Farm Concrete	1	4	Agricultural Engineering 304. Drainage	2	2
Civil Engineering 319..... Farm Surveying	2	3	Agricultural Engineering 306. Farm Motors	2	4
*Elective	3		*Elective	3	
	7	11		7	10

*To be chosen from the following:

Mathematics 101 ..... Algebra	3	0	Chemistry 418 ..... Technical Analysis	1	3
List A			Mechanical Engineering 104.. Forging	0	3
			List A		

SENIOR YEAR.

Agricultural Engineering 401. Tractors	1	4	Agricultural Engineering 402. Automobile and Motor Trucks	2	4
Agricultural Engineering 303. Farm Buildings	2	4	Agricultural Engineering 408. Terracing	0	2
Civil Engineering 407..... Roads and Pavements	3	0	*Elective	6	
*Elective	6				
	12	8		8	6

*To be chosen from the following:

Agricultural Engineering 403. Irrigation	2	2	Agricultural Engineering 404. Exp. Agricultural Engineering	0	6
Horticulture 301 ..... Spraying	1	4	Electrical Engineering 412... Motors, Wiring, Lighting	3	0
List A			List A		

GROUP 4. AGRONOMY.

JUNIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Agronomy 305 ..... Genetics	2	2	Agronomy 306 ..... Plant Breeding	2	2
Civil Engineering 319..... Farm Surveying	2	3	Biology 316 ..... Plant Diseases	3	4
*Elective	3		*Elective	3	
	7	5		8	6

*To be chosen from the following:

Horticulture 303 ..... Principles of Fruit Production	3	2	Veterinary Anatomy 302..... Anatomy and Physiology	2	2
List A			List A		

SENIOR YEAR.

Agronomy 403 ..... Cost Accounting	0	4	Agronomy 405 ..... Use of Fertilizers and Manures	2	2
Animal Husbandry 409..... Animal Nutrition and Feeding	3	2	Agronomy 406 ..... Soil Mapping	0	3
Entomology 407 ..... Economic	3	2	*Elective	6	
*Elective	6				
	12	8		8	5

*To be chosen from the following:

List A			Agronomy 408 ..... Advanced Soils	2	2
			List A		

GROUP 5. ANIMAL HUSBANDRY.

JUNIOR YEAR.

Agronomy 305 ..... Genetics	2	2	Animal Husbandry 302..... Animal Breeding	2	2
Animal Husbandry 301..... History and Dev. of Breeds	2	2	Entomology 306 ..... Animal Parasites	2	2
*Elective	3		Veterinary Anatomy 302..... Anatomy and Physiology	2	2
			*Elective	3	
	7	4		9	6

*To be chosen from List A.

SENIOR YEAR.

Animal Husbandry 401..... Animal Nutrition	3	2	Animal Husbandry 402..... Livestock Breeding	3	2
Animal Husbandry 403..... Advanced Judging	1	4	Animal Husbandry 404..... Livestock Management	2	4
Veterinary Medicine 403..... Animal Diseases	3	2	*Elective	6	
*Elective	6				
	13	8		11	6

*To be chosen from the following:

Animal Husbandry 405..... Herd Book Study	4	4	Biology 416 ..... Agricultural Bacteriology	1	6
Animal Husbandry 407..... Poultry	2	2	List A		
Biology 415 ..... General Bacteriology	1	6			
List A					

GROUP 6. BIOLOGY.

JUNIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Biology 303 Plant Physiology	2	4	Biology 304 Plant Physiology	2	4
Biology 301 General Embryology	1	4	Biology 316 Plant Diseases	3	4
*Elective	3		*Elective	3	
	6	8		8	8

*To be chosen from List A.

SENIOR YEAR.

Biology 415 General Bacteriology	1	6	Biology 416 Agricultural Bacteriology	1	6
Biology 423 Advanced Vertebrate Zoology	2	6	Biology 426 Advanced Bacteriology	0	4
*Elective	6		*Elective	6	
	9	12		7	10

*To be chosen from List A.

GROUP 7. DAIRY HUSBANDRY.

JUNIOR YEAR.

Agronomy 305 Genetics	2	2	Animal Husbandry 302 Animal Breeding	2	2
Dairy Husbandry 301 Market Milk	3	0	Dairy Husbandry 302 Dairy Manufactures	2	2
*Elective	3		Veterinary Anatomy 302 Anatomy and Physiology	2	2
			*Elective	3	
	8	2		9	6

*To be chosen from List A.

SENIOR YEAR.

Animal Husbandry 401 Animal Nutrition	3	2	Dairy Husbandry 402 Milk Production	3	2
Biology 401 General Bacteriology	1	6	Dairy Husbandry 404 Seminar	2	0
Dairy Husbandry 401 Herd Book Study	0	4	*Elective	6	
*Elective	6				
	10	12		11	2

*To be chosen from the following:

Veterinary Medicine 403 Animal Diseases	3	2	Biology 432 Dairy Bacteriology	1	4
List A			List A		

GROUP 8. ENTOMOLOGY.

JUNIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Entomology 301 ..... Advanced Systematic	2	2	Entomology 302 ..... Advanced Systematic	3	2
Horticulture 303 ..... Principles of Fruit Production	3	2	Entomology 304 ..... Apiculture	2	2
*Elective, at least.....	3		*Elective, at least.....	3	
	8	4		8	4

*To be chosen from the following:

Biology 301 ..... General Embryology	1	6	Biology 316 ..... Plant Diseases	3	4
Biology 303 ..... Plant Physiology	2	4	Biology 304 ..... Plant Physiology	2	4
Entomology 203 ..... Veterinary Entomology	3	2	Horticulture 302 ..... Plant Breeding	2	2
List A			List A		

SENIOR YEAR.

Entomology 401 ..... Advanced Economic	3	2	Entomology 402 ..... Advanced Economic	3	2
Entomology 403 ..... Entom. Literature	3	2	*Elective	6	
Entomology 410 ..... Seminar	0	2			
*Elective	6				
	12	6		9	2

*To be chosen from the following:

Biology 415 ..... General Bacteriology	1	6	Agronomy 406 ..... Use of Fertilizers and Manures	2	2
Horticulture 403 ..... Sub-Tropical Fruits	3	2	Biology 416 ..... Agricultural Bacteriology	1	6
List A			List A		

GROUP 9. HORTICULTURE.

JUNIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Agronomy 305 ..... Genetics	2	2	Biology 316 ..... Plant Diseases	3	4
Horticulture 303 ..... Principles of Fruit Production	3	2	Horticulture 302 ..... Plant Breeding	2	2
*Elective	3		*Elective	3	
	8	4		8	6

*To be chosen from the following:

Biology 303 ..... Plant Physiology	2	4	Biology 304 ..... Plant Physiology	2	4
Civil Engineering 319..... Farm Surveying	2	3	Horticulture 304 ..... Nut Culture	1	4
Horticulture 301 ..... Spraying	1	4	Veterinary Anatomy 302..... Anatomy and Physiology	2	2
List A			List A		

SENIOR YEAR.

Horticulture 401 ..... Pomology	3	2	Horticulture 402 ..... Experimental Horticulture	1	4
Horticulture 413 ..... Seminar	0	2	Horticulture 404 ..... Commercial Horticulture	2	2
Entomology 407 ..... Economic	3	2	*Elective	6	
*Elective	6				
	12	6		9	6

*To be chosen from the following:

Entomology 405 ..... Fruit Insects	2	2	Horticulture 304 ..... Nut Culture	1	4
Horticulture 301 ..... Spraying	1	4	Horticulture 412 ..... Horticultural By-Products	1	4
Horticulture 405 ..... Bush and Vine Fruits	2	2	Horticulture 408 ..... Floriculture	2	2
Horticulture 403 ..... Sub-Tropical Fruits	3	2	List A		
List A					

GROUP 10. LANDSCAPE ART.

JUNIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Civil Engineering 319 ..... Farm Surveying	2	3	Drawing 316 ..... Water Color	0	4
Horticulture 307 ..... Introduction to Landscape Art	2	0	Horticulture 308 ..... History of Lanscape Art	2	0
Drawing 315 ..... Mechanical	0	2	*Elective	8	
*Elective	3				
	7	5		10	4

*To be chosen from List A.

SENIOR YEAR.

Horticulture 415 ..... Landscape Design	3	4	Horticulture 416 ..... Landscape Design	3	4
Architecture 419 ..... Theory of Design	1	0	*Elective	6	
*Elective	9				
	13	4		9	4

*To be chosen from the following:

Horticulture 409 ..... Ornamentals	2	2	Horticulture 408 ..... Floriculture	2	2
List A			List A		

XII.—COURSE IN AGRICULTURAL EDUCATION.

FRESHMAN YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Agronomy 101 Crop Production	3	2	Animal Husbandry 104 Live Stock Production	2	4
Animal Husbandry 103 Live Stock Production	2	4	Biology 102 General Botany	3	2
Biology 101 General Botany	3	2	Chemistry 102 Inorganic	3	3
Chemistry 101 Inorganic	3	3	Dairy Husbandry 102 Dairying	2	2
English 103 Rhetoric and Composition	3	0	English 104 Rhetoric and Composition	3	0
Military Science 101, or 103	1		Military Science 102, or 104	1	
	15	11		14	11

SOPHOMORE YEAR.

Agricultural Engineering 201 Farm Machinery	1	4	Biology 202 Zoology	1	4
Animal Husbandry 201 Poultry	2	2	Chemistry 206 Organic	3	2
Biology 201 Zoology	1	4	Chemistry 212 Introductory Soil Geology	3	2
English 201 Literature	2	0	English 202 Literature	2	0
English 203 Composition	1	0	English 204 Composition	1	0
Horticulture 201 Plant Prop. and Orcharding	3	2	Horticulture 202 Vegetable Gardening	3	2
Military Science 201, or 203	1		Military Science 202, or 204	1	
Physics 206 Agricultural Physics	2	4			
	13	16		14	10

JUNIOR YEAR.

Agricultural Education 301 Educational Psychology	3	0	Agricultural Education 302 Methods of Teaching	3	0
Agronomy 301 Soils	4	2	Agronomy 302 Farm Crops	4	2
Chemistry 309 Agricultural Chemistry	3	4	Economics 306 Fundamental Principles	3	0
English 301 Argumentation	1	0	English 302 Argumentation	1	0
*Elective	6		*Elective	8	
	17	6		19	2

*To be approved by the Professor of Agricultural Education.

SENIOR YEAR.

Agricultural Education 405 Vocational Education	3	0	Agricultural Education 402 Adm. of H. S. Agriculture	2	2
Economics 407 Rural Economics	3	0	Agronomy 402 Farm Management	3	4
English 401 Public Speaking	1	0	Economics 410 Rural Sociology	3	0
Textile Engineering 419 Cotton Classing	1	2	English 402 Public Speaking	1	0
*Elective	11		*Elective	8	
	19	2		17	6

*Three term hours credit in supervised teaching of vocational agriculture required for graduation. Elective work to be approved by Professor of Agricultural Education.

C.—TWO-YEAR COURSE IN AGRICULTURE.

FIRST YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Animal Husbandry 21 (Market Types)	0	6	Agronomy 28 (Soils)	3	2
Agricultural Engineering 25 (Farm Machinery)	3	2	Animal Husbandry 22 (Breeds and Types)	2	2
Dairy Husbandry 21 (Elementary Dairying)	2	2	Entomology 22 (Economic)	3	2
English 31 (Practical Composition)	3	0	Biology 14 (Agricultural Botany)	2	2
Horticulture 21 (Plant Culture and Prop.)	3	2	English 32 (Practical Composition)	3	0
Military Science 11	1		Horticulture 22 (Vegetable Gardening)	2	2
Textile Engineering 17 (Cotton Classing)	0	2	Military Science 12	1	
	12	14		16	10

SECOND YEAR.

Eighteen term-hours each term from the following in addition to Military Science.

Agricultural Engineering 61 (Farm Concrete)	1	4	Agricultural Engineering 66 (Farm Motors)	2	4
Agricultural Engineering 55 (Irrigation and Drainage)	2	4	Agricultural Engineering 58 (Automobiles)	2	4
Agricultural Engineering 59 (Tractors)	1	4	Agronomy 52 (Farm Equip. and Management)	3	2
Agronomy 51 (Farm Crops)	3	2	Animal Husbandry 52 (Breeding)	2	2
Animal Husbandry 55 (Feeding)	2	2	Animal Husbandry 54 (Poultry)	3	3
Biology 51 (Economic Zoology)	3	2	English 54 (Rhetoric and Composition)	3	0
Dairy Husbandry 53 (Farm Dairying)	2	2	Entomology 56 (Elementary Apiculture)	2	2
English 53 (Rhetoric and Composition)	3	0	Forestry 52 (Elementary Forestry)	3	0
Forestry 51 (Farm Forestry)	3	2	Horticulture 58 (Nut Culture)	2	2
Horticulture 53 (Tree and Vine Fruits)	3	2	Horticulture 60 (By-products)	1	4
Horticulture 55 (Spraying)	1	4	Military Science 52	1	
Military Science 51	1		Textile Engineering 52 (Cotton Classing)	0	2
			Veterinary Anatomy 52 (Animal Diseases)	3	2

M.—TWO-YEAR COURSE IN AGRICULTURAL ENGINEERING.

FIRST YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Agricultural Engineering 25 Farm Machinery	1	4	Agricultural Engineering 26 Farm Motors	2	4
Agricultural Engineering 27 Farm Concrete	1	4	Agronomy 24 Farm Crops	3	2
Agronomy 23 Soils	3	2	Civil Engineering 24 Surveying	2	3
Drawing 15 Mechanical	0	2	Drawing 16 Mechanical	0	2
English 31 Practical Composition	3	0	English 32 Practical Composition	3	0
Mathematics 13 Shop Mathematics	4	0	Mathematics 14 Shop Mathematics	3	0
Mechanical Engineering 23 Woodshop	0	4	Mechanical Engineering 24 Forge	0	4
Military Science 11	1		Military Science 12	1	
	13	16		14	15

SECOND YEAR.

Agricultural Engineering 55 Irrigation and Drainage	1	4	Agricultural Engineering 56 Repairing Farm Machinery	1	4
Agricultural Engineering 57 Farm Buildings	2	4	Agricultural Engineering 58 Automobiles	2	4
Agricultural Engineering 59 Tractors	1	4	Agricultural Engineering 60 Testing	0	4
Dairy Husbandry 53 Farm Dairying	2	2	Animal Husbandry 56 Feeding	2	2
English 53 Practical Composition	3	0	Chemistry 52 Practical	1	4
Horticulture 55 Spraying Machinery	1	2	English 54 Practical Composition	3	0
Military Science 51	1		Military Science 52	1	
	11	16		10	18

COURSES IN ENGINEERING.

(The curricula for all Engineering courses are identical in the Freshman year.)

FRESHMAN YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Chemistry 101 ..... Inorganic	3	3	Chemistry 102 ..... Inorganic	3	3
Drawing 113 ..... Descriptive Geometry	2	3	Drawing 114 ..... Descriptive Geometry	2	3
Drawing 105 ..... Freehand	0	1	Drawing 106 ..... Freehand	0	1
English 103 ..... Rhetoric and Composition	3	0	English 104 ..... Rhetoric and Composition	3	0
Mathematics 101 ..... Algebra	3	0	Mathematics 102 ..... Algebra	3	0
Mathematics 103 ..... Trigonometry	3	0	Mathematics 104 ..... Analytics	3	0
Mechanical Engineering 101.. Elementary Mechanics	1	0	Mechanical Engineering 102.. Elementary Mechanics	1	0
Mechanical Engineering 103.. Woodwork	0	3	Mechanical Engineering 104.. Forging	0	3
Mil. Science 101, 103, or 105.	1		Mil. Science 102, 104, or 106*	1	
	16	10		16	10

*To be replaced by Electrical Engineering 110 for members of the Signal Corps.

IX.—COURSE IN ARCHITECTURE.

FRESHMAN YEAR.

See page 98.

SOPHOMORE YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Architecture 201 Elements	0	12	Architecture 202 Elementary Design	0	12
Architecture 203 Shades, Shadows, Perspective	1	0	Architecture 206 Carpentry	2	0
Architecture 207 History of Architecture	2	0	Architecture 208 History of Architecture	2	0
Drawing 209 Freehand	0	3	Civil Engineering 204 Analytic Mechanics	3	0
English 201 Literature	2	0	Drawing 210 Freehand	0	3
English 203 Composition	1	0	English 202 Literature	2	0
Mathematics 205 Calculus	4	0	English 204 Composition	1	0
Military Science 201, or 203	1		Military Science 202, or 204	1	
Physics 203 General	3	3	Physics 204 General	3	3
	14	18		14	18

JUNIOR YEAR.

Architecture 301 Design	0	15	Architecture 302 Design	1	15
Architecture 305 Mechanical Equipment	2	0	Civil Engineering 302 Graphics	0	3
Architecture 307 Details of Construction	2	2	Civil Engineering 308 Roofs and Bridges	3	0
Architecture 309 History of Architecture	2	0	Civil Engineering 326 Surveying	1	3
Civil Engineering 305 Mechanics of Materials	3	2	English 302 Argumentation	1	0
English 301 Argumentation	1	0	History 306 Citizenship	3	0
	10	19		9	21

And one subject from the following:

Civil Engineering 311 Hydraulics	3	3	Chemistry 306 General Geology	3	3
One subject from List B, p. 109	3	0	One subject from List B, p. 109	3	0

SUMMER WORK.

Architecture 300. Working drawings, three weeks.

Six weeks spent in practical work under a competent architect or builder will be accepted as fulfilling this requirement.

GROUP 1. ARCHITECTURAL DESIGN.

SENIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Architecture 401 Design	0	16	Architecture 402 Design	0	16
Architecture 407 History of Ornament	3	0	Architecture 406 Special Topics	2	0
Civil Engineering 413 El. of Reinforced Concrete	2	0	Civil Enginering 414 Reinforced Concrete Design	2	3
Drawing 409 Color Rendering	0	6	Civil Engineering 406 Materials of Construction	0	3
Economics 403 Fundamental Principles	3	0	Electrical Engineering 436 Wiring and Lighting	3	0
English 401 Public Speaking	1	0	English 402 Public Speaking	1	0
	9	22		8	22

And one subject from the following:

Chemistry 425 Engineering Geology	2	2	Civil Engineering 410 Contracts and Specifications	2	0
One subject from List C, p. 109.	3	0	One subject from List C, p. 109.	3	0

GROUP 2. ARCHITECTURAL ENGINEERING.

SENIOR YEAR.

Architecture 403 Structural Design	0	16	Architecture 404 Structural Design	0	16
Architecture 405 Structural Problems	2	0	Architecture 406 Special Topics	2	0
Architecture 407 History of Ornament	3	0	Civil Engineering 406 Materials of Construction	0	3
Civil Engineering 413 El. of Reinforced Concrete	2	0	Civil Engineering 414 Reinforced Concrete Design	2	3
Economics 403 Fundamental Principles	3	0	Electrical Engineering 436 Wiring and Lighting	3	0
English 401 Public Speaking	1	0	English 402 Public Speaking	1	0
	11	16		8	22

And one subject from the following:

Chemistry 425 Engineering Geology	2	2	Civil Engineering 410 Contracts and Specifications	2	0
One subject from List C, p. 109.	3	0	One subject from List C, p. 109.	3	0

VIII.—COURSE IN CHEMICAL ENGINEERING.

FRESHMAN YEAR.

See page 98.

SOPHOMORE YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Chemistry 205 Qualitative Analysis	2	8	Chemical Engineering 202 Quantitative Analysis	2	8
Drawing 201 Mechanical	0	3	Drawing 202 Mechanical	0	3
English 201 Literature	2	0	English 202 Literature	2	0
English 203 Composition	1	0	English 204 Composition	1	0
Mathematics 205 Calculus	4	0	Mechanical Engineering 206 Elementary Steam Engineering	3	3
Military Science 201, or 203	1		Military Science 202, or 204	1	
Physics 203 General	3	3	Physics 204 General	3	3
	13	14		12	17

JUNIOR YEAR.

Chemical Engineering 301 Advanced Quantitative Analysis	2	9	Chemical Engineering 302 Technical Analysis	1	6
Chemistry 301 Organic	3	4	Chemistry 302 Organic	3	4
Electrical Engineering 305 Electrical Machinery	3	3	Chemistry 306 General Geology	3	3
English 301 Argumentation	1	0	English 302 Argumentation	1	0
			History 306 Citizenship	3	0
	9	16		11	13

And one subject from the following:

Mechanical Engineering 317 Engineering Mechanics	4	0	Civil Engineering 332 Water Supply and Sewerage	3	0
One subject from List B, p. 109	3	0	One subject from List B, p. 109	3	0

SENIOR YEAR.

Chemical Engineering 411 Physical Chemistry	3	4	Chemical Engineering 412 Industrial Chemistry	3	4
Chemical Engineering 413 Chemical Technology	3	4	Chemical Engineering 414 Sanitary Chemistry	3	4
Economics 403 Fundamental Principles	3	0	Chemical Engineering 406 Microchemical Methods	1	2
English 401 Public Speaking	1	0	Chemistry 406 History of Chemistry	1	0
			English 402 Public Speaking	1	0
	10	8		9	10

And seven hours each term from the following:

Technical Subjects	4	0	Technical Subjects	4	0
One subject from List C, p. 109	3	0	One subject from List C, p. 109	3	0

Notes.—1. The choice of technical subjects is subject to the approval of the head of the department of Chemistry and Chemical Engineering.

2. To those students desiring to do so, an opportunity will be given to specialize in the study of the cotton seed oil industry or in petroleum technology.

IV.—COURSE IN CIVIL ENGINEERING.

FRESHMAN YEAR.

See page 98.

SOPHOMORE YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Civil Engineering 201 (Surveying)	3	3	Civil Engineering 202 (Railroad Engineering)	2	3
Drawing 201 (Mechanical)	0	3	Civil Engineering 204 (Analytic Mechanics)	3	0
English 201 (Literature)	2	0	Drawing 202 (Mechanical)	0	3
English 203 (Composition)	1	0	English 202 (Literature)	2	0
Mathematics 203 (Calculus)	4	0	English 204 (Composition)	1	0
Mechanical Engineering 205 (Elementary Steam Engineering)	2	0	Mathematics 204 (Calculus)	4	0
Military Science 201, or 203	1		Military Science 202, or 204	1	
Physics 203 (General)	3	3	Physics 204 (General)	3	3
	16	9		16	9

SUMMER WORK.

Civil Engineering 300, Field Practice, three weeks.

JUNIOR YEAR.

Civil Engineering 303 (Railroad Engineering)	3	3	Chemistry 306 (General Geology)	3	3
Civil Engineering 305 (Mechanics of Materials)	3	2	Civil Engineering 302 (Graphics)	0	3
Civil Engineering 311 (Hydraulics)	3	2	Civil Engineering 304 (Railroad Construction)	2	0
Electrical Engineering 305 (Electrical Machinery)	3	3	Civil Engineering 308 (Roofs and Bridges)	3	0
English 301 (Argumentation)	1	0	Civil Engineering 320 (Toporaphic Drawing)	0	2
			Civil Engineering 322 (Strength of Materials)	2	0
			English 302 (Argumentation)	1	0
			History 306 (Citizenship)	3	0
	13	10		14	8

And one subject each from List B, page 109.

SUMMER WORK.

Civil Engineering 400. Field Practice, three weeks.

GROUP 1. GENERAL CIVIL ENGINEERING.

SENIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Civil Engineering 401 Railroad Drafting	0	4	Civil Engineering 404 Bridge Design	0	6
Civil Engineering 403 Roofs and Bridges	3	6	Civil Engineering 406 Materials of Construction	0	3
Civil Engineering 407 Roads and Pavements	3	0	Civil Engineering 410 Contracts and Specifications	2	0
Civil Engineering 413 El. of Reinforced Concrete	2	0	Civil Engineering 414 Reinforced Concrete Design	2	3
Economics 403 Fundamental Principles	3	0	Civil Engineering 416 Masonry	2	0
English 401 Public Speaking	1	0	Civil Engineering 438 Water Supply and Sewerage	3	0
			Civil Engineering 434 Irrigation and Drainage	2	0
			English 402 Public Speaking	1	0
	12	10		12	12

And one subject from the following:

Chemistry 425 Engineering Geology	2	2	Economics 408 Business Organization	3	0
One subject from List C, p. 109.	3	0	One subject from List C, p. 109.	3	0

GROUP 2. HIGHWAY AND MUNICIPAL ENGINEERING.

Civil Engineering 401 Railroad Drafting	0	4	Biology 418 Bacteriology	2	4
Civil Engineering 413 El. of Reinforced Concrete	2	0	Civil Engineering 410 Contracts and Specifications	2	0
Civil Engineering 415 High. Const. and Maintenance	5	0	Civil Engineering 416 Masonry	2	0
Civil Engineering 417 Highway Materials	1	3	Civil Engineering 418 Highway Materials	1	3
Civil Engineering 423 Bridge Design	1	3	Civil Engineering 426 Highway Bridges and Culverts	1	3
Economics 403 Fundamental Principles	3	0	Civil Engineering 438 Water Supply and Sewerage	3	0
English 401 Public Speaking	1	0	Civil Engineering 436 Management Engineering	1	0
			English 402 Public Speaking	1	0
	13	10		13	10

And one subject from the following:

Chemistry 425 Engineering Geology	2	2	Chemical Engineering 410 Water Treatment	3	0
Civil Engineering 429 Highway Laws and Economics	3	0	Economics 408 Business Organization	3	0
One subject from List C, p. 109.	3	0	One subject from List C, p. 109.	3	0

V.—COURSE IN ELECTRICAL ENGINEERING.

FRESHMAN YEAR.

See page 98.

SOPHOMORE YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Drawing 201 ..... Mechanical	0	3	Civil Engineering 206..... Surveying	1	3
Electrical Engineering 201.... Electricity and Magnetism	4	4	Drawing 202 ..... Mechanical	0	3
English 201 ..... Literature	2	0	Electrical Engineering 202... Elementary	3	3
English 203 ..... Composition	1	0	English 202 ..... Literature	2	0
Mathematics 203 ..... Calculus	4	0	English 204 ..... Composition	1	0
Mechanical Engineering 201.. Pattern Making and Foundry	0	3	Mathematics 204 ..... Calculus	4	0
*Military Sc. 201, 203, or 205.	1		Mechanical Engineering 214.. Machine Shop	0	3
Physics 207 ..... General	2	2	*Military Sc. 202, 204, or 206.	1	
			Physics 208 ..... General	2	2
	14	12		14	14
*Or Electrical Engineering 209 Signal Corps Work	1		*Or Electrical Engineering 210 Signal Corps Work	1	

JUNIOR YEAR.

Civil Engineering 305..... Mechanics of Materials	3	2	Electrical Engineering 302... Alternating Currents	4	4
Electrical Engineering 301... Direct Currents	3	6	Electrical Engineering 304... D. C. Design	1	4
English 301 ..... Argumentation	1	0	English 302 ..... Argumentation	1	0
Mechanical Engineering 307.. Kinematics	2	2	History 306 ..... Citizenship	3	0
Mechanical Engineering 317.. Engineering Mechanics	4	0	Mechanical Engineering 302.. Steam Engines and Boilers	5	0
	13	10		14	8

And one subject from the following:

Electrical Engineering 309... Communication Engineering	3	0	Electrical Engineering 310... Communication Engineering	3	0
One subject from List B, p. 109.	3	0	One subject from List B, p. 109.	3	0

SENIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Economics 403 ..... Fundamental Principles	3	0	Civil Engineering 410..... Contracts and Specifications	2	0
Electrical Engineering 401... A. C. Machinery	4	4	Electrical Engineering 402... A. C. Machinery	3	4
Electrical Engineering 403... Electric Machine Design	1	4	Electrical Engineering 406... Power Distribution	2	2
Electrical Engineering 423... Electric Railways	2	0	Electrical Engineering 408... General Problems	0	2
English 401 ..... Public Speaking	1	0	Electrical Engineering 426... Illumination Engineering	2	2
Mechanical Engineering 415.. Laboratory	0	3	English 402 ..... Public Speaking	1	0
			Mechanical Engineering 416.. Laboratory	0	3
	11	11		10	13

And one subject from the following:

Civil Engineering 411..... Hydraulics	3	0	Chemistry 416 ..... General Geology	3	3
Electrical Engineering 409... Advanced Communication Eng.	3	0	Electrical Engineering 410... Advanced Communication Eng.	3	0
One subject from List C, p. 109.	3	0	One subject from List C, p. 109.	3	0

III.—COURSE IN MECHANICAL ENGINEERING.

FRESHMAN YEAR.

See page 98.

SOPHOMORE YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Chemistry 207 ..... Quantitative Analysis	1	3	Chemistry 208 ..... Technical Analysis	1	3
English 201 ..... Literature	2	0	English 202 ..... Literature	2	0
English 203 ..... Composition	1	0	English 204 ..... Composition	1	0
Mathematics 203 ..... Calculus	4	0	Mathematics 204 ..... Calculus	4	0
Mechanical Engineering 201.. Pattern Making and Foundry	0	3	Mechanical Engineering 202.. Pattern Making and Foundry	0	3
Mechanical Engineering 207.. Kinematics	2	3	Mechanical Engineering 212.. Engineering Mechanics	3	0
*Military Sc. 201, 203, or 205.	1		Mechanical Engineering 204.. Principles of Manufacture	1	0
Physics 203 ..... General	3	3	*Military Sc. 202, 204, or 206.	1	
			Physics 204 ..... General	3	3
	14	12		16	9
*Or Electrical Engineering 209 Signal Corps Work	1		*Or Electrical Engineering 210 Signal Corps Work	1	

JUNIOR YEAR.

Civil Engineering 305..... Mechanics of Materials	3	2	Electrical Engineering 308... Electrical Machinery	2	3
Electrical Engineering 307... Electrical Machinery	3	0	English 302 ..... Argumentation	1	0
English 301 ..... Argumentation	1	0	History 306 ..... Citizenship	3	0
Mechanical Engineering 319.. Engines and Boilers	4	0	Mechanical Engineering 320.. Thermodynamics	4	0
Mechanical Engineering 303.. Machine Design	0	3	Mechanical Engineering 304.. Machine Design	0	4
Mechanical Engineering 313.. Engineering Mechanics	3	0	Mechanical Engineering 314.. Engineering Mechanics	3	0
Mechanical Engineering 309.. Machine Shop	0	3	Mechanical Engineering 310.. Machine Shop	0	3
	14	8		13	10

And one subject from the following:

Electrical Engineering 309... Communication Engineering	3	0	Electrical Engineering 310... Communication Engineering	3	0
One subject from List B, p. 109.	3	0	One subject from List B, p. 109.	3	0

†SENIOR YEAR.

Required in all groups.

Chemical Engineering 407.... Industrial Chemistry	3	0	Chemical Engineering 408... Metallurgy	2	0
Civil Engineering 411..... Hydraulics	3	0	English 402 ..... Public Speaking	1	0
Economics 403 ..... Fundamental Principles	3	0	Mechanical Engineering 404.. Laboratory	0	4
English 401 ..... Public Speaking	1	0	Mechanical Engineering 410.. Gas Engines	3	0
Mechanical Engineering 403.. Laboratory	0	4	Mechanical Engineering 412.. History and Biography	3	0
	10	4		9	4

GROUP 1.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Mechanical Engineering 407.. Thermodynamics	2	0	Mechanical Engineering 414.. Steam Turbines	2	0
Mechanical Engineering 417.. Power Plants and Equipment	2	4	Mechanical Engineering 418.. Power Plants and Equipment	2	4
*Elective	3		*Elective	3	
	7	4		7	4

GROUP 2.

Mechanical Engineering 419.. Industrial Engineering	3	2	Mechanical Engineering 420.. Industrial Engineering	3	2
Mechanical Engineering 421.. Methods and Management	2	0	Mechanical Engineering 422.. Methods and Management	2	0
*Elective	3		*Elective	3	
	8	2		8	2

GROUP 3.

Mechanical Engineering 423.. Transportation	2	0	Mechanical Engineering 421.. Transportation	2	0
Mechanical Engineering 425.. Railway Mech. Engineering	2	4	Mechanical Engineering 426.. Railway Mech. Engineering	2	4
*Elective	3		*Elective	3	
	7	4		7	4

*The student will elect one of the following, or any other approved elective.

Electrical Engineering 409... Advanced Communication Eng.	3	0	Electrical Engineering 410... Advanced Communication Eng.	3	0
One subject from List C, p. 109.	3	0	One subject from List C, p. 109.	3	0

†For the class of 1920 the work of the Senior year will be the same as published in the Forty-second Catalogue with the exception of the elective studies, which are to be approved by the Executive Committee of the Engineering Faculty.

VI.—COURSE IN TEXTILE ENGINEERING.

FRESHMAN YEAR.

See page 98.

SOPHOMORE YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Drawing 201 ..... Mechanical	0	3	Chemistry 206 ..... Organic	3	2
English 201 ..... Literature	2	0	Civil Engineering 206..... Surveying	1	3
English 203 ..... Composition	1	0	Drawing 202 ..... Mechanical	0	3
Mathematics 205 ..... Calculus	4	0	English 202 ..... Literature	2	0
Mechanical Engineering 205.. Elementary Steam Engineering	2	0	English 204 ..... Composition	1	0
Mechanical Engineering 207.. Kinematics	2	2	Military Science 202, or 204..	1	
Military Science 201, or 203..	1		Physics 204 ..... General	3	3
Physics 203 ..... General	3	3	Textile Engineering 204..... Weaving	3	3
Textile Engineering 203..... Yarn Manufacture	0	4			
	15	12		14	14

JUNIOR YEAR.

Electrical Engineering 307... Electrical Machinery	3	0	Chemistry 308 ..... Dyeing	2	2
English 301 ..... Argumentation	1	0	Electrical Engineering 308... Electrical Machinery	2	3
Mechanical Engineering 309.. Machine Shop	0	3	English 302 ..... Argumentation	1	0
Textile Engineering 301..... Yarn Manufacture	5	3	History 306 ..... Citizenship	3	0
Textile Engineering 303..... Fabric Design	0	3	Textile Engineering 302..... Yarn Manufacture	3	2
Textile Engineering 305..... Weaving	3	3	Textile Engineering 304..... Fabric Design	0	3
			Textile Engineering 306..... Weaving	0	4
	12	12		11	14

And one subject each term from List B, page 109.

SENIOR YEAR.

Chemistry 407 ..... Quantitative Analysis	1	3	Chemistry 408 ..... Technical Analysis	1	3
Economics 403 ..... Fundamental Principles	3	0	English 402 ..... Public Speaking	1	0
English 401 ..... Public Speaking	1	0	Textile Engineering 402..... Yarn Manufacture	3	4
Textile Engineering 401..... Yarn Manufacture	0	2	Textile Engineering 404..... Fabric Analysis	1	0
Textile Engineering 405..... Sizing	3	0	Textile Engineering 408..... Weaving	0	4
Textile Engineering 407..... Weaving	3	2	Textile Engineering 410..... Mill Management	3	0
Textile Engineering 413..... Cotton Classing	1	2	Textile Engineering 412..... Magazine Review	1	0
Textile Engineering 415..... Fabric Design	0	3	Textile Engineering 416..... Fabric Design	0	3
	12	12		10	14

And one subjct each term from List C, page 109.

LIST B.

Junior electives common to all engineering courses.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
English 321 ..... Literature	3	0	English 322 ..... Literature	3	0
History 307 ..... Europe since 1815	3	0	History 308 ..... Industrial History	3	0
Military Sc. 301, 303, or 315.	3		Military Sc. 302, 304, or 306.	3	
Mod. Language 311, 313, or 315 French, German, or Spanish	3	0	Mod. Language 312, 314, 316. French, German, or Spanish	3	0

LIST C.

Senior electives common to all engineering courses.

English 403 ..... Public Speaking	3	0	English 404 ..... Public Speaking	3	0
Military Sc. 401, 403, or 405.	3		Military Sc. 402, 404, or 406.	3	
Mod. Language 421, 423, 425. French, German, or Spanish	3	0	Mod. Language 422, 424, 426. French, German, or Spanish	3	0

XIII.—FOUR-YEAR COURSE IN INDUSTRIAL EDUCATION.

FRESHMAN YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Chemistry 101 ..... Inorganic	3	3	Chemistry 102 ..... Inorganic	3	3
Drawing 113 ..... Descriptive Geometry	2	3	Drawing 114 ..... Descriptive Geometry	2	3
Drawing 105 ..... Freehand	0	1	Drawing 106 ..... Freehand	0	1
English 103 ..... Rhetoric and Composition	3	0	English 104 ..... Rhetoric and Composition	3	0
Mathematics 101 ..... Algebra	3	0	Mathematics 102 ..... Algebra	3	0
Mathematics 103 ..... Trigonometry	3	0	Mathematics 104 ..... Analytics	3	0
Mechanical Engineering 101.. Elementary Mechanics	1	0	Mechanical Engineering 102.. Elementary Mechanics	1	0
Mechanical Engineering 103.. Woodwork	0	3	Mechanical Engineering 104.. Forging	0	3
Military Science 101.....	1		Military Science 102.....	1	
	16	10		16	10

SOPHOMORE YEAR.

Chemical Engineering 201.... Industrial Chemistry	3	0	Architecture 206 ..... Carpentry	2	0
Drawing 201 ..... Mechanical	0	3	Chemical Engineering 208.... Metallurgy	2	0
Drawing 203 ..... Color Harmony and Design	1	2	Drawing 202 ..... Mechanical	0	3
English 201 ..... Literature	2	0	English 202 ..... Literature	2	0
English 203 ..... Composition	1	0	English 204 ..... Composition	1	0
Mathematics 203 ..... Calculus	4	0	Mathematics 204 ..... Calculus	4	0
Mechanical Engineering 201.. Pat. Making and Foundry Work	0	3	Mechanical Engineering 202.. Pat. Making and Foundry Work	0	3
Military Science 201.....	1		Military Science 202.....	1	
Physics 203 ..... General	3	3	Physics 204 ..... General	3	3
	15	11		15	9

JUNIOR YEAR.

Agricultural Education 301.. Educational Psychology	3	0	Agricultural Education 306.. Methods of Teaching Ind. Edu.	3	0
History 305 ..... Citizenship	3	0	Agricultural Engineering 312. Automobile and Motor Trucks	2	4
Mechanical Engineering 309.. Machine Shop Work	0	3	Electrical Engineering 312... Motors, Wiring and Lighting	3	0
Mechanical Engineering 311.. Carpentry and Cabinet Making	0	3	History 308 ..... Industrial History	3	0
Elective 11			Mechanical Engineering 310.. Machine Shop Work	0	3
			Elective 6		
	17	6		17	7

SENIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Agricultural Education 405	3	0	Agricultural Education 416	3	0
Vocational Education			Adm. and Sup. of Ind. Edu.		
Agricultural Education 413	3	0	English 402	1	0
Related Subjects			Public Speaking		
English 401	1	0	*Elective	16	
Public Speaking					
*Elective	13				
	20	0		20	0

*Three hours credit in supervised teaching of Industrial Education is required for graduation. Elective work to be approved by the Professor of Industrial Education.

COURSE IN CHEMICAL ENGINEERING.

(Leading to the Degree of Chemical Engineer.)

FIFTH YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Chemical Engineering 503 — Adv. Ind. Chemistry	2	12	Chemical Engineering 504 — Adv. Ind. Chemistry	2	12
Chemical Engineering 505 — Rarer Elements	2	4	Chemical Engineering 506 — Chemical Preparations	2	4
Elective	6	0	Elective	6	0
Thesis	3		Thesis	3	
	13	16		13	16

COURSE IN CIVIL ENGINEERING.

(Leading to the Degree of Civil Engineer.)

FIFTH YEAR.

Civil Engineering 501 — Least Squares	2	0	Civil Engineering 502 — Geodesy	2	0
Civil Engineering 503 — Water Powers	2	0	Civil Engineering 504 — Astronomy	2	0
Civil Engineering 505 — Sanitary Science	2	0	Civil Engineering 506 — Reclamation Engineering	2	0
Civil Engineering 507 — Advanced Bridge Analysis	3	4	Civil Engineering 508 — Higher Structures	2	6
Civil Engineering 509 — General Civil Engineering	2	4	Civil Engineering 510 — General Civil Engineering	3	2
Civil Engineering 511 — Thesis	1	4	Civil Engineering 512 — Thesis	1	4
Elective	3	0	Elective	3	0
	15	12		15	12

COURSE IN ELECTRICAL ENGINEERING.

(Leading to the Degree of Electrical Engineer.)

FIFTH YEAR.

Electrical Engineering 501 — Advanced Alternatingv Currents	3	0	Electrical Engineering 502 — Advanced Alternatingv Currents	3	0
Electrical Engineering 503 — Electrical Machine Design	3	0	Electrical Engineering 504 — Power Plant Design	3	0
Electrical Engineering 505 — General Electrical Engineering	3	0	Electrical Engineering 506 — General Electrical Engineering	3	0
Electrical Engineering 507 — Laboratory	0	8	Electrical Engineering 508 — Laboratory	0	8
Elective	6		Elective	6	
Thesis	2		Thesis	2	
	17	8		17	8

COURSE IN MECHANICAL ENGINEERING.

(Leading to the Degree of Mechanical Engineer.)

FIFTH YEAR

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Mathematics 501 Calculus	4	0	Mathematics 502 Differential Equations	4	0
Mechanical Engineering 501 General Mech. Engineering	2	4	Mechanical Engineering 502 General Mech. Engineering	2	4
Mechanical Engineering 503 Power Plants	3	0	Mechanical Engineering 504 Power Plants	3	0
Mechanical Engineering 509 Thesis	1	6	Mechanical Engineering 510 Thesis	1	6
Elective	5		Elective	5	
	15	10		15	10

XIV.—TWO-YEAR COURSE IN INDUSTRIAL EDUCATION.

FRESHMAN YEAR.

Agricultural Education 101 Educational Psychology	3	0	Agricultural Education 102 Methods of Teaching Ind. Edu.	3	0
Chemistry 101 Inorganic	3	3	Architecture 106 Carpentry	2	0
Drawing 101 Mechanical	0	3	Chemistry 102 Inorganic	3	3
Drawing 107 Freehand	0	2	Drawing 102 Mechanical	0	3
English 103 Rhetoric and Composition	3	0	English 104 Rhetoric and Composition	3	0
Mathematics 101 Algebra	3	0	Mathematics 106 Trigonometry	3	0
Mechanical Engineering 101 Elementary Mechanics	1	0	Mechanical Engineering 104 Forging	0	3
Mechanical Engineering 103 Woodwork	0	3	Mechanical Engineering 102 Elementary Mechanics	1	0
Military Science 101	1		Military Science 102	1	
	14	11		16	9

SOPHOMORE YEAR.

Agricultural Education 205 Vocational Education	3	0	Agricultural Education 202 Adm. and Super. of Ind. Edu.	3	0
Agricultural Education 203 Related Subjects	3	0	Agricultural Engineering 212 Automobiles and Motor Trucks	2	4
Agricultural Education 201 Supervised Teaching	3	0	Drawing 202 Mechanical	0	3
Drawing 201 Mechanical	0	3	Electrical Engineering 206 Motors, Wiring and Lighting	3	0
Mechanical Engineering 201 Pat. Making and Foundry Work	0	3	Mechanical Engineering 202 Pat. Making and Foundry Work.	0	3
Mechanical Engineering 215 Machine Shop	0	3	Mechanical Engineering 216 Machine Shop	0	3
Mechanical Engineering 211 Carpentry and Cabinet Making	0	3	Military Science 202	1	
Military Science 201	1		Physics 204 General	3	3
Physics 203 General	3	3			
	13	15		12	16

H.—TWO-YEAR COURSE IN TEXTILE ENGINEERING.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Drawing 11 ..... Mechanical	0	3	Drawing 12 ..... Mechanical	0	3
Drawing 13 ..... Freehand	0	1	Drawing 14 ..... Freehand	0	1
English 31 ..... Practical Composition	3	0	English 32 ..... Practical Composition	3	0
Mechanical Engineering 21.. Power and Heat	4	0	Mechanical Engineering 22... Power and Heat	4	0
Mechanical Engineering 25.. Forging	0	4	Mechanical Engineering 26... Woodwork	0	4
Military Science 11.....	1		Military Science 12.....	1	
Physics 11 ..... Elementary	2	2	Physics 12 ..... Elementary	2	2
Textile Engineering 11..... Designing	0	3	Textile Engineering 12..... Designing	0	3
Textile Engineering 13..... Yarn Manufacture	4	3	Textile Engineering 16..... Weaving	3	3
	14	16		13	16

SECOND YEAR.

Chemistry 51 ..... Practical Chemistry	3	2	Chemistry 54 ..... Dyeing	2	2
Mechanical Engineering 71... Machine Shop Practice	0	3	Mechanical Engineering 72... Machine Shop Practice	0	3
Mechanical Engineering 75... Engines and Boilers	4	0	Mechanical Engineering 76... Engines and Boilers	4	0
Military Science 51.....	1		Military Science 52.....	1	
Textile Engineering 51..... Yarn Manufacture	3	2	Textile Engineering 52..... Yarn Manufacture	3	4
Textile Engineering 53..... Designing	0	3	Textile Engineering 54..... Designing	0	3
Textile Engineering 55..... Weaving	3	2	Textile Engineering 56..... Weaving	3	4
Textile Engineering 61..... Cotton Classing	1	2	Textile Engineering 58..... Fabric Analysis	1	0
	15	14		14	16

N.—TWO-YEAR COURSE IN ENGINEERING.

FIRST YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Drawing 11 ..... Mechanical	0	3	Drawing 12 ..... Mechanical	0	3
Drawing 13 ..... Freehand	0	1	Drawing 14 ..... Freehand	0	1
Electrical Engineering 21.... Elementary Electricity	4	4	Electrical Engineering 22.... Elementary Electricity	4	4
English 31 ..... Practical Composition	3	0	English 32 ..... Practical Composition	3	0
Mechanical Engineering 21... Power and Heat	4	0	Mechanical Engineering 22... Power and Heat	4	0
Mechanical Engineering 25... Forging and Woodwork	0	4	Mechanical Engineering 26... Forging and Woodwork	0	4
Military Science 11.....	1		Military Science 12.....	1	
Physics 11 ..... Elementary	2	2	Physics 12 ..... Elementary	2	2
	14	14		14	14

SECOND YEAR.

Electrical Engineering 55.... Alternating Currents	5	4	Electrical Engineering 56.... Electrical Machinery	5	4
Mechanical Engineering 75... Engines and Boilers	4	0	Mechanical Engineering 76... Engines and Boilers	4	0
Mechanical Engineering 63... Engineering Laboratory	0	3	Mechanical Engineering 64... Engineering Laboratory	0	3
Military Science 51.....	1		Military Science 52.....	1	
	10	7		10	7

And one of the following groups:

GROUP 1.

Electrical Engineering 65.... Applied Electricity	3	0	Electrical Engineering 66.... Applied Electricity	3	0
Electrical Engineering 61.... Electrical Laboratory	0	4	Electrical Engineering 62.... Electrical Laboratory	0	4
Mechanical Engineering 61... Machine Shop	0	3	Mechanical Engineering 62... Machine Shop	0	3

GROUP 2.

Mechanical Engineering 65... Shop Methods	3	2	Mechanical Engineering 66... Shop Methods	3	2
Mechanical Engineering 71... Foundry and Machine Shop	0	5	Mechanical Engineering 72... Foundry and Machine Shop	0	5

XI.—COURSE IN VETERINARY MEDICINE.

FRESHMAN YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Biology 101 ..... General Botany	2	4	Biology 102 ..... General Botany	2	4
Chemistry 101 ..... Inorganic	3	3	Chemistry 102 ..... Inorganic	3	3
English 103 ..... Rhetoric and Composition	3	0	English 104 ..... Rhetoric and Composition	3	0
Military Science 101.....	1		Military Science 102.....	1	
Physics 101 ..... Principles of Physics	2	2	Physics 102 ..... Principles of Physics	2	2
Vet. Anatomy 111.....	2	6	Vet. Anatomy 112.....	2	4
Vet. Phys. and Pharm. 121... Physiology	3	2	Vet. Phys. and Pharm. 122... Physiology	3	2
	16	17		16	15

SOPHOMORE YEAR.

Biology 201 ..... Zoology	1	4	Animal Husbandry 204..... Judging	2	4
Biology 209 ..... General Bacteriology	2	4	Biology 202 ..... Zoology	1	4
English 203 ..... Composition	1	0	Chemistry 206 ..... Organic	3	2
Entomology 203 ..... Veterinary Entomology	3	2	English 204 ..... Composition	1	0
Military Science 201.....	1		Military Science 202.....	1	
Vet. Anatomy 201..... Anat. and Phys. of Dom. An.	3	6	Vet. Anatomy 202..... Histology and Embryology	3	4
Vet. Phys. and Pharm. 231... Inorganic Drugs	3	0	Vet. Pathology 242..... General	3	2
	14	16		14	16

JUNIOR YEAR.

Dairy Husbandry 301..... Technology of Milk	2	0	Animal Husbandry 302..... Animal Breeding	2	2
English 301 ..... Argumentation	1	0	English 302 ..... Argumentation	1	0
Vet. Medicine and Surgery 371 Clinic	0	7	Vet Medicine and Surgery 372 Clinic	0	12
Vet. Medicine 351..... Non-infectious Diseases	3	0	Vet. Medicine 352..... Non-infectious Diseases	3	0
*Modern Language 311 or 313. French or German	3	0	*Modern Language 312 or 314. French or German	3	0
Vet. Pathology 341..... Special	2	2	Vet. Pathology 342..... Special	2	2
Vet. Pathology 343..... Special Bacteriology	2	2	Vet. Pathology 344..... Special Bacteriology	2	2
Vet. Pharmacology 331..... Organic Drugs	3	4	Vet. Surgery 362..... General	3	0
Vet. Surgery 361..... General	3	0			
	19	15		16	18

*Or Military Science 301, 302 for members of the R. O. T. C.

SENIOR YEAR.

First Term.	Hours per week. Th.	Pr.	Second Term.	Hours per week. Th.	Pr.
Animal Husbandry 401 Animal Nutrition	3	2	English 402 Public Speaking	1	0
English 401 Public Speaking	1	0	Vet. Medicine and Surgery 472 Clinic	0	7
Vet. Medicine 453 Infectious Diseases	3	0	Vet. Medicine 452 Prac. of Med. and Jurisprudence	3	0
Vet. Medicine and Surgery 471 Clinic	0	7	*Modern Language 422 or 424 French or German	3	0
Vet. Medicine 451 Diseases of Small Animals and Fowls	3	0	Vet. Pathology 444 Laboratory Diagnosis	0	4
*Modern Language 421 or 423 French or German	3	0	Vet. Pathology 442 Meat Hygiene	2	2
Vet. Pathology 441 Serum Therapy	0	4	Vet. Pharmacology 432 Toxicology	1	2
Vet. Surgery 461 Obstetrics	2	0	Vet. Surgery 462 Operative	3	4
	15	13		13	19

*Members of the R. O. T. C. will substitute Military Science 401 or 402 for one starred subject each term.

COURSES OF INSTRUCTION BY DEPARTMENTS.

The courses of instruction are described on the following pages under the department in which they are offered. Courses from 101 to 199 are for Freshmen, 201 to 299 for Sophomores, 301 to 399 for Juniors, 401 to 499 for Seniors, 501 to 599 for graduate students; 1 to 49 for first-year students in short courses; 51 to 99 for second-year students in short courses. First-term courses are given odd numbers, second-term courses, even numbers.

The figures in parentheses following the name of a course indicate the number of hours per week, theory and practice, respectively, devoted to the course.

For convenience of reference, the departments are listed here in alphabetical order:

	Page.
Agricultural Education	119
Agricultural Engineering	124
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Chemistry and Chemical Engineering	142
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Electrical Engineering	162
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DEPARTMENT OF AGRICULTURAL EDUCATION.

PROFESSOR HAYES, ASSOCIATE PROFESSORS BROYLES, FIELDS, MERTEN, KRAFT.

Under the laws of Texas, there are two kinds of teachers' certificates for which graduates of this College are eligible. A First Grade State Certificate, good for four years, may be granted to any student who has completed four "full courses" (equivalent to twenty-four term-hours) of Arts and Science work, and one "full course" (equivalent to six term-hours) of Education. A Permanent State Certificate may be given to a graduate of the College who has completed four "full courses" (equivalent to twenty-four term-hours) in Education, or who has had three years of teaching experience. All courses offered by this Department are regarded by the Superintendent of Public Instruction as courses in "Education" under the meaning of the law.

The State Department of Education has announced that it will grant a Permanent State Certificate for teaching vocational agriculture under the provisions of the Smith-Hughes Act to those who complete the four-year Course in Agricultural Education, or to those who graduate from the Agricultural Education group in the regular four-year Course in Agriculture, provided they meet the requirement of three term-hours' credit in teaching vocational secondary agriculture.

101. Educational Psychology. (*3-0*).
Same as course 310.
(Required in XIV).

102. Methods of Teaching Industrial Education. (*3-0*).
Same as course 306.
(Required in XIV).

201. Supervised Teaching. (*3-0*).
Same as course 409.
(Required in XIV).

202. Administration and Supervision of Industrial Education. (*3-0*).
Same as course 416.
(Required in XIV).

203. Related Subjects. (*3-0*).
Same as course 413.
(Required in XIV).

205. Vocational Education. (*3-0*).
Same as course 405.
(Required in XIV).

301. Educational Psychology. (*3-0*).
This is a beginning course in Psychology with special emphasis on its application to the problems of teaching. Stress will be placed upon

instinct, habit formation, memory, attention, and the psychological principles of industrial subjects in the curriculum. The principles of adolescence form an interesting chapter. The text is supplemented to a large extent by the use of lectures and references.

Text: The Mind and Its Education, Betts.

(Required in I, group 2; XII; XIII).

302. Methods of Teaching. (*3-0*).

The fundamental principles of the aims and methods of the recitation are considered with their application to the conditions of the high school. Lesson plans and practice teaching in agriculture and other kindred subjects form an interesting and important part of the course.

Text: Methods of Teaching in High Schools, Parker.

(Required in I, group 2; XII).

303. School Administration. (*3-0*).

This course deals with the organization and management of State, county and city school systems; the qualifications, duties and relations of school boards, superintendents, principals and teachers; school finances; school architecture and equipment; school curricula; formation, enlargement, and consolidation of school districts; certification of teachers; and the interpretation and application of the Texas School Law. The course is intended to give a general view of the educative systems of the State and of the nation.

Text: Administration of Public Education in the United States, Dutton & Sneeden.

(Elective in I, group 2; XII, XIII).

304. High School Problems. (*3-0*).

A study of the relation of the high school to elementary school, college and community, reorganization of the curriculum with special attention to vocational subjects: equipment, discipline; daily schedules; records; and high school activities are included in this course. The course is a detailed study of the administration of high schools, and is intended for those who are preparing to become teachers or principals of high schools.

Text: Principles of Secondary Education, Monroe.

(Elective in I, group 2; XII, XIII).

306. Methods of Teaching Industrial Education. (*3-0*).

This course deals with the relation of the instructor to production; methods of analyzing a vocation into lessons and arranging these lessons in instructional order; analyzing the operation, trade knowledge and teaching points in a lesson; methods of instruction; line of approach; lesson planning; effect of surroundings and materials upon instructional conditions; interest factors; planning short unit course in shop and related work.

Text: The Instructor, The Man, and The Job, Allen.

(Required in XIII).

401. Methods of Teaching. (*3-0*).

Same as course 302.

(Elective in I, groups 4, 5, 7, 8, 9, 10.)

402. Administration of High School Agriculture. (*2-2*).

This course is a study of the specific problems that confront the teacher carrying on the work of the department of Agriculture in the high school. Among the topics discussed are: The selection of subject-matter suited to local conditions; agriculture in the curriculum; laboratory, field and home exercises; visual instruction; supervision of home projects; laboratory and library equipment; use and management of school farm; and community or extension work. The laboratory period will be used for the preparation of teaching material, and for working out individual assignments connected with the work.

Text: Materials and Methods in High School Agriculture, Hummel.

(Required in I, group 2; XII; elective in I, groups 4, 5, 7, 9, 10.)

403. Rural Education. (*3-0*).

The primary purpose of this course is to make a study of rural education in its broad sense, with a view of preparing teachers and extension workers for more efficient service in rural communities. Some of the topics discussed are: Changes in rural education and the rural home, together with the factors affecting such changes; the school as a community center; other agencies to be co-ordinated; community play and recreation; and the redirected rural school.

Text: Rural Life and Education, Cubberley.

(Elective in I, group 2; XII).

404. Agricultural Extension and Demonstration. (*3-0*).

This course is intended to give a survey of the whole field of extension in agriculture and home economics, and to give practice that will prepare for actual field work. Among the topics discussed are: Evolution of extension in agriculture and home economics; general organization for extension; methods of extension; farm demonstration work; junior agricultural clubs; extension by experts; extension by railroads and commercial companies; and the training of extension workers. Agricultural Education 301, 302, and 403 are important to give preparation for this course, but they are not prerequisite. Lectures, assigned readings, and problems constitute the work of this course.

(Elective in I, group 2; XII).

405. Vocational Education. (*3-0*).

The purpose of this course is to give a clear understanding of the growth and importance of trade industrial and agricultural instruction, and to develop sympathy and enthusiasm for the introduction of vocational training in the public school. The history of the movement is traced; vocational guidance in the high school is considered carefully; various types of vocational schools are examined to discover their methods and content of subject-matter; and study is made of the nature and scope of vocational work carried on under the provisions of the Smith-Hughes Act.

(Required in I, group 2; XII, XIII).

409. Supervised Teaching. (*3-0*).

The purpose of this course is to give opportunity for students to get actual experience in teaching secondary agriculture under supervision. Lesson plans must be submitted by the student and approved by critic teacher in advance of the lesson. The teaching methods and results of the student will be discussed in special conferences. Provision will be made for classes on the campus and at nearby high schools. Application for this course should be made at least three months in advance.

(Elective in I, group 2; required in XII).

410. Supervised Teaching. (*3-0*).

This course may be considered the same as 409, of as a continuation of 409.

411. Supervised Teaching. (*3-0*).

This course gives students an opportunity to get actual experience in teaching industrial education under supervision. Lesson plans are submitted for approval in advance of the lesson. Conference periods are held for discussion of methods used and results obtained. Application for this course should be made at least three months in advance.

(Required in XIII).

412. Supervised Teaching. (*3-0*).

This course may be considered the same as 411, or as a continuation of 411.

413. Related Subjects. (*3-0*).

This course deals with the problem of determining what related subjects should be taught in connection with the different short unit industrial courses. A discussion will be made of the content of such related subjects as mathematics, physics, drawing, chemistry, history, etc.

(Required in XIII).

414. Vocational Guidance. (*3-0*).

This course is devoted to a study of the methods, problems and administration of vocational guidance. The course will include a discussion of vocational guidance surveys and literature, supervision, analysis, possibilities of vocational guidance in regular school work, means of discovering vocational aptitudes, work of vocational counselors, and vocational bureaus.

(Elective in XII, XIII).

416. Administration and Supervision of Industrial Education. (*3-0*).

This course deals with the various problems encountered in introducing industrial education into a school system and in developing the work in its varied forms. Among the topics discussed are: The place of industrial education in the elementary school; the relation of industrial education to fine arts, nature study, geography, and arithmetic; organization of courses of study for high schools, technical schools,

trade schools, and corporation schools; safety first; plans and equipment; selection of teachers; improvement of teachers in service; formulating programs; selection of text-books; classroom management.
(Required in XIII).

FOR GRADUATES.

501, 502. Agricultural Instruction. (*3-0*).

This course will include a study of the content of the agricultural course in the high school, the supervision of home project work, the community work of the agricultural teacher, methods of teaching agriculture, visual instruction, and the administration of vocational agriculture.

503, 504. Agricultural Extension and Demonstration. (*3-0*).

This course will include the history of the extension movement, the administration of co-operative extension and demonstration in agriculture and home economics as carried on under the Smith-Lever Act, and the methods and scope of extension. The student will be expected to do some extension work as a part of the course.

505, 506. Organization and Management of Teacher-Training Departments. (*3-0*).

The purpose of this course is to train men for positions in departments of agricultural education. Among the topics to be considered are: The making of the curriculum for training teachers of vocational agriculture, the number and content of courses to be offered by the department of agricultural education, nature and importance of visual instruction, methods of conducting supervised teaching, and improvement of teachers in service.

507, 508. Direction and Supervision of Vocational Agriculture. (*3-0*).

The purpose of this course is to train men for positions of State directors or supervisors of vocational agriculture. Among the topics to be discussed are: The history of vocational agriculture, the Smith-Hughes Act, agriculture in the high school curriculum, content of courses in agriculture, text-books and library, laboratory equipment, supervised home projects, records and reports, relation between supervisor and itinerant teacher, and improvement of teachers in service.

DEPARTMENT OF AGRICULTURAL ENGINEERING.

PROFESSOR ANDREE, MR. BOSQUE, MR. WHITLEY, MR. M. M. JONES, MR. BALDWIN.

201. Farm Machinery. (*1-4*).

The practical study of all lines of farm machinery, tilling, seeding, cultivating, harvesting and fertilizing machinery.

Laboratory practice to consist of detailed study of the construction, adjustment, calibration and operation of all lines of farm machinery. Demonstrations and tests to be made under field conditions.

(Required in XII).

212. Automobiles and Motor Trucks. (*2-4*).

Same as course 402.

(Required in XIV).

301. Farm Machinery. (*1-4*).

Same as course 201.

(Required in I, group 3; elective in all other groups).

302. Repair of Farm Machinery. (*1-4*).

The practical method of repair, upkeep, and care of all kinds of farm machinery. The design and equipment of the farm power plant and shop.

Laboratory practice consists of overhauling, repairing and painting of the College farm machinery, and the use of repair catalogues, babbit-solder, simple wood and iron working tools.

Prerequisite: Agricultural Engineering 301.

(Required in I, group 3).

303. Farm Buildings. (*2-4*).

The study of building materials, design and construction of farm buildings, and building location. Ventilation, lighting, heating, water supply, plumbing, sewage disposal will be studied briefly in their relation to rural conditions.

Text: Farm Buildings, Eckblaw.

Practice in the care and use of drawing instruments. Complete working drawings, with tracings and blue prints of some farm building will be made.

(Required in I, group 3).

304. Drainage. (*2-2*).

A study of the principles of farm drainage with both open ditches and tile drains; the design and location of drainage systems, including silt traps, catch basins, and outlet bulkheads. The Texas drainage district law will be studied briefly.

Text: Land Drainage, Elliott.

Practice to consist of laying out a complete drainage system with necessary profiles, maps and cost estimates.

Prerequisite: Civil Engineering 319.

(Required in I, group 3; elective in all other groups).

306. Farm Motors. (*2-4*).

The practical study of the tractor, the farm gas and steam engine, their use, care and repair.

Laboratory practice will consist of the operation, care and repair of different types of farm gas and steam engines. Brake horse power, and fuel economy tests will be run by the students.

(Required in I, group 3; elective in all other groups).

309. Farm Concrete. (*1-4*).

A study of the use of concrete on the farm.

Practice to consist of the design and construction of molds and forms, methods of reinforcing, and proportions of mixture to be used in various farm buildings and equipment.

Text: Concrete Construction for Rural Communities, Seaton.

(Required in I, group 3).

312. Automobiles and Motor Trucks. (*2-4*).

Same as course 402.

(Required in XIII).

315. Farm Shop. (*1-6*).

This course is especially designed for those intending to teach agricultural engineering in vocational high schools. The work will include such subjects as are usually taught in vocational high schools, and will include soldering, tinning, erection of line shafting, belt lacing, power transmission, pipe fitting, gas engines, fundamental principles in the care and operation of farm machinery and sufficient forging to enable the student to make ordinary farm repairs.

(Elective in I, group 2).

401. Traction Engines. (*1-4*).

The practical study of the care, operation, and handling of both steam and gas tractors.

Laboratory practice to consist of the practical operation of tractors, making brake and drawbar tests when operating under field conditions; fuel economy tests will also be made.

Prerequisite: Agricultural Engineering 306.

(Required in I, group 3; elective in all other groups).

402. Automobiles and Motor Trucks. (*2-4*).

The study of the construction, care, repair and operation of the gasoline automobile.

Text: The Gasoline Automobile, Hobbs and Elliott.

Practice to consist of tire repair, valve grinding, care of electric equipment, and general repair of the automobile and motor truck.

Prerequisite: Agricultural Engineering 306.

(Required in I, group 3).

403. Irrigation. (*2-2*).

A study of the principles of irrigation practice, source of water supply and methods of application to various crops, the measurement and duty of water. Special attention will be given to pump irrigation.

Practice to consist of reports on bulletins and important irrigation investigations, also the laying out of ditches and irrigation systems.

Text: Irrigation Practice, Widtsoe.

Prerequisite: Civil Engineering 319.

(Elective in I, group 3).

404. Experimental Agricultural Engineering. (*0-6*).

A course for advanced undergraduates who are especially interested in solving some agricultural engineering problem.

(Elective in I, group 3).

406. Farm Motors. (*2-4*).

Same as course 306.

(Required in I, group 2).

408. Terracing. (*0-4*).

Practice in differential and profile leveling, use of precise and home-made levels in location of terraces, adjustment of levels, construction of the broad terrace and the soil saving dam. Trips will be made to terraced fields, and one or more lectures illustrated with slides will be given.

(Required in I, group 3).

411. Farm Machinery. (*1-4*).

Same as course 301.

(Required in I, group 2).

FOR STUDENTS IN SHORT COURSES.

25. Farm Machinery. (*1-4*).

This is a practical course designed for students who wish to perfect themselves in the operation and care of all types of farm machinery.

Laboratory practice will consist of a detailed study of the construction, design and calibration and the operation of tilling, cultivating and harvesting machinery. Such other machinery as ensilage cutters, terracing machines, hay baling, etc., will also be studied.

(Required in M).

26. Farm Motors. (*2-4*).

This course lays the foundation for the study of power farming. The student is not only taught the care, repair and operation of many different types of gasoline engines, but he is also given such information as will enable him to purchase power machinery intelligently. Some time is devoted to the study of farm lighting plants and other equipment of importance for farm homes.

(Required in M).

27. Farm Concrete. (*1-4*).

This course deals with the mixing and placing of concrete and with the arrangement of the various concrete structures ordinarily used on the farm. The student will be required to construct fence posts, floors, a small section of sidewalk, and a section of a monolithic silo.

(Required in M).

55. Irrigation and Drainage. (*1-4*).

A study of the principles of drainage and irrigation and the methods of handling drainage and irrigation water.

Text: Agricultural Engineering, Davidson.

Practice in the use of surveying instruments in farm surveying and in laying out drainage and irrigation systems.

(Required in M; elective in C).

56. Repairing Farm Machinery. (*1-4*).

Instruction is given in the use of trade catalogues. Practice is given on the repair of machinery for which repair parts can no longer be purchased. The operation and lubrication of farm machines will also be studied.

(Required in M).

57. Farm Buildings. (*2-4*).

The study of the proper arrangement, design and construction of various types of farm buildings. The lectures cover ventilation, lighting, water supply, sewage disposal and plumbing. Practice includes the use of drawing instruments, reading of blue prints and plans, and the actual designing of a number of simple farm structures. The object of this work is to enable the student to use blue prints, plans and specifications.

(Required in M).

58. Automobiles. (*2-4*).

In this course the student is permitted to dissemble and to assemble a number of automobiles and to study under the guidance of the instructor the causes of various troubles together with their prevention and remedies. Since the motor truck is becoming a very important factor on the farm the student will be taught how to load and drive trucks under conditions of varying difficulty.

(Required in M).

59. Tractors. (*1-4*).

This course is a continuation of course 26, and includes such work as plowing, discing, harrowing, road grading, cutting ensilage, baling hay, and other farm work with tractors.

Prerequisite: Agricultural Engineering 26.

(Required in M).

60. Advanced Testing. (*0-4*).

In this course the student will have the opportunity to investigate some problem of agricultural engineering value, such as the comparative cose of gasoline and kerosene as fuel for tractor plowing. Problems of an entirely different nature may be undertaken, such as investigations of water supply, or lighting systems for Texas farms.

61. Farm Concrete. (*1-4*).

Same as course 27.

(Elective in C).

66. Farm Motors. (*2-4*).

Same as course 26.

(Elective in C).

DEPARTMENT OF AGRONOMY.

PROFESSOR MORGAN, PROFESSOR MCMILLAN, ASSOCIATE PROFESSOR C. A. WOOD, MR. SUTTLE.

101. Crop Production. (*3-2*).

This course gives the student an elementary knowledge of the best practices involved in the production of field crops, including seed selection, the preparation of the seed bed, cultivation, etc. Crop rotation and its value is discussed in an elementary way.

Text: Field Crop Production, Livingston.

The practice work in this course comprises an elementary study of the different farm crops, both in the laboratory and field, noting particularly those points that constitute ideal seed plants. When opportunity permits, the improved practices involved in crop production will be studied in the field.

(Required in I, XII).

301. Soils. (*4-2*).

This course gives the student a rather comprehensive knowledge of the soil and its management. It is given according to the following outline:

(a) The soil as a medium for root development, including a study of rock and its products; the soil mass, together with the physical properties of the soil and their modification; the organic content of the soil.

(b) The soil as a reservoir for water, including the functions of water in plant growth; the amount of water in the soil; the movement of soil water, and the control of soil water.

(c) Plant nutrients in the soil, including a careful study of both micro-organisms and macro-organisms, as they influence soil productiveness.

(d) The soil air; composition and functions of.

(e) The heat of the soil; comprising a study of the sources, functions and means of modifying soil temperature.

(f) External factors in soil management; tillage, crop adaptation, etc.

Text: Soils, Lyon, Fippin, and Buckman.

In the laboratory the student applies the principles learned in the class room to the actual management of soils.

Prerequisite: Chemistry 101, 102.

(Required in I, XII).

302. Farm Crops. (*4-2*).

In this course, all the leading field crops are studied with regard to structure, composition, races and varieties, breeding or improvement, soils, rotations, fertilizers, together with tillage operations, harvesting and marketing.

Text: Field Crops for the Cotton Belt, Morgan; Forage Plants and Their Culture, Piper.

In the laboratory, field, and greenhouse, the student makes a careful study of the leading characteristics of the different crops; seeds are studied as regards purity, and other points that determine value.

Prerequisite: Agronomy 301; Biology 101, 102.

(Required in I, XII).

305. Genetics. (*2-2*).

This course comprises a fundamental study of the resemblances and differences in individuals related by descent to the end that these relationships may be accounted for.

The important divisions of the work as presented are as follows: variation, including a statistical study of variation; the various phases of Mendelism, including the physical basis of Mendelism, independent Mendelian inheritance, linkage relations in Mendelism, the nature and expression of Mendelian factors, allelomorphic relationships in Mendelism; inheritance of sex and related phenomena; species hybridization; pure lines; mutations.

Text: Genetics in Relation to Agriculture, Babcock and Clausen.

In practice the student will make such studies in the laboratory, greenhouse and field as will give him first-hand acquaintance with the phenomena of variation and heredity.

Prerequisite: Biology 101, 102, 201, 202.

(Required in I, groups 4, 5, 7, 9).

306. Plant Breeding. (*2-2*).

This course will deal with the various methods applicable to the improvement of our common field and forage crops. These methods will be considered primarily from the standpoint of their technique and relative value.

In the greenhouse and field laboratory, practice in hybridizing field and forage crops, and also in making field selections, will be given.

Prerequisite: Agronomy 302.

(Required in I, group 4).

402. Farm Management. (*3-4*).

The application of all the principles taught in the various agricultural subjects to the business management of the farm. Farm problems and farm bookkeeping are featured. Different systems of farming are studied with reference to the equipment in land, labor, and capital for each; also crop rotations best suited to the different systems.

Text: Farm Management, Warren.

Practice work comprises a field study of available farms, planning and outlining systems of management best adapted to each. Attention is given to the general layout of farm, size and shape of fields, condition of buildings, ditches, roadways, etc., and the necessary improvements are suggested.

Prerequisite: Agronomy 301, 302; Dairy Husbandry 102; Horticulture 201, 202.

(Required in I, XII).

403. Cost Accounting. (*0-4*).

In this course special attention is given to the analysis of farm inventories, the preparation of work reports, keeping cost accounts with single crop and stock enterprises, and the preparation and analysis of at least two complete sets of farm accounts.

(Required in I, group 4).

405. The Use of Fertilizers and Manures. (*2-2*).

A thorough course dealing with soil requirements as regards fertilizers; methods of determining the fertilizer needs of soils; correct fertilizer practices with reference to the important field crops; lime and its use on the farm; the care, management and use of barnyard manure, the the use of green manure in soil improvement.

The fertilizer requirements of various soils for a number of crops will be determined by pot tests. The secondary effects of fertilizers and manures on soils will be studied in the laboratory. When opportunity permits, field excursions will be taken for the purpose of observing farm practices with fertilizers and manures.

Prerequisite: Agronomy 301.

(Required in I, group 4).

406. Soil Mapping. (*0-3*).

In this course special consideration is given to the methods employed in classifying soils, and the benefits derived from soil survey work.

The students make a field study of the various soil types found in the surrounding locality. This area is surveyed and mapped according to the methods employed by the Bureau of Soils of the United States Department of Agriculture. In this work the student is taught the use of the plane table and map making.

Prerequisite: Agronomy 301.

(Required in I, groups 1, 4).

408. Advanced Soils. (*2-2*).

This course is intended for the student who wishes to make a specialty of soil study. It deals especially with systems of soil management with reference to permanent soil productiveness. Recent literature bearing on the subject is discussed and the results of some of the leading soil investigations studied.

In the soils laboratory special fertility problems will be studied.

Prerequisite: Agronomy 301.

(Required in I, group 1; elective in I, group 4).

FOR GRADUATES.

501, 502. Advanced Farm Crops. (*3-4*).

This course will comprise an advanced study of field crop production and breeding, most attention being given to the recent developments in the field of plant breeding. The student will take up first a study of the principles of genetics. This will be followed by a rather comprehensive study of the recent literature of field crop breeding and crop production. The course of study will be so directed as to cover as

thoroughly as possible the results of the more recent and noteworthy investigations relative to the various phases of crop production and breeding.

505, 506. Advanced Soils. (*3-4*).

This course consists of two parts: (1) a concise account of our present knowledge of the soil as a medium for plant life; (2) a detailed study of the more recent and noteworthy investigations pertaining to soils and soil fertility. Free use is made of such publications as "Soil Conditions and Plant Growth," by E. J. Russell; "Soil Science," "The Journal of Agricultural Research," and "The Journal of American Society of Agronomy."

507, 508. Advanced Farm Management. (*2-4*).

An advanced study of the factors determining farm efficiency based on the business records of selected farms. The farm business will be analyzed by various methods and particular attention will be given to the correlation of factors and the presentation of results.

FOR STUDENTS IN SHORT COURSES.

28. Soils. (*3-2*).

A study of the origin, structure, texture and crop adaptations of agricultural soils. Soil fertility and its maintenance; manures, fertilizers, cover crops, fallowing, fall and spring plowing, crop rotations, diversification and the renovation of worn-out soils will receive attention in their proper order. This course is designed to meet the more practical needs of the two-year student.

Recitations and lectures.

Text: Soils and Fertilizers, Lyon.

Laboratory and field studies on the water-holding capacity of soils, capillarity, the influence of organic matter on the physical properties, lime and its effects, etc.

(Required in C, M).

51. Farm Crops. (*3-2*).

This course will include a rather thorough treatment of all the principal southern field crops, giving special attention to methods of breeding, preparation of the seed bed, cultivating, harvesting and storing.

Text: Southern Field Crops, Duggar.

A laboratory and field study of the various field crops, noting particularly those points that constitute ideal seed plants. When opportunity permits, the improved practices involved in crop production will be studied in the field.

(Required in M; elective in C).

52. Farm Equipment and Management. (*3-2*).

A comprehensive study of the farm from an economic and business standpoint. Such topics as the planning and organizing of the farm with respect to available resources; farm labor; wages; rents and lease syestems; contracts; farm accounts; farm advertising and salesmanship; efficiency; and the principal rural problems will be studied.

Text: Farm Management, Boss.

Students will be required to work out problems consisting of the planning, equipping and managing of a given farm on an ideal plan for a period of several years. Excursions to representative farms, and agricultural surveys will be undertaken as opportunity may permit.

(Elective in C).

DEPARTMENT OF ANIMAL HUSBANDRY.

PROFESSOR BURNS, PROFESSOR MILLER, ASSOCIATE PROFESSORS ROUSE, STANGEL, CONWAY, MR. REGENBRECHT.

The courses in the Department of Animal Husbandry may be grouped under the four main heads

(1) The Judging of Live Stock.
(2) The Breeding of Live Stock.
(3) The Feeding of Live Stock.
(4) The Management of Live Stock.

The courses are as follows:

101. Judging Market Types of Cattle and Sheep. (0-4).

The lectures are explanatory of the various classes and grades of cattle and sheep recognized in the leading stock markets. The points of these and their value to the stockman, the butcher and the consumer are fully discussed. The practice embraces a thorough training in the scoring of fat cattle and fat sheep; supplemented by the study of dressed carcasses as far as possible. In this course lectures are also given on the type and function of the dairy cow and thorough training is given in the scoring of dairy cattle. Comparative judging constitutes an important part of the work.

Text: Types and Market Classes of Live Stock, Vaughn.

(Required in I).

102. Judging Market Types of Horses and Swine. (0-4).

The classes and grades of horses and swine recognized in the leading markets are discussed fully. The distinction of classes, and their importance, is made clear by the further use of the score card. Comparative judging is also an important factor in this course.

(Required in I).

103. Live Stock Production (Beef, Cattle and Sheep). (2-4).

A general course briefly covering the various phases of beef cattle and sheep production, including judging, breeding, care, and management. This course is especially designed to meet the needs of students taking Agricultural Education.

Text: Types and Market Classes of Live Stock, Vaughan.

(Required in XII).

104. Live Stock Production (Hogs and Horses). (2-4).

This is a continuation of course 103, covering hogs and horses.

(Required in XII).

201. Farm Poultry. (*2-2*).

This is a general course on Farm Poultry and treats of the breeds and types of poultry; the principles of breeding and mating of fowls; incubation and brooding; feeding for growth and egg production; winter and summer management; housing and hygiene; sanitation; disease; parasites and their treatment; preparing poultry for market, marketing. It deals with the practical application of these principles to general farm conditions.

Text: Poultry Production, Lippincott.

The practice work consists of the study of breeds and types, incubators and brooders, housing, judging of fancy and utility poultry, candling and grading of eggs and poultry products, killing and dressing poultry.

(Required in I, XII).

202. Judging Breed Types of Horses, Cattle, Sheep and Swine. (*2-2*).

The lectures in this course treat of the origin, history, characteristics and adaptability of the various breeds of live stock. As far as the equipment in live stock will permit, the student is shown by means of representative animals the best types of the breeds of horses, cattle, sheep and swine.

Text: Types and Breeds of Farm Animals, Plumb.

The score cards of the different breed associations are used in determining the merits of the animals, and these are further explained in the lectures. An important part of the practice consists of comparative judging similar to that of the show ring.

Prerequisite: Animal Husbandry 101, 102.

(Required in I).

204. Judging Market and Breed Types of Horses, Cattle, Sheep and Swine. (*2-4*).

This course is offered to students in Veterinary Medicine. The work in both theory and practice is similar to that presented in courses 101, 102 and 202, but less extensive on account of the shorter time given to it.

Text: Judging Farm Animals, Plumb.

(Required in XI).

301. History and Development of Breeds. (*2-2*).

A study of the origin, improvement, adaptability, and characteristics of the important breeds of horses, cattle, sheep and swine. The foundation of the breeds, their subsequent development, and the special breed features and qualities are given full consideration, with the view of acquainting the student with the conditions to which each breed is suited. The text is supplemented by assigned readings.

Text: The Breeds of Live Stock, Gay.

Practice consists of judging representatives of the various breeds, applying the official standards as adopted by the breed associations.

Prerequisite: Animal Husbandry 202.

(Required in I, group 5).

302. Animal Breeding. (*2-2*).

A study of the principles of animal improvement which form the basis of proper selection and mating for the production of pure bred live stock and market animals. The course includes a discussion of the subjects of reproduction, variation, heredity, selection, and the various methods of breeding, which include line breeding, inbreeding, crossing, grading, and other subjects connected with the breeding and improvement of farm animals.

Text: The Breeding of Animals, Mumford.

Practice consists largely of a study of the results obtained with the various breeds comprising the College herds. Training is given in the use of herd books, which involves the tabulation of pedigrees of representatives of the different breeds.

Prerequisite: Animal Husbandry 301; Biology 301.

(Required in I, group 5, 7; XI).

401. Animal Nutrition. (*3-2*).

This subject involves a study of the fundamental principles of live stock feeding, including the composition and digestibility of feeding stuffs, the disposition made of the different feed constituents by the animal organism, and, finally, the methods of calculating rations for the various classes of farm animals,—horses, cattle, sheep, and swine. Students are required to use a text-book and that is supplemented by lectures

Text: Feeds and Feeding, Henry & Morrison.

The practice consists chiefly in calculating rations and in working out problems relating to the economic side of live stock feeding.

Prerequisite: Chemistry 206.

(Required in I, groups 1, 5, 7).

402. Live Stock Feeding. (*3-2*).

This course treats of the practical application of the principles taught under the subject of animal nutrition. It embraces a thorough study of horse, mule, cattle, sheep, and swine feeding investigations, and of the practical feeding operations of the most successful stockmen with special reference to Texas conditions. Lectures supplement the text in the presentation of the course.

Text: Feeds and Feeding, Henry & Morrison.

In the practice, students are required to keep in close touch with all feeding tests that the Experiment Station has in progress, to make abstracts of Experiment Station bulletins relating to live stock feeding tests of this and other stations, and to gain experience in compounding rations for various purposes from limited selections of feeding stuffs.

Prerequisite: Animal Husbandry 401.

(Required in I, group 5).

403. Advanced Judging. (*1-4*).

The lectures of this course treat further of the most approved types of pure-bred animals and of those used for the common market.

Classes of the different kinds of live stock are selected as similar as possible to those which come together in the show rings of exhibitions

and the work of competitive judging among the students is given much prominence.

Prerequisite: Animal Husbandry 302.

(Required in I, group 5).

404. Live Stock Management. (2-2).

The raising of horses, cattle, sheep, and swine, as a business, is discussed in full detail, covering all features of management in production and marketing. The management of stock farms and ranches is fully treated. A study is made of the methods used by some of the most successful stock farmers and ranchers in Texas and other States. Special attention is given to the management of pure-bred herds and flocks and to the keeping of private herd and flock records.

The practice in live stock management consists of actual work in preparing different classes of stock for show and sale. The student is given instruction in trimming sheep, washing and curling the coats of cattle and polishing horns and hoofs. The work on horses consists of grooming, fitting of harness, and decorating manes and tails.

Prerequisite: Animal Husbandry 302; must be accompanied by Animal Husbandry 402.

(Required in I, group 5).

405. Herd Book Study. (0-4).

The first part of the work consists of training in the intelligent use of herd books, involving practice in the tabulation and study of pedigrees of famous animals. This is followed by a study of the blood lines of the breed or breeds of live stock which the student intends to produce, in order to familiarize him with the best strains and individuals of the breed. Practice is also given in the necessary incidentals connected with the registration of animals, such as the rules of entry, application for transfer, etc.

Prerequisite: Animal Husbandry 302.

(Elective in I, group 5).

456 Beef Cattle Production 2-2

407. Poultry Feeding and Management. (2-2).

This course is an application of the principles involved in the management and feeding of fowls for egg production and for fattening. Problems of interest to individual members of the class will receive attention.

Practice will include the management of a pen of chickens by each student for four weeks, keeping detailed records of cost of feed, production, and all operations connected with the work.

Prerequisite: Animal Husbandry 201.

(Elective in I, group 5).

409. Animal Nutrition and Live Stock Feeding. (3-2).

This is a combined course, involving the principles of Animal Nutrition and their practical application. The work is similar to that presented in courses 401 and 402, but less extensive on account of the shorter time given to it. Lectures supplement the text in the presentation of the course.

Text: Feeds and Feeding—Abridged, Henry and Morrison.

The practice consists of calculating rations; studying the results of feeding tests conducted by this and other Experiment Stations; and studying practical feeding operations.

(Required in I, group 4; XII).

4 1/2 Swine Production 2-2

FOR GRADUATES.

501, 502. Advanced Animal Nutrition. (*3-4*).

This course involves a study of the more recent investigations in animal nutrition: methods of investigation as well as results are given consideration. Experiment Station literature, scientific journals, and advanced text-books on nutrition are reviewed by the student, who is required to attend class three hours weekly for lecture, recitation, or conference.

FOR STUDENTS IN SHORT COURSES.

21. Judging Market Types of Horses, Cattle, Sheep and Swine. (*0-6*).

In this course students are given thorough training in scoring and judging market types of horses, cattle, sheep and swine. The points of these and their value to the stockman, the butcher, and the consumer are fully discussed. A study of dressed carcasses is made.

Text: Types and Market Classes of Live Stock, Vaughan.

(Required in C).

22. Judging Breed Types of Horses, Cattle, Sheep and Swine. (*2-2*).

A modification of Animal Husbandry 202.

Text: Types and Breeds of Farm Animals, Plumb.

Prerequisite: Animal Husbandry 21.

(Required in C).

52. The Breeding of Live Stock and the Study of Pedigrees. (*2-2*).

The lectures in this course treat of the principles of breeding and the methods used in the practice of breeding horses, cattle, sheep and swine,—pure-bred animals, as well as those for the common market.

Text: Breeding Farm Animals, Marshall.

The practice consists principally of the study of pedigrees. Students are required to trace out the blood lines of some of the most noted animals of each breed of live stock in order that they may obtain a knowledge of the combinations that have produced the best results.

Prerequisite: Animal Husbandry 22.

(Elective in C).

54. Farm Poultry. (*3-2*).

This is a thoroughly practical course dealing with the proper methods of poultry production under general farm conditions.

Text: Poultry Production, Lippincott.

The practice is practically the same as in course 201.

(Elective in C).

55. Live Stock Feeding. (*2-2*).

This course embraces a study of the feeding of all classes of farm animals, horses, cattle, sheep and swine. The subject of animal nutri-

AH 418 - Poultry Breeding & Judging 2-2

tion, the composition of available feeding stuffs and the calculating of rations, are treated fully.

Text: Feeds and Feeding—Abridged, Henry and Morrison.

The practice consists largely of calculating rations for different classes of farm animals, special attention being given to the study of Texas grown feeding stuffs.

(Elective in C).

56. Live Stock Feeding. (*2-2*).

Same as course 55.

(Required in M).

DEPARTMENT OF ARCHITECTURE.

PROFESSOR LAROCHE, MR. DUNNE.

106. Carpentry. (*2-0*).

Same as course 206.

(Required in XIV).

201. Elements. (*0-12*).

Architectural drawing in line and wash. The classic orders of architecture. Correlation of plan, elevation and section.

Lectures; tracings; library assignments.

Text: American Vignola, Vols. 1 and 2, Ware.

(Required in IX).

202. Elementary Design. (*0-12*).

Simple problems, involving the use of the orders. Rendering in India ink and water colors.

Lectures; tracings; library assignments.

Text: American Vignola, Vols. 1 and 2, Ware.

(Required in IX).

203. Shades, Shadows, Perspective. (*1-0*).

Principles of shades and shadows; their application to architectural subjects. Principles of perspective drawing.

This course is co-ordinated with course 201: its practical application is extended throughout the work in Design.

Text: Shades and Shadows, McGoodwin.

(Required in IX).

206. Carpentry. (*2-0*).

Woods, lumber, framing, finishing, interior and exterior details. Hardware, paints, roofings.

Lectures; tracings, quizzes.

Text: Building Construction, Part II, Kidder.

(Required in IX).

207, 208. History of Architecture. (*2-0*).

Egyptian, Western, Asiatic, Greek, Roman, Early Christian, Byzantine, Romanesque, and Gothic styles.

Written quizzes; tracings; research; lectures.
Text: A History of Architecture, Hamlin.
(Required in IX).

301, 302. Design. (*0-15*).

A series of problems, throughout the year, in architectural design; composition, planning; studies in details; rendering; research.
Prerequisite: Architecture 201, 202.
(Required in IX).

305. Mechanical Equipment. (*2-0*):

Water supply; sanitation; plumbing; specialties; fixtures. Heating and ventilating systems. Designs and layouts.
(Required in IX).

307. Details of Construction. (*2-2*).

A continuation of the work given in course 206. Materials of masonry; their use in buildings; methods and details of construction; cost estimates.
Prerequisite: Architecture 206.
Text: Building Construction, Part I, Kidder.
(Required in IX).

309. History of Architecture. (*2-0*).

Renaissance, Indian, Chinese, Japanese and Saracenic styles. Modern architecture.
Written quizzes; tracings; research; lectures.
Prerequisite: Architecture 207, 208.
Text: A History of Architecture, Hamlin.
(Required in IX).

401, 402. Design. (*0-16*).

This course is a continuation of the work in Architectural Design with more advanced problems in planning, composition and presentation.
Prerequisite: Architecture 301, 302.
(Required in IX, group 1).

403, 404. Structural Design. (*0-16*).

Structural design and details as applied to building construction are studied in wood, steel and concrete. Computations and drawings; foundations and waterproofing.
Prerequisite: Architecture 301, 302; Civil Engineering 302, 305, 308.
Text: Architect's handbooks.
(Required in IX, group 2).

405. Structural Problems. (*2-0*).

Lectures, in co-ordination with course 403, covering principles and methods of solving structural problems. Use of handbooks.
Prerequisite: As for Architecture 403.

Texts: Architects' and Builders' Handbook, Kidder; Cambria Steel Handbook.

(Required in IX, group 2).

406. Special Topics. (*2-0*).

A series of lectures on professional practice; ethics; specifications; superintendence; contracts; housing; development planning and other subjects of special interest.

Reading assignments and reports.

(Required in IX, groups 1, 2).

407. History of Ornament. (*3-0*).

a. An analysis of historic styles of decoration as applied to architecture.

b. A brief study of the history of Scripture.

c. A brief study of the History of Painting.

NOTE.—About one-third of the term given to each subject.

Texts: A History of Ornament, Hamlin; History of Sculpture, Marquand and Frothingham; A History of Painting, Van Dyke.

(Required in IX, groups 1, 2).

DEPARTMENT OF BIOLOGY

PROFESSOR BALL, ASSOCIATE PROFESSORS CASSIDAY, NELSON, ASSISTANT PROFESSOR GOLDSMITH, MR. MCCAULEY.

BOTANY.

101, 102. General Botany. (*2-4*).

The aim of this course is to provide the student who looks forward to entering some field of work in Agriculture with an accurate and thorough knowledge of living plants. The point kept steadily in view is, therefore, physiologic rather than anatomic. The first term begins with an outline of the external and internal form and structure necessary to the more extended study of life processes of plants. In the second term, types of various subdivisions of the plant kingdom are used to illustrate the great fundamental principles of development and adaptation, and to serve as a foundation for later work in classification.

The plan of the laboratory work is based on the inductive principle; the student is trained to acquire facts of development, structure and function by direct observation. Each student is required to keep a note-book in which he records by drawings and notes the results of his work.

Text: Nature and Development of Plants, Curtis.

(Required in I, XII).

303, 304. Plant Physiology. (*2-4*).

An advanced course in physiology is here offered in which the functions of respiration, assimilation and nutrition receive especial attention. The course is designed for those who wish to pursue work of higher character in the field of general agricultural botany and at the

same time to give, in the practical work, an introduction to the methods of research.

Text: Physiology of Plants, McDougal.

Laboratory Manual: Practical Physiology of Plants, Darwin and Acton.

Prerequisite: Biology 101, 102.

(Required in I, group 6; elective in groups 8, 9).

316. Plant Diseases. (*3-4*).

This course begins with a study of the biology and classification of fungi with special reference to pathogenic forms. Types of the more important plant diseases occurring in Texas are selected for study and the student is trained to investigate and identify the cause of the trouble and is shown appropriate corrective measures. Plant diseases due to other causes receive attention within the limits of time and material.

In the laboratory, the student will study the form, structure, and biology of selected fungi and will learn routine methods of cultivation and identification. Diseased plants are placed before him for individual study and he is instructed in the diagnosis of each disease.

Text: Fungus Diseases of Plants, Duggar.

Prerequisite: Biology 101, 102.

(Required in I, groups 4, 6, 9; elective in group 8).

ZOOLOGY.

201, 202. General Zoology. (*1-4*).

The essential aims and plan outlined in the work in botany are continued in this course. Especial attention is given to forms of economic importance. Types of the various great groups of animals will be considered as illustrating origin, development, and distribution. Careful dissection and study of type forms, with notes and drawings, will be required in the laboratory work.

Text: College Zoology, Hegner.

(Required in I, XII).

301. General Embryology. (*1-4*).

This course presents an outline of the origin and development of the vertebrate animals and of the fundamental problems of heredity. As far as possible, the work will be done in the laboratory.

Text: Text-book of Embryology, Prentiss and Arey.

(Required in I, group 6; elective in group 8).

423. Advanced Vertebrate Zoology. (*2-6*).

An advanced course in zoology, consisting largely of the comparative anatomy of the vertebrate. Especial emphasis will be placed on fundamental principles of evolution and distribution.

Text: Text-Book of Zoology, Parker and Haswell.

(Required in I, group 6).

BACTERIOLOGY.

209. Introductory Bacteriology. (*2-4*).

This course is designed as an introduction to a more extended study of the nature and relations of bacteria. The laboratory work will comprise, in part, the preparation of culture media; of pure cultures; staining and microscopic technique; methods of identification, etc.

Laboratory Manual: Laboratory Methods for Beginners in Bacteriology, Moore.

Text: General Bacteriology, Jordan.

(Required in XI).

302. Rural Sanitation. (*2-4*).

This course presents an outline of the relation of bacteria to every day life, at home and on the farm. The rationale of sanitation in and about the home; sewage disposal plants suitable for use in villages and in the country; the relations of bacteria, insects and vermin to the health of man and animals will be carefully considered.

Text: Principles of Hygiene, Bergey.

Laboratory study of bacteria and their activities; methods of disinfection, etc.

(Elective in I, group 2).

415. General Bacteriology. (*1-6*).

In this course, the general nature and relations of bacteria, as exhibited in the study of selected types, will be considered.

In the laboratory, routine methods of isolation, preparation, and study of pure cultures; technical microscopy of bacteria, etc., will occupy the time allotted.

Text: Household Bacteriology, Buchanan.

Laboratory Manual: A Manual of Bacteriology, Reed.

(Required in I, groups 6, 7; elective in I, groups 1, 5, 8).

416. Agricultural Bacteriology. (*1-6*).

The relations of bacteria to agricultural pursuits, in soil building, dairy processes, and various fermentations, are studied. In the practice, the student will make analyses of water, milk, sewage and soils.

(Required in I, group 6; elective in I, groups 1, 5, 8).

418. Water Bacteriology. (*2-4*).

The relations of bacteria and similar organisms to water, and water supplies, sewage and sewage disposal will be thoroughly considered.

The laboratory work will consist of preparation of culture media; qualitative and quantitative analyses of water, sewage and sewage effluents.

Text: To be selected.

(Required in IV, group 2).

426. Advanced Bacteriology. (*0-4*).

This course is designed for students who elect special work in Bacteriology and will be adapted to the needs of the groups making the selection.

Prerequisite: Biology 209, 302, 415.
(Required in I, group 6).

432. Dairy Bacteriology. (*1-4*).
(Elective in I, group 7).

FOR STUDENTS IN SHORT COURSES.

14. Agricultural Botany. (*2-2*).

This is an elementary course in the botany of field and garden crops, farm seeds, weed pests, and fungous diseases of plants. The systematic relationships of economic plants will receive attention within the limits of time and material.

In the laboratory, careful study will be made of the main agricultural plants and seeds of this State.

Text: Botany of Crop Plants, Robbins.
(Required in C).

DEPARTMENT OF CHEMISTRY AND CHEMICAL ENGINEERING

PROFESSOR HEDGES, ASSOCIATE PROFESSORS BRAYTON, A. E. WOOD, BURCHARD, E. O. RANDOLPH, ASSISTANT PROFESSOR STONE, MR. RIFFENBURG, MR. MOORE, MR. RATHJEN.

CHEMISTRY.

101, 102. General Inorganic Chemistry. (*3-3*).

In this course the foundation principles of all chemical activity are fully discussed and demonstrated. The chemical elements and their compounds are then taken up separately and systematically. Industrial applications of the more important chemical processes are briefly described, and organic chemistry is touched upon. This course must precede all other chemical studies. An elementary course in physics should precede or accompany this course.

Text: General Chemistry for Colleges, Alex. Smith.

General laboratory work, duplication of lecture experiments, and simple tests of technical importance.

(Required in all four-year courses.)

Course 101 is repeated in the second term; course 102 is repeated in the first term.

205. Qualitative Analysis. (*2-8*).

This course includes both the theory and practice of fundamental analytical operations and is designed to enable the student to make a rapid and accurate analysis of substances of average complexity, and to understand the steps by which his results are obtained. In theory the principles upon which the laboratory work is based are explained and discussed, and the student's knowledge rigorously tested by oral and written exercises.

The laboratory work consists of a study of the properties and reactions of the more common basic and acidic radicals, their separation

and identification from mixtures, the methods of getting solids into solution for analysis and the analysis of unknown substances. The number of substances analyzed varies with their nature and complexity.

Text: Qualitative Analysis, Dennis.

Prerequisite: Chemistry 101, 102.

(Required in VIII).

206. Organic Chemistry. (*3-2*).

The subject is treated primarily as a pure science. An effort is made to select for illustrations such compounds as are of interest to the student of agriculture.

Text: Organic Chemistry, Moore.

In the laboratory a study is made of the properties and typical reactions of the compounds discussed in the lectures.

Prerequisite: Chemistry 101, 102.

(Required in I, VI, XI).

207. Quantitative Analysis. (*1-3*).

This course is designed to meet the requirements of civil, mechanical and textile engineering students, and is preparatory to advanced courses in those departments. The laboratory exercises are explained in detail, general deductions drawn, and the student's knowledge of the subject tested by short oral and written exercises. A considerable portion of the class-room time is devoted to chemical calculations involved in the practice.

The laboratory work consists of a number of carefully selected experiments in quantitative analysis designed to typify operations of general application.

Prerequisite: Chemistry 101, 102.

(Required in III).

208. Technical Analysis. (*1-3*).

This course is designed to give to students of agriculture and mechanical engineering an insight into the methods employed in the analysis of materials connected with their profession, and the application of the results obtained to practical problems. The work in the laboratory is discussed and explained, and its application to engineering problems emphasized.

In the laboratory fuels, steels, cements, waters for industrial purposes, and industrial products that are commonly met with, are analyzed by rapid technical methods.

Prerequisite: Chemistry 207.

(Required in III).

301, 302. Organic Chemistry. (*3-4*).

The lectures and recitations serve as an introduction to the chemistry of the compounds of carbon. A study is made of the general principles, and attention is called to their application to various industrial processes.

The laboratory work serves as a basis for the course. The student here familiarizes himself with the reactions, properties and relations of typical organic compounds.

Prerequisite: Chemistry 101, 102.

(Required in VIII).

308. Dyeing. (*2-2*).

This course consists of a study of the physical and chemical properties of textile fibers, dyes, dyestuffs, and mordants, together with the principles and appliances involved in the commercial coloring of textiles, especially cotton and woolen goods.

Most of the principles discussed in the theory are tested in the laboratory, with especial attention to the production of dyeing to meet particular commercial requirements.

Prerequisite: Chemistry 202.

(Required in VI).

309. Agricultural Chemistry. (*3-4*).

This is a study of the fundamental chemical principles of agriculture, and in addition to giving the student a grasp of the application of chemistry it helps to understand the chemical terms used in Experiment Station literature. The chemistry of plant substances, soils, irrigation water, fertilizers, insecticides, and fungicides is studied.

The laboratory work serves to familiarize the student with the composition and behavior in the laboratory of many materials important in agriculture. It consists of the chemical analysis of feeds, soils, fertilizers, insecticides and fungicides.

Prerequisite: Chemistry 206.

(Required in I, XII).

406. History of Chemistry. (*1-0*).

This course aims to trace the development of chemical knowledge from early times to the present.

Prerequisite: Chemistry 101, 102.

(Required in I, group 1; VIII).

407. Quantitative Analysis. (*1-3*).

Same as course 207.

(Required in VI).

408. Quantitative Analysis. (*1-3*).

This course is designed to familiarize students in textile engineering with the methods employed in the analysis of size compounds, and with the properties of the various substances they contain. In the early part of this course experiments are conducted to test the purity of the substances usually incorporated in sizes, and later analyses are performed on typical sizes and the purity of the constituents determined.

Text: The Chemistry and Practice of Sizing, Percy Bean.

Prerequisite: Chemistry 407.

(Required in VI).

410. Water Analysis. (*1-3*).

This course is designed to impart a knowledge of the methods employed in the analysis of waters for industrial and potable purposes, of the interpretation of the results for such analyses, and of the methods employed in water purification. Attention is also directed to the nature and analysis of sewage, and its purification.

Prerequisite: Chemistry 307.

(Elective in IV, group 2).

418. Technical Analysis. (*1-3*).

Same as course 208.

(Required in I, group 3).

421. Advanced Agricultural Chemistry. (*2-8*).

Studies are made of selected topics concerning the chemistry of soils, plants, or animal nutrition, in such a way as to give the student a knowledge of the methods used in agricultural investigation, and to aid him to develop habits of independent thought.

The student is required in this work to take up some special problem in agricultural chemistry or to work on the chemical phase of some problem simultaneously pursued in some other department.

Prerequisite: Chemistry 309.

(Required in I, group 1).

FOR GRADUATES.

501. Advanced Agricultural Chemistry. (*2-8*).

Same as course 421.

FOR STUDENTS IN SHORT COURSES.

51. Practical Chemistry. (*3-2*).

This course is intended to familiarize the student with chemistry and its relation to every-day affairs. The elementary principles of inorganic chemistry are first considered and then topics of practical interest are taken up. Some of the topics studied: Fuels (solid, liquid, and gaseous), illuminants, air and ventilation, water purification and softening, extraction and properties of the non-ferrous metals, alloys, iron and steel, corrosion of metals, lime, cement, brick and pottery, glass, protective coatings, some carbon compounds, foods, etc.

The laboratory work comprises the preparation or testing of materials discussed in the class-room.

Text: Chemistry of Common Things, Brownlee, and other texts.

(Required in H).

52. Practical Chemistry. (*3-2*).

Same as course 51.

(Required in M).

54. Dyeing. (*2-2*).

Similar to course 308 but more elementary.

Prerequisite: Chemistry 51.

(Required in H).

GEOLOGY.

209. General Geology. (*3-2*).

This course offers the student a critical introduction to dynamical, structural, and historical geology. The dominant geologic processes, together with their resultants, are emphasized throughout the work. Also, a general working knowledge of the economic and the other associated

phases of geology is presented. This course is essential for all students pursuing this science through the specialized divisions.

The laboratory work will include the megascopic identification of the more common rock-forming minerals and representative members of the common rock groups; introductory map reading; and occasional field excursions.

Prerequisite: Chemistry 101, 102.

(Required in I).

210. Agricultural Geology. (*2-2*).

This specialized phase of geology is a natural outgrowth of facts and materials that are treated in General Geology above. The general principles of physical and structural geology are emphasized with special reference to disintegration and decomposition. Much attention will be devoted to such topics as these: structure, composition, formation, association, soil values, and other characteristics of rocks and rock-forming minerals; the principles of rock-weathering and soil formation; physiographic conditions and processes; erosion, drainage, etc. These topics are treated in such a manner as to relate and properly interpret geology and agriculture.

In the laboratory attention will be given to the comparison, composition, and agricultural value of minerals and rocks; the study of maps and models; supplemental study with stereoscopes, etc.

Prerequisite: Chemistry 209.

(Required in I).

212. Introductory Soil Geology. (*3-2*).

The object of this course is to present a concise treatment of the primary fundamentals necessary for teachers who wish to offer work in soil geology and as preparatory work to course in soils. The first several lectures will be devoted to general geology principles and terms. Regular class study will be directed along the following lines: the origin, mineralogical composition, distribution, transportation, and fixation of soils; geologic agents such as water, wind, ice, vulcanism, organism, etc.; the influence of rock texture and structure in soil formation; also a consideration of the part played by earth relief.

In laboratory work, careful attention will be given to the study and ready identification of the representative rock-forming minerals, not simply as such but with special reference to their soil values. Among the minerals studied will be those with natural fertilizer, aeration, and percolation qualities. The mineralogic composition, texture, structure, and occurrence of the common soil-forming rocks will be studied also. Models and regional maps will be used for illustrative purposes.

(Required in XII).

306. General Geology. (*3-3*).

Necessarily some phases of this course are similar to fundamentals in course 209; but special attention will be given to paving the way for students who will pursue course 425. Critical study will be made of structural, dynamic, and metamorphic agencies affecting the general engineering side of geology. Each student will be required to familiarize himself with the necessary vocabulary for advanced work.

The laboratory work will cover same materials as in course 209, but will be intensified with map and folio readings, and the application of these principles to field work.

Prerequisite: Chemistry 101, 102.

(Required in IV, VIII; elective in IX).

416. General Geology. (*3-3*).

Same as course 306.

(Required in V).

425. Engineering Geology. (*2-2*).

The theoretical side of this subject is emphasized only when necessary, but the practical side is kept prominently in the foreground because agriculture, industry, and commerce are so vitally affected by the work of the engineering geologist. Among the topics to which special attention will be devoted are these: geologic agencies determining the exploitation, usability, and value of dimension stones and rough constructional materials; location, extraction, and transportation; labor problems; foundations, drainage, etc.; and the general application of geologic principles to engineering problems.

The work in the laboratory will pertain to intense study of the common dimension stones and other constructional materials; a rapid survey of the more important metals and non-metals; detail work on structure sheets; a study of type areas of economic importance; written reports on a comparative study of State and Federal Surveys, etc.

Text: Ries and Watson's Engineering Geology.

Prerequisite: Chemistry 306, Physics 203, 204.

(Elective in IV, IX).

426. Historical Geology. (*3-2*).

The student in this course will find quite an advancement over the work done in course 209. Practically the entire time will be devoted to a careful consideration of the development of the earth from the beginning of geologic time to the present, with special reference to the evolution of the North American continent. Also stratigraphic principles and relationships as interpreted from the structural and fossil records of the earth. Emphasis will be placed upon environmental influences and adaptability of life forms.

This course is very necessary for those who wish to pursue geology in a professional way, especially if they desire to enter preparatory to teaching geology, or to enter the U. S. Geological Survey as a soil man, paleontologist, stratigrapher, etc.

Text: Pirsson and Schuchert's Historical Geology.

Prerequisite: Chemistry 209.

450. Petroleum Geology. (*3-3*).

The real purpose of this course is to present some of the more important fundamentals that are necessary for those who anticipate becoming actively engaged in prospecting, exploiting, investing, or engineering in oil and gas areas. The student's attention will be directed along the following lines: general geologic agencies, processes, and resultants; the origin, composition, distribution, association, exploitation, and migra-

tion of the hydrocarbons; catchments, stratigraphy, and discovery; well decline, exhaustion, conservation; well and field technology; commercial problems, valuations, etc.

The laboratory work will include a study of rock-forming materials; mineral structures, textures, capillarity; porosity; sedimentation, sedimentaries, and metamorphism in relation to oil and gas occurrences; petroliferous materials; comparative study in well cuttings and well logs; map interpretation and construction; careful study of type areas; field excursions.

Prerequisite: Chemistry 209.

CHEMICAL ENGINEERING.

The foundation for the work in chemical engineering is laid in the courses in chemistry, already described. Chemistry and chemical engineering cover such a broad field that in the Senior year students are advised to specialize in some branch of technical analysis, such as its application to the cotton seed oil industry, petroleum technology, problems of sanitation, or the chemical control of a cement plant. All the work is supplemented by laboratory work. The chemical industries most highly developed in this State are inspected from time to time.

201. Industrial Chemistry. (*3-0*).

Same as course 307.

(Required in XIII).

202. Elementary Quantitative Analysis. (*1-6*).

This course serves as an introduction to the methods of exact analysis, and is regarded as preliminary training for the more advanced courses. In the class-room the practice and theory of the laboratory exercises are dealt with by lectures and recitations. Special attention is given to stoichiometry.

The laboratory work consists of a number of carefully selected experiments in quantitative analysis designed to typify operations of general application. The work is first gravimetric, then volumetric. In the early periods compounds of known composition and purity are analyzed but later substances of industrial significance, whose percentage composition is known only to the instructor are undertaken. Near the close of the term an analysis is made of a carbonate or silicate rock for the commonly determined constituents.

Text: Notes on Quantitative Chemical Analysis, Foulk.

Prerequisite: Chemistry 205.

(Required in VIII).

208. Metallurgy. (*2-0*).

Same as course 408.

(Required in XIII).

301, 302. Technical Analysis. (*2-9, 1-6*).

The theory consists of lectures, recitations and conferences dealing with technical methods of analysis, both rapid and exact, effort being made to thoroughly familiarize the student with principles involved.

Before beginning an analysis the student is required to consult current literature and standard books of reference and present a written outline for criticism and suggestion.

The laboratory work comprises the analysis of limestone, fuels, lubricating oils, gas, boiler water, iron and steel, alloys, ores, paint, soap, sugar, asphalt and other materials of engineering and industrial importance.

Prerequisite: Chemical Engineering 202.

(Required in VIII).

303. Physical Chemistry. (*3-4*).

(Required in I, group 1).

307. Industrial Chemistry. (*3-0*).

This is an introductory course, covering the principal applications of chemical process to commercial products, mostly organic in nature, such as gas manufacture, petroleum products, soaps, the starch and sugar industries, and the manufacture of paper, leather, and explosives. The manufacture of fertilizers, cement and ceramics is also considered.

Text: Industrial Chemistry, Rogers.

Prerequisite: Chemistry 101, 102.

(Required in III).

406. Microchemical Methods. (*1-2*).

This course is designed to give the student some knowledge of the use of the microscope in qualitative and quantitative analysis. General methods are first explained and dealt with, followed by an examination of various substances to which this method of analysis is particularly adapted.

Open to Juniors and Seniors who have had a course in Quantitative Analysis.

(Required in I, group 1; VIII).

408. Metallurgy of Iron and Steel. (*3-0*).

In this course the metallurgy of iron and the manufacture of steel are considered in detail, especial attention being given to the nature and location of valuable iron ore deposits, together with suitable fluxes; to the nature and availability of proper fuels, together with the furnaces used; to the constitution of the resulting pig iron and the manufacture of steel therefrom; and finally to the chemistry of the different kinds of steel and their adaptability in engineering practice. Lectures and recitations.

Text: The Metallurgy of Iron and Steel, Stoughton.

Prerequisite: Chemistry 101, 102.

(Required in III).

411. Physical Chemistry. (*3-4*).

This course presents physical explanations of chemical and allied phenomena, together with a mathematical exposition of the laws involved. Some of the subjects thus developed are the atomic theory, the periodic law, solubility, fusion, vaporization, the phase rule, dissociation in solution, chemical equilibrium, and relative chemical activ-

ity. It leads up to the consideration of the best research of today. Most of the theoretical conclusions deduced in the class-room are confirmed in the laboratory. Lectures and recitations.

The laboratory work consists of the calibration of apparatus, determination of molecular weights, heats, of reaction, rate of reaction, Law of Mass Action and other related topics. During the second term most of the experiments deal with electrical phenomena. A few experiments illustrating electro-chemical processes of commercial importance are performed.

Prerequisite: Chemistry 301, 302; Mathematics, 20.

(Required in I, group 1; VIII).

412. Industrial Chemistry. (*3-4*).

Same as course 307 with the addition of laboratory work on industrial processes.

(Required in VIII).

413. Chemical Technology. (*3-4*).

The theory consists of lectures and conferences dealing with technical methods of analysis and with principles of chemical analysis and control, and with the application to problems other than those being carried out by the students in the laboratory. As the work of the student diverges, individual conferences will be arranged with each during which his particular problems will be discussed. Reference will be made to the library and current technical literature.

The course is devoted to a comparison of different methods of analysis, to detailed investigation of problems relating to chemical control, and to such work as seems suitable to the requirements of the individual student.

Prerequisite: Chemical Engineering 302.

(Required in VIII).

414. Sanitary Chemistry. (*3-4*).

The course deals with the sanitary examination of food, milk, and milk products, and the sanitary analysis of water, including water treatment methods. Methods of purification of water, as the use of sand filters, coagulants, and algicides, are explained. Sources of pollution of water and milk supplies and their relation to public health are discussed. Problems common to the sanitary chemist and engineer are also considered.

Prerequisite: Chemistry 206 or 301, 302.

(Required in VIII).

452. Chemical Summary. (*3-0*).

This course is designed to summarize all the work given in the course in Chemical Engineering and to co-ordinate the different subjects throughout the four years' work. Work is given by means of lectures, recitations, and written tests.

DEPARTMENT OF CIVIL ENGINEERING.

PROFESSOR NAGLE, PROFESSOR MORRISON, PROFESSOR LOVE, PROFESSOR RICHEY, ASSOCIATE PROFESSORS MCADAMS, GREEN, MR. BIRD.

201. Plane Surveying. (*3-3*).

Chaining; the adjustment, use and care of compass, transit, level, plane table and hand instruments; measurement of angles; land surveys and computations; stadia, topographic, city and general surveying; leveling; observations for true meridian and latitude; plotting results of surveys.

Stress is laid upon the practical side of surveying, the importance of care and precision both in the field and the class room, and the necessity for understanding the principles underlying each step of the work.

Additional problems under the same working conditions met by the practicing surveyor are assigned in course 300 during the summer.

Text: Principles and Practice of Surveying, Vol. 1, Breed and Hosmer.

Prerequisite: Mathematics 103.

(Required in IV).

202. Railroad Engineering. (*2-3*).

The theory and practice of simple and compound curves is taught in both class-room and field, and such problems are given as will illustrate the application of the theory to actual working conditions.

Text: Field Manual for Railroad Engineers, Nagle.

Problems in simple and compound curves are assigned, the notes calculated and the curves "run out" in the field.

Prerequisite: Civil Engineering 201.

(Required in IV).

204. Analytic Mechanics. (*3-0*).

A study of the fundamental principles of mechanics, with numerous problems showing their application in engineering. Both kinetic and statics are considered, but especial emphasis is put upon the applications of the principles of static equilibrium.

Text: Applied Mechanics, Poorman.

(Required in IV, IX).

206. Plane Surveying. (*1-3*).

A modification of course 201.

After covering the fundamental principles of surveying, special attention is given to the use of the transit and level in making layouts of building and machinery foundations, lining shafting, running profile surveys for pipe lines, etc.

Text: Surveying Manual, Pence and Ketchum.

Prerequisite: Mathematics 103.

(Required in V, VI).

300. Field Practice. Summer Following Sophomore Year; 3 Weeks.

This summer course includes the care, management and use of surveying instruments in making land, topographic and triangulation surveys, particular attention being paid to stadia and plane table methods.

Practical working conditions are approximated by requiring a full working day in the solutions of special problems in the several different surveys. Areas are computed, topography platted and maps made. The true meridian is determined by observations on the sun and Polaris. Each student is required to become reasonably proficient in the use of the surveyor's compass, transit, level and plane table.

Reference text: Principles and Practice of Surveying, Vol. 1, Breed and Hosmer, together with additional notes by the instructors.

302. Graphics. (0-3).

Elements of graphic statics. Use of the force and equilibrium polygons in determining resultants, reactions, centers of gravity, and bending moments. Determination of stresses in bridge and roof trusses by the costruction of stress diagrams.

Text: Modern Framed Structures, Part I, Johnson, Bryan and Turneaure.

Prerequisite: Civil Engineering 204.

(Required in IV, IX).

303. Railroad Engineering. (3-3).

A continuation of course 202, covering transition curves, frogs and switches, turnouts, vertical curves, earthwork, overhaul, estimates, etc.

Theory is demonstrated in the field by working out assigned problems and actually doing the field work necessary. Instruction in platting progress profiles, preparing preliminary, monthly, and final estimates, including the determination of overhaul, is given.

This practice, as well as that of course 202, is preliminary to more elaborate field work required in course 400, and railroad drafting in course 401.

Text: Field Manual for Railroad Engineers, Nagle.

Prerequisite: Civil Engineering 202.

(Required in IV).

304. Railroad Construction. (2-0).

Railroad surveys; materials; structures; equipment; costs; economics.

Text: Design of Railway Location, Williams.

Prerequisite: Civil Engineering 303.

(Required in IV)..

305. Mechanics of Materials. (3-2).

This course covers a treatment of the resistance of materials and the mechanics of pipes, riveted joints, beams, columns, shafts, etc. After the study of the elementary mechanics of these structures, attention is given to more advanced topics, such as combined stresses, compound beams and columns, resilience, impact, and fatigue of materials.

Determination of the strength, ductility, modulus of elasticity, and other properties of engineering materials. Various tests of timber, steel,

cast iron, cement, etc., are made by the student and reports submitted showing results. In these reports considerable attention is given to the presentation of results in clear and condensed form by means of curves and tables.

Text: Strength of Materials, Boyd.
Prerequisite: Mathematics 204.
(Required in III, IV, V, IX).

308. Roofs and Bridges. (*3-0*).

Application of the laws of equilibrium in the determination of reactions and stresses for roof trusses and bridge trusses. Abbreviated methods for bridge trusses, including use of index stresses, influence lines, etc. Determination of stresses caused by lateral loads.

Text: Modern Framed Structures, Part I, Johnson, Bryan and Turneaure.
Prerequisite: Mathematics 204, Civil Engineering 204.
(Required in IV, IX).

311. Hydraulics. (*3-2*).

The laws governing the action of water at rest and in motion, as related to engineering problems. The flow of water in pressure mains, sewers, aqueducts, open channels, and in rivers; measurement of the flow of water by nozzles, orifices, weirs, and meters; estimates for water supply and water power; hydrography; theory and efficiency of water wheels, motors, turbines, rams and pumps.

The practice consists of calibration of nozzles, orifices, water meters, weirs, pressure gauges; efficiency tests on impulse motors, hydraulic rams, and one, two and three-stage centrifugal pumps.

Text: Treatise on Hydraulics, Merriman.
Prerequisite: Mathematics 204.
(Required in IV).

319. Farm Surveying. (*2-3*).

Chain surveying; adjustments and use of instruments in leveling, compass and transit surveying, with special reference to application on farms. The necessary trigonometric formulas are taught in connection with this course.

Text: Surveying Manual, Pence and Ketchum.
(Required in I, groups 3, 4).

322. Strength of Materials. (*2-0*).

This is a continuation of course 305.
(Required in IV).

326. Plane Surveying. (*1-3*).

Same as course 206.
(Required in IX).

400. Field Practice. Summer Following Junior Year; 3 Weeks.

A practice course in which effort is made to approximate actual working conditions of preliminary and location surveys.

The class is required to complete exercises in railroad surveying;

river gauging; road and street location; mapping. Each student is drilled in the use of the transit and level in running preliminary and location lines; with the surveyor's compass in tying in land lines; with the hand level, pocket compass and pocket sextant in taking topography. Instruction is given in cross-sectioning, staking out bridge openings, running drainage areas and determining the size of drainage openings. The care and adjustment of instruments is reviewed and observations on the sun and Polaris for determining the true meridian and latitude are repeated. Additional problems of benefit to the student will be assigned when time permits.

Reference texts: Field Manual for Railroad Engineers, Nagle; Notes on Railroad Summer Practice, Love.

401. Railroad Drafting. (*0-4*).

Office methods of working up the notes of reconnoissance, preliminary and location surveys and maintenance surveys. This includes the completion of a map, a profile and estimate of the line located in course 400.

(Required in IV, groups 1, 2).

403. Roofs and Bridges. (*3-6*).

Study of the design of simple plate girder and truss spans. The student makes designs and general drawings and has some practice also in detailing.

Text: Modern Framed Structures, Part III, Johnson, Bryan and Turneaure.

Prerequisite: Civil Engineering 308.

(Required in IV, group 1).

404. Bridge Design. (*0-6*).

A continuation of the practice in course 403.

Prerequisite: Civil Engineering 403.

(Required in IV, group 1).

406. Materials of Construction. (*0-6*).

A laboratory study of the suitability of various materials of engineering, including brick, stone, sand, gravel, cement, mortars, and concrete.

(Required in IV, group 1).

407. Roads and Pavements. (*3-0*).

This course is provided for students in general Civil Engineering, and covers a brief general study of country roads and city pavements. Highway location, design, construction and maintenance are studied; also road laws, finances, organization and supervision.

The text is supplemented by lectures, the use of bulletins, road machinery, models and samples of materials.

Text: Elements of Highway Engineeering, Blanchard.

Prerequisite: Civil Engineering 201.

(Required in IV, group 1).

410. Contracts and Specifications. (*2-0*).

A brief study of the law of contracts as applied to engineering operations; the relation of the engineer to the owner and to the contractor;

the necessity for, and preparation of, engineering specifications and the accompanying documents; general and specific clauses in specifications; illustrative examples.

Texts: Elements of Specification Writing, Kirby; Contracts in Engineering, Tucker.

(Required in IV, V; elective in IX).

411. Hydraulics. (*3-0*).

Same as course 311, except that no practice is given.

(Required in III; elective in V).

413. Elements of Reinforced Concrete. (*2-0*).

The theories of stress distribution, and various systems of reinforcement employed in the construction of beams and columns are discussed, and illustrative examples studied. Determination of stresses and elementary design, based upon the assumptions commonly made, are taken up by means of practical problems solved by the student.

Text: Reinforced Concrete Construction, Vol. I, Hool.

Prerequisite: Civil Engineering 204, 305.

(Required in IV, IX).

414. Reinforced Concrete Design. (*2-3*).

Study of the design of various types of reinforced concrete structures, such as buildings, bridges, retaining walls, culverts, etc. Practice is laid in the making of simple designs and working drawings.

Text to be selected.

Prerequisite: Civil Engineering 413.

(Required in IV, IX).

415. Highway Construction and Maintenance. (*5-0*).

This course covers the construction and maintenance of all types of roads. The text-book is supplemented by frequent reference to bulletins, standard specifications, trade catalogues, proceedings of engineering societies, and current engineering periodicals.

Text: Text-book on Highway Engineering, Blanchard and Drowne.

(Required in IV, group 2).

416. Masonry. (*2-0*).

The principles of masonry construction in general, except as applied to reinforced concrete, are covered in this course.

Text: To be assigned.

Prerequisite: Civil Engineering 305.

(Required in IV).

417, 418. Highway Materials. (*1-3, 1-3*).

The various materials used in the construction and maintenance of roads and pavements are studied with special reference to their suitability for the various types of construction. The mining, refining and testing of bituminous materials and control of the manufacture of the various pavement mixtures are studied in detail. The laboratory work consists of standard tests of both bituminous and non-bituminous materials.

Text: Laboratory Manual of Bituminous Materials, Hubbard; and bulletins.
Prerequisite: Senior or Junior classification.
(Required in IV, group 2).

423. Bridge Design. (*1-3*).
The design of steel highway bridges.
Text to be selected.
Prerequisite: Civil Engineering 308.
(Required in IV, group 2).

426. Highway Bridges and Culverts. (*1-3*).
This course includes lectures and problems in the design and construction of highway bridges and culverts. The types of bridges best suited to various traffic conditions are studied, and such questions as the size of waterways, width of road, etc., are taken up in detail.
Text to be assigned.
Prerequisite: Civil Engineering 413.
(Required in IV, group 2).

429. Highway Laws and Economics. (*3-0*).
This course takes up a study of the road laws of Texas and other States, benefits of good roads, methods of financing highway construction and maintenance, and organization of State and municipal highway departments.
Text to be assigned.
Prerequisite: Senior or Junior classification.
(Elective in IV, group 2).

434. Irrigation and Drainage. (*2-0*).
Determination of the quantity of water available; collection and storage works; design, location and construction of distribution systems; economic use, and "duty" of water in irrigation; water rights.
Text: Irrigation Engineering, Wilson and Davis.
Prerequisite: Civil Engineering 311.
(Required in IV, group 1).

436. Management Engineering. (*1-0*).
Cost keeping, the analysis and use of cost data, and the principles of scientific management are studied with special reference to civil engineering work.
Text: Cost Keeping and Management Engineering, Gillette and Dana.
Prerequisite: Senior or Junior classification.
(Required in IV, group 2).

438. Water Supply and Sewerage. (*3-0*).
A study of the collection, storage and distribution of water for municipal use; the necessity for and methods of water purification; design and construction of waterworks systems. A study of questions relating to quantity of sewage; design, construction and maintenance of sewerage systems; sewage treatment and disposal.

Texts: Water Supply Engineering, Folwell; Sewerage, Folwell.
Prerequisite: Civil Engineering 311.
(Required in IV).

FOR STUDENTS IN SHORT COURSES.

24. Plane Surveying. (*2-3*).

An elementary course in plane surveying. The construction, use and adjustment of the compass, level, and transit; methods, computations, and platting.

Text: Principles and Practice of Surveying, Vol. I, Breed and Hosmer.

Methods of measurements, use of the level, "running out" of areas and the adjustment of the instruments.

Prerequisite: Mathematics 13.
(Required in M).

DEPARTMENT OF DAIRY HUSBANDRY.

PROFESSOR RIDGWAY, ASSISTANT PROFESSOR REYNOLDS.

102. Dairying. (*3-2*).

A course dealing with the secretion of milk, and the composition of milk and its products; the use and application of the lactometer in the determination of the total solids and adulterations; the various methods of cream raising and separation.

Text: Milk and Its Products, Wing.
(Required in I, XII).

301. Market Milk. (*3-0*).

The food value of milk; the production and sale of market milk; milk inspection.

Text: The City Milk Supply, Parker.
Prerequisite: Dairy Husbandry 102.
(Required in I, group 7; XI).

302. Dairy Manufactures. (*2-2*).

The manufacture of the more common dairy products, such as butter, cheese, and ice cream both in the factory and on the farm.

Texts: The Book of Butter, Guthrie; The Book of Cheese, Thom and Fisk.

Prerequisite: Dairy Husbandry 301.
(Required in I, group 7).

401. Herd Book Study. (*0-4*).

The tracing and study of the pedigrees of the leading strains and families of dairy cattle, with special reference to official records.

Prerequisite: Dairy Husbandry 10, Animal Husbandry 302.
(Required in I, group 7).

402. Milk Production. (*3-2*).

This course covers the field of Dairy Husbandry in its relation to the producer. The breeding, feeding and management of dairy cattle will be given special consideration. Lectures will supplement text.

Text: Feeds and Feeding, Henry and Morrison.

Prerequisite: Dairy Husbandry 401, Animal Husbandry 401.

(Required in I, group 7).

404. Seminar. (*2-0*).

Devoted to a study along selected lines of research, with a review and study of recent Experiment Station work.

(Open only to students taking Dairy Husbandry 402.)

(Required in I, group 7).

FOR STUDENTS IN SHORT COURSES.

21. Elementary Dairying. (*2-2*).

A modification of course 102 dealing specially (in a more practical way) with herd record keeping and herd testing.

Text: Milk and Its Products. Wing.

(Required in C).

53. Farm Dairying. (*2-2*).

The feeding, breeding, and management of dairy cattle; the use and care of cream separators, and the manufacture of butter on the farm.

Text: Dairy Cattle and Milk Production, Eckles.

Prerequisite: Dairy Husbandry 21.

(Required in M; elective in C).

DEPARTMENT OF DRAWING.

PROFESSOR A. MITCHELL, ASSOCIATE PROFESSOR GEIST, ASSISTANT PROFESSOR LANGFORD, MR. LEAKE, MR. GARGES, MR. HUMPHREVILLE, MR. DURST.

105, 106. Freehand Drawing. (*0-1*).

Drawing from geometrical solids, common objects, plaster casts, still life, to study form, proportion, light and shade; in the second term special attention is given to measuring, dimensioning and describing machines, machine parts, engineering structures and details.

The course is varied to meet the practical needs of students in the different engineering departments.

(Required in all four-year Engineering courses).

107. Freehand Drawing. (*0-2*).

(Required in XIV).

113, 114. Descriptive Geometry. (*2-3*).

Class-room exercises, quizzes, and lectures on general and special problems relating to points, lines, planes and solids; problems in shades

and shadows and in perspective. Special attention is paid to the representation of objects, by orthographic projection, in the first and third angles.

Text: Descriptive Geometry, Giesecke and Mitchell.

(Required in all four-year Engineering courses).

Course 113 is repeated in the second term; course 114 is repeated in the first term.

201. Mechanical Drawing. (*0-4*).

Standard conventional section lining, drawing of standard bolts, nuts, rivets and threads; helixes, elementary parts of machines and engineering structures.

Text: Mechanical Drawing, Part III, Giesecke.

Prerequisite: Drawing 113.

(Required in IV, V, VI, VIII).

202. Mechanical Drawing. (*0-2*).

A continuation of course 201, including patent office drawings, working drawings of machines, engineering structures and details. The student is required to carefully sketch and measure the model; then, from his dimensioned sketch he makes on detail paper and traces his working drawings.

This course is varied to meet the practical needs of students in the different engineering departments.

Prerequisite: Drawing 201.

(Required in IV, V, VI, VIII).

203. Color Harmony and Design. (*1-2*).

Exercises in the harmony of color, including the use of water and distemper colors for the purpose of training the student in the use of correct color combinations.

(Required in XIV).

209. Freehand Drawing (Advanced). (*0-4*).

Line charcoal drawings of full-length antique and modern subjects; shaded charcoal drawings from casts of more complex architectural ornament.

Prerequisite: Drawing 105.

(Required in IX).

210. Freehand Drawing (Advanced). (*0-4*).

A continuation of course 209.

Shaded charcoal drawings of full-length antique and modern subjects.

Prerequisite: Drawing 209.

(Required in IX).

315. Mechanical Drawing. (*0-2*).

Exercises in the use of drawing instruments, instrumental and freehand lettering, geometrical constructions, orthographic and isometric projections, working drawings of simple farm structures.

Text: Mechanical Drawing, Part I, Giesecke.

(Required in I, group 10).

316. Freehand Drawing. (*0-4*).

Elementary principles of freehand drawing during first part of the term followed by water color rendering of foliage and general entourage.
(Required in I, group 10).

FOR STUDENTS IN SHORT COURSES.

11, 12. Mechanical Drawing. (*0-3*).

Proper care and correct use of drawing instruments, simple exercises in the use of drawing instruments, lettering, geometrical constructions, standard conventional signs, standard bolts, nuts, rivets, and threads; helixes, sketching, measuring and dimensioning elementary parts of machines.

This course is varied to meet the practical needs of students in the different engineering departments.

Text: Mechanical Drawing, Parts I and III, Giesecke.
(Required in H, N).

13. Freehand Drawing. (*0-1*).

This course is practically the same as course 105.
(Required in H, N).

14. Freehand Drawing. (*0-1*).

This course is practically the same as course 106.
(Required in H, N).

15. Mechanical Drawing. (*0-2*).

Same as the elementary part of course 315.
Text: Mechanical Drawing, Part I, Giesecke.
(Required in M).

16. Mechanical Drawing. (*0-2*).

Working drawings of simple farm structures.
(Required in M).

DEPARTMENT OF ECONOMICS.

PROFESSOR CLARK.

306. Fundamental Principles. (*3-0*).

This course consists of the theory of economic activities concerning production, distribution, and consumption; and the practical problems of credit, banking, foreign exchange, monetary systems, co-operation, tariff, transportation, trusts, corporations, and finance and taxation. The assignments in the text will be supplemented by evpositions and explanations by the instructor, and bv reports by the students.

Text: Principles of Political Economy, Gide.
(Required in I, XII).

403. Fundamental Principles. (*3-0*).

The work in this course is not materially different from that given in course 306. On account of the fact that this is a Senior course the dis-

cussions will be somewhat more comprehensive and exhaustive. Also, since the students taking this course are primarily interested in engineering subjects, more emphasis will be placed on general business principles.

Text: Seager's Principles of Economics.

(Required in III, IV, V, VI, VIII, IX).

407. Rural Economics. (*3-0*).

On the basis of general principles and concepts developed in course 306 attention is here given to the bearing of these principles in agricultural life. The discussions in the time devoted to recitations will be developments of thoughts brought out in some suitable text. In the light of these discussions, special studies will be made of different systems of land tenure, rural credits and co-operative movements.

Text: To be selected.

Prerequisite: Economics 306.

(Required in I, XII).

408. Modern Business Corporations. (*3-0*).

This course considers the common forms of business organization, but special emphasis is placed on corporations as the most important of these. The subjects taken up in connection with the text are the following: definition, advantages, legal status, formation and organization, charter and by-laws, directors and officers, capital stock and bonds, stockholders, corporation bookkeeping, auditing and accounting, dissolution, consolidation and reorganization, and taxation of corporations. Forms are studied as illustrative of the principles laid down. Once a week the recitation period will be turned into a seminar or labor problems. The student will be assigned topics and required to report on specific aspects of these problems, such as a summary of the history of organized labor in America, a summary of the theories of labor, trade union ideals, and trade union methods. It is hoped thus to balance off the course in business principles with certain concepts of justice to employees.

Prerequisite: Economics 403.

Text: Modern Business Corporations, Wood.

(Elective in IV).

418. Business Law. (*2-0*).

This is a special course originating at the request of students. It has no prerequisite, but it is open only to those who can fit it on their schedules in addition to the subjects required in their respectice courses. It is especially fitted to those who plan to enter general business practice, but is important in all spheres of American life. Such subjects as the following are studied: The nature and scope of law, contracts, sales, agency, negotiable instruments, employment, partnership, personal property, real property, wills and inheritance, personal relations, surety, bankruptcy, etc.

Text: Business Law, Conyngton.

DEPARTMENT OF ELECTRICAL ENGINEERING.

PROFESSOR BOLTON, ASSOCIATE PROFESSORS WOOTEN, JAMES, SHEPHERD, MR. GRISSOM.

201. Electricity and Magnetism. (*4-4*).

Lectures, recitations and problems in electricity and magnetism.

This includes a laboratory investigation of the phenomena studied in the text-book.

Prerequisite: Mathematics 102, 103.

(Required in V).

202. Elementary Electrical Engineering. (*3-3*).

Lectures and recitations on simple electric circuits, primary and secondary batteries, battery charging, simple telephone circuits, the magnetic circuit, inductance and capacity.

A short time is devoted to the study of the National Electric Code, and of methods of wiring.

The practice is intended to clarify the ideas received by the student in the class-room. It includes the accurate measurements of various electrical quantities, such as resistance, inductance, capacity, and the effect of temperature, position, etc., on these quantities; a study of the various types of batteries to determine their adaptability to different uses; calibration and repair of instruments, such as ammeters, voltmeters, and wattmeters; tests of the magnetic properties of iron.

Prerequisite: Electrical Engineering 201, Mathematics 104.

(Required in V).

206. Motors, Wiring and Lighting. (*3-0*).

Same as course 312.

(Required in XIV).

209, 210. Signal Corps Work. (*1-0*).

Lectures on the technical equipment used by the Signal Corps. A part of this work includes the study of the telegraph code.

(Elective for members of the Signal Corps Unit, R. O. T. C.).

301. Direct Currents. (*3-6*).

The course is devoted to the study of the theory and applications of direct current machinery.

The practice is intended to give practical demonstration of the theory. It includes the operation of dynamos and motors, the determination of characteristics and the measurements and calculation of losses, efficiencies and regulation.

Prerequisite: Electrical Engineering 202, Mathematics 204.

(Required in V).

302. Alternating Currents. (*4-4*).

Lectures and recitations on the principles of alternating currents, including a study of the relations of voltage, current, resistance, inductance and capacity.

An experimental study of the effect of resistance, reactance, and capacity on alternating current circuits; the determination of wave shapes; and tests of some of the simpler types of alternating current machines.

Text: Alternating Currents and Alternating Current Machinery, Jackson.

Prerequisite: Electrical Engineering 301, Mathematics 204.

(Required in V).

304. Direct Current Design. (*1-4*).

Lectures and recitations on the design of direct current machines.

Text: Electrical Machine Design, Gray.

Practice in the design of parts of the magnetic circuit of electrical machines, followed by the design of a direct current dynamo.

Prerequisite: Electrical Engineering 301.

(Required in V).

305. Electrical Machinery. (*3-3*).

Lectures and recitations on the operation and characteristics of dynamos, motors, transformers and other electrical appliances of the types most commonly met with in general engineering practice. This course is intended to give only a general idea of the subject. The course is abbreviated so that only the more fundamental principles are studied.

Text: Principles and Practice of Electrical Engineering, Gray.

The practice is designed to give the general engineering student some degree of familiarity with the operation and the more important characteristics of both direct current and alternating current machines.

Prerequisites: Physics 204, Mathematics 204.

(Required in IV, VIII).

307, 308. Electrical Machinery. (*3-0, 2-3*).

This course includes all the instruction given in course 305, but is more detailed. In this course special emphasis is laid on the study of the industrial application of motors and the operating characteristics of electrical machines usually found in power plants.

Practice, the same as for course 306.

Prerequisite: Physics 204, Mathematics 204.

(Required in III, VI).

309, 310. Communication Engineering. (*3-0*).

Construction and theory of telephone, telegraph and radio apparatus. A study of magneto and central battery circuit, alternating current telegraphy, telephone cable construction, poles, towers, insulators, radio communication.

Practice will be included in the time devoted to Signal Corps drill.

Open only to members of Signal Corps Unit, R. O. T. C.

(Elective in III, V).

401, 402. Alternating Current Machinery. (*4-4, 3-4*).

This course embraces a study of alternating currents and alternating current machinery, including methods of generation, transformation and

use; a study of wave forms and quantities affecting wave forms; and the effect of balanced and unbalanced loads.

The subject is treated from both the graphical and the mathematical viewpoint, the text being supplemented by lectures and problems.

Text: Principles of Alternating Current Machinery, Lawrence.

The practical operation and determination of the characteristics of various types of alternating current machines.

Prerequisite: Electrical Engineering 302, or 308.

(Required in V).

403. Electrical Machine Design. (*1-4*).

Lectures and recitations on the design of electrical machines.

Text: Electrical Machine Design, Gray.

Practice in the design of dynamos, motors and transformers. Working drawings of some of the machines are required, while for others the design of the electrical parts of the machine is considered sufficient.

Prerequisite: Electrical Engineering 302, 304; to be accompanied or preceded by Electrical Engineering 401.

(Required in V).

406. Electric Power Distribution. (*2-2*).

Lectures and recitations on the transmission and distribution of power by electrical methods. Many subjects not treated in the textbooks are studied, and the student is encouraged to investigate all available sources for information.

Practice includes the design and cost estimates of several transmission and distribution systems.

Prerequisite: Electrical Engineering 401.

(Required in V).

408. General Problems. (*0-2*).

A course of problems based on all engineering work required of the student previous to graduation.

Prerequisite: All subjects required before the second term of the Senior year.

(Required in V).

409, 410. Advanced Communication Engineering. (*3-0*).

Advanced telephone, telegraph and radio engineering, including a study of vacuum tubes, long distance telephone circuits, line and cable loading, induction effects, transpositions, phantom circuits, submarine telegraphy, telephone and telegraph repeaters, multiplex telegraphy and telephony, and radio telephony.

Practice to accompany this work is given in connection with other practice courses and during the time for military practice.

Open only to members of Signal Corps Unit, R. O. T. C.

Prerequisite: Electrical Engineering 309, 310.

(Elective in III, V).

412. Motors, Wiring, Lighting. (*3-0*).

An elementary course covering:

(a) A study of the characteristics of the more frequently used types of electric motors.

(b) Lectures on methods of electric wiring for lights and power.

(c) Lectures and recitations on the principles of illumination.

(Elective in I, group 3).

423. Electric Railways. (*2-0*).

A study of railway apparatus, costs of construction and operation of electric railway systems, and operation methods. Students are required to make an engineering report on a small railway project, estimating cost of construction and operation and probable returns on investment.

The practice in this course consists of the test of electric railway motors, controllers, and other appliances, and tests of electric cars.

Prerequisite: Electrical Engineering 301.

(Required in V).

426. Illumination. (*2-2*).

A course dealing with the principles of illumination and the application of these principles to specific cases. Attention is given to the arrangement of electric lights for decorative purposes as well as for useful illumination.

The practice in this course includes the test of various types of lighting units, the design of lighting systems, and the test of the illumination of buildings already lighted.

Prerequisite: Electrical Engineering 301, 305, or 307.

(Required in V).

436. Wiring and Lighting. (*3-0*).

(a) A study of the fundamentals of interior wiring.

(b) The principles of artificial illumination with a study of modern types of illuminants.

(Required in IX).

FOR STUDENTS IN SHORT COURSES.

21. Electricity and Magnetism. (*4-4*).

A modification of course 201.

Laboratory verification of the laws studied in the theory. The course also includes the use of instruments for the measurements of voltage, current, resistance, etc.

(Required in N).

22. Direct Currents. (*4-4*).

A modification of course 301.

(Required in N).

55. Alternating Currents. (*5-4*).

A study of alternating currents with particular emphasis laid on the practical application of the subject matter. As far as possible, the subject will be treated from the graphical viewpoint.

(Required in N).

56. Electrical Machinery. (*5-4*).

A study of the types of electrical machinery usually found in power plants and electrical installations. The course deals principally with alternating current machinery.

The practice includes the test of alternating current machines.

(Required in N).

61, 62. Electrical Laboratory. (*0-4*).

Laboratory tests of electrical meters and other machines, practice in installing electric wiring and in constructing and repairing electric machines.

(Required in N, group 1.)

65, 66. Applied Electricity. (*3-0*).

The study of wiring methods, meters, storage batteries, lighting, and line construction.

Practice for this course is given in course 61, 62.

(Required in N, group 1).

DEPARTMENT OF ENGLISH.

PROFESSOR FOUNTAIN, ASSOCIATE PROFESSORS THOMAS, BRACKETT, ASSISTANT PROFESSORS COFER, GUNTER, CLICK, PAGE, MILLER, E. E. RANDOLPH, MR. BITTLE, MR. MORGAN.

103, 104. Rhetoric and Composition. (*3-0*).

This course involves recitations, oral and written, readings from masterpieces of literature, and composition writing.

(Required in all four-year courses).

201, 202. English Literature. (*2-0*).

In this course a somewhat detailed study will be made of some of the masterpieces of English Literature from Shakespeare to Tennyson. Written reports will be required.

(Required in all four-year courses, except XI).

203, 204. English Composition. (*1-0*).

This course is intended to give the student practice in writing themes and reports on subjects related to his studies in agriculture or in engineering. Attention is also given to the writing of business letters.

(Required in all four-year courses).

301, 302. Argumentation. (*1-0*).

This course involves a study of the essentials of argumentation, and practice in drawing briefs.

(Required in all four-year courses).

321, 322. English Literature. (*3-0*).

In this course English literature from the beginning of the Victorian era to the present time will be treated as a reflection of the predominant

ideals in politics, economic theory, science, philosophy, and religion. Weekly themes in connection with the reading will be a feature of the course.

(Elective in all four-year courses except XI, XII).

401, 402. Public Speaking. (*1-0*).

The aim of this course is to help the student to a simple, direct manner of speaking. The work consists of the oral interpretation of some of the best orations, writing and delivering original pieces, and debating. Personal conferences with the instructor are required.

(Required in all four-year courses).

403, 404. Public Speaking and Lecturing. (*3-0*).

The aim of this course is to give more practice in speaking than is offered in the required one-hour course. Attention will be given to the preparation and delivery of special types of speeches and of lectures on popular scientific and industrial subjects. The course is recommended to those who expect to be engaged in teaching, in the extension field, or in similar lines of public service. Conferences with the instructor are required.

(Elective in all four-year courses except XI, XII).

FOR STUDENTS IN SHORT COURSES.

31, 32. Practical Composition. (*3-0*).

This course includes a review of the fundamental principles of composition. The written exercises are on practical subjects, especial attention being given to business correspondence.

(Required in all two-year courses).

53, 54. Rhetoric and Composition. (*3-0*).

Same as course 103, 104.

(Required in M).

DEPARTMENT OF ENTOMOLOGY.

PROFESSOR BILSING, ASSISTANT PROFESSOR VON ROSENBERG.

201. General Entomology. (*2-2*).

In this course the student is taught the systematic position of the various insects. The relation of the anatomy of insects to control measures is also studied. The life histories of the more common insects are given together with the methods of control for the injurious forms.

Text: Elementary Entomology, Sanderson & Jackson.

(Required in I).

203. Veterinary Entomology. (*3-2*).

A study is made of the more important insects which affect domesticated animals. Special attention is given those insects which act as disease carriers. Methods of control are discussed. Flies, fleas, ticks

and mites are some of the forms which are given attention in this course.
Text: Veterinary and Medical Entomology, Herms.
(Required in XI).

301, 302. Systematic Entomology. (*2-2, 3-2*).

A thorough systematic study of the various orders of insects is made in this course. The student has free access to the entomological library which contains bound volumes of all standard publications on Entomology, keys, etc. The student also has access to a considerable insect collection for identification purposes.
Text: Comstock's Manual of Insects.
(Required in I, group 8).

304. Apiculture. (*2-2*).

This course is so arranged as to give the student a practical working knowledge of beekeeping which will prepare him for conducting a small apiary in connection with other farm work or for entering commercial beekeeping as a vocation. The course includes a study of the biology and life history of the honey bee, methods of making hives and equipment, management of swarming, honey plants, harvesting and marketing of honey, wax production and refining, control of bee diseases and elementary queen-rearing. The department is equipped with an apiary of medium size. hives, tools, wax-presses, automatic extractors and all standard equipment used in modern beekeeping.
Text: Beekeeping, Phillips.
(Required in I, group 8).

306. Animal Parasites. (*2-2*).

This course consists of a study of insects and other anthropods which are parasitic upon domestic animals or which are concerned in the transmission of diseases of live stock. Methods of eradication and control are given due emphasis.
Text: Sanderson's Pests of the Farm, Orchard and Garden.
Prerequisite: Entomology 201.
(Required in I, group 5).

401. Advanced Economic Entomology. (*3-2*).

This course is arranged for students intending to follow entomological work. Particular attention is given to economic problems, methods of entomological research and field methods of insect investigation and control. This course also embraces insectary methods of breeding insects and studies of insect parasitism.
Prerequisite: Entomology 201.
(Required in I, group 8).

402. Advanced Economic Entomology. (*3-2*).

This course is a continuation of Entomology 301. In addition to a field and laboratory study of life histories which has been carried on in 301, the student goes into a detailed study of insecticides. Various types of spraying machinery, dusting machines, fumigating apparatus are discussed.
(Required in I, group 8).

403. Entomological Literature. (*3-2*).

The aim of this course is to acquaint the student with the most important works on the classification of insects. Publications of various entomologists are discussed. A review of the more important bulletins published by the United States Department of Agriculture and the various State Experiment Stations is made.

(Required in I, group 8).

405. Fruit Insects. (*2-4*).

This course is intended for students who are specializing in horticulture and who wish more definite information concerning the insect pests of fruit and truck crops. In this course a detailed study is made of the life history, habits and control of the pests of these crops. Special attention is given to control methods adapted to Texas conditions and to the value of parasites and orchard management in the control of insect pests.

(Elective in I, group 9).

407. Economic Entomology. (*3-2*).

Special attention is given in this course to the insects which are directly beneficial or injurious. A study is made of the life history of the important pests of farm crops, fruits, vegetables, and live stock. Methods of control and means of preventing insect outbreaks are given due consideration.

In the laboratory the student studies spraying machinery, fumigating apparatus and dusting machinery. The student studies the more important insecticides and makes and applies them when possible.

Text: Sanderson's Pests of Farm, Orchard and Garden.

(Required in I, group 4, 9).

410. Seminar. (*0-2*).

An informal conference is held once a week with the members of the department in which the student reports on some important problem. Reviews of various entomological publications are given.

(Required in I, group 8).

FOR STUDENTS IN SHORT COURSES.

22. Elementary Economic Entomology. (*3-2*).

In this course particular attention is given to the insects which affect cotton, corn, vegetables, and to the various live stock pests. A general discussion of insecticides is given, and the student himself makes and applies as many of them as possible.

(Required in C).

Text: Entomology for Schools, Sanderson and Peairs.

56. Elementary Apiculture. (*2-2*).

In this course the life history and habits of the honey bee are discussed. The student is taught the making of hives, the management of swarming, the harvesting and marketing of honey. The course is

arranged so as to give the student a practical working knowledge of beekeeping.

Text: Productive Beekeeping, Pellet.

(Elective in C).

DEPARTMENT OF FORESTRY.

PROFESSOR SIECKE, ASSISTANT PROFESSOR WYMAN.

The courses offered by the forestry department are not intended to equip students for the profession of forestry. Experience in all parts of the United States have shown that a training in professional forestry cannot be given in less than five years with any assurance of a reasonably successful career. It is, therefore, urged that any student desirous of making forestry his life work shall first obtain a bachelor's degree, taking as much work as possible in biology, chemistry, English, mathematics, and agriculture, including the courses offered in forestry. After the completion of such a course the student who wishes to follow forestry should expect to conclude his work with one or two years at some professional school of forestry which trains men for this profession.

301. Principles of Forestry. (*3-0*).

This course is intended to give the student a general knowledge of forestry, tracing its history from the beginning in European practice to the United States and following its development in this country. In addition, the course consists of a general survey of the fundamental principles underlying forestry, including the relation of forests to soil, moisture, light, and climatic conditions; influences of forests upon stream flow; the important systems of treating woodlands practiced in Europe and in the United States; the habits of important economic timber trees and the character and uses of the more important woods; preparation of forest maps and working plans; methods of estimating standing timber and measuring its growth by the use of various forest instruments; artificial regeneration of forests by seeding and planting, and the best trees for ornamental and shelter belt planting; effects of forest fires and the study of other important enemies of the forest; a brief treatise on the timber regions of the United States; the amount of standing timber and the consumption of timber; the practice of forestry by the government, particularly on its national forests, and the present status of forestry in the States and among private owners of timber land.

Text: Elements of Forestry, Moon and Brown.

(Elective in I, all groups).

302. Silviculture. (*2-2*).

This course consists of two parts, a study of trees under natural conditions, and the establishment of trees and forests by planting. The first part consists of a study of the life history of trees; the relation of different species of light, moisture, soil, temperature, and the effect of their association in the forest; origin and determination of forest types;

the relation of forests to stream flow; description of forests; preparation of forest maps; improvement of young forests; and the proper cutting and use of mature forests so as to secure natural reproduction; silvicultural systems of cutting as practiced in the forests of Europe and the United States.

The second part considers the forest as an artificial establishment, and includes the collection, storage, testing, and germination of tree seeds; relative value of various species of trees for planting purposes; nursery practice; direct seeding; relative use of nursery and forest grown stock in planting; care of young plantations; cost of planting; planting for ornamental purposes; care of shade trees and parks; value of wind-breaks and shelter belts.

This course is supplemented by actual nursery and planting work.

Text: Seeding and Planting in the Practice of Forestry, Toumey.

(Elective in I, all groups).

401. Dendrology. (3-0).

The course in dendrology consists of a comprehensive study of the forest tree species of the United States and the more important introduced trees. This includes the botanical characteristics, distribution, classification and relative importance of the various species of trees. Both the summer and winter characteristics are examined and particular reference is made to those prominent and constant features which lead to ready identification. In this course the native and introduced trees of Texas and the commercial timber trees of the United States are given chief attention.

During the course each student is required to make a twig collection of not less than fifty different species of trees.

Text: Checklist of Forest Trees of the U. S., Sudworth.

402. Wood Technology and Utilization. (2-2).

This course consists fundamentally of the study of the structure of the more important economic woods used in Texas and elsewhere in the United States. The student is taught first to become familiar with such characteristics as odor, taste, color, grain, and hardness in the different woods, and then to identify specimens definitely by studying their structure with the hand lens and the microscope. In addition, a study is made of the uses of the various woods and of the wood-using industries of Texas and other States. The student learns to become familiar with the sources of raw material which supply these industries. Attention is given to methods of preserving timber from decay and wood testing as carried on in the United States.

Practice in this course consists chiefly in studying the various woods in the laboratory.

Text: Economic Woods of the U. S., Record.

FOR STUDENTS IN SHORT COURSES.

52. Elementary Forestry. (3-0).

This course is intended to give the student a general understanding of the principles of forestry. It will be the aim, however, to emphasize the management and care of farm wood lots and wind breaks and the

propagation of trees for ornamental and forestry purposes. The course will consider briefly the development of forestry in the United States and abroad; the practice of forestry by the government on its national forests, by the States, and by private owners; the methods of improving and maintaining wood lots and protecting them from fire and other injuries; the methods of growing trees and the kind of trees to plant in the plains region of the State, including seed collection and nursery work; rules and methods of measuring the contents of trees and wood products, and the study of fence posts and the means of preserving them from decay. The course will include a brief study of the native trees of Texas and the important introduced trees desirable for planting purposes.

(Elective in C).

DEPARTMENT OF HISTORY.

PROFESSOR MCDONALD.

305. Citizenship. (*3-0*).

This course is aimed to prepare the student to render effectively the public services of a useful citizen, by helping him acquire that common fund of knowledge which should be the political asset of every citizen; by acquainting him, while in college, with the issues of the day; by grounding him in the fundamentals of political liberty, and by helping him see how hardly democracy was won and how easily it may be lost.

Lectures, readings and discussions.

(Required in XIII; elective in I).

306. Citizenship. (*3-0*).

Same as course 305.

(Required in all four-year engineering courses).

307. Europe Since 1815. (*3-0*).

The aim of this course is to help the student acquire a comprehensive view of the forces and movements of the nineteenth century which culminated in the World War in the twentieth century, including the reaction of the Napoleonic era, the industrial revolution, democratic reforms, nationalism, commercialism and imperialism.

Text, readings and lectures.

(Elective in all four-year courses, except XI, XII, XIII).

308. Industrial History. (*3-0*).

In this course the industrial history of English and the United States will be considered. The marvelous industrial progress of the United States will receive major attention. The rich literature of the subject, varying from technical treatise to popular novel will be utilided.

Text, readings and lectures.

(Required in XIII; elective in all other four-year courses, except XI, XII).

DEPARTMENT OF HORTICULTURE.

PROFESSOR KYLE, PROFESSOR POTTS, ASSOCIATE PROFESSORS MCGINNIS, HENSEL.

201. Plant Propagation and Orcharding. (*3-2*)

Lectures and recitations are given on the fundamental principles and method of plant propagation and orcharding, including vegetables and fruit, and ornamentals.

Lectures and recitations.

Practice is given in propagation of plants from seed, budding, grafting and in planning, planting, pruning, spraying and general care of the orchard.

Text: Plant Propagation, Kains. Lectures.

Prerequisite: Biology 101, 102.

(Required in I, XII).

202. Vegetable Gardening. (*3-2*).

Detailed instruction in planting, equipping and operating vegetable gardens for home and commercial purposes, and practical demonstrations and experience in the field; a thorough discussion of the methods use in Texas in growing the most important vegetable crops.

Text, lectures and recitations.

The practice is devoted to the building of hotbeds, cold frames, the mixing and application of fertilizers, planting, cultivating, spraying and harvesting of vegetable crops.

(Required in I, XII).

301. Spraying. (*1-4*).

The history and development of spraying in the Unites States and foreign countries is studied, special attention being given to the evolution of spraying machinery and formulas.

Lectures and recitations.

Practical work in making various spraying mixtures for insects and diseases and applying the preparation to orchard and vegetable crops.

Prerequisite: Entomology 201.

(Elective in I, groups 3, 9).

302. Plant Breeding. (*2-2*).

This course is planned to give the student a better understanding of the benefits to be derived from the intelligent breeding of plants. The history and principles of plant breeding are studied in detail; the relation of horticultural varieties and hybrids to each other and to their parents is discussed, together with the principles of pollination, hybridizing and crossing.

The practice work includes a detailed study of biometrical facts as applied to heredity and variation; the cross pollination of our most common horticultural plants.

Text: Plant Breeding, Bailey and Gilbert.

Prerequisite: Agronomy 305; Horticulture 201, 202.

(Required in I, group 9; elective in I, group 8).

303. Principles of Fruit Production. (*3-2*).

This course includes a comprehensive study of orchard management, including problems of location, soils, planting, cultivating, protection from insects and diseases, pruning, harvesting and marketing.

Lectures and recitations.

Text: Principles of Fruit Growing, Bailey.

Prerequisite: Horticulture 201.

(Required in I, groups 8, 9; elective in I, groups 2, 4).

304. Nut Culture. (*1-4*).

This course includes a study of those nuts which are of the most economic importance. Special attention is given to the native nuts. Top-working the native pecan and hickory to improved varieties of pecans is fully discussed.

Lectures and recitations.

Practice is given in budding and grafting pecans in the nursery row; also in top-working native pecans to improved varieties by means of the ring, patch, chip, crown budding and grafting. A critical study is made of the standard varieties of nuts.

Text to be assigned.

Prerequsite: Horticulture 201.

(Elective in I, group 9).

307. Introduction to Landscape Art. (*2-0*).

This is a cultural course given for the purpose of developing in the student a true appreciation of Landscape Art.

Illustrated lectures and recitations.

Text: Rural Improvement, Waugh.

(Required in I, group 10).

308. History of Landscape Design. (*2-0*).

A comprehensive study of the development of landscape design.

Illustrated lectures and recitations.

(Required in I, group 10).

401. Pomology. (*3-2*).

A technical course covering deciduous fruits, their identification, classification, distribution, importance, and history, and a detailed study of the more important species and varieties; a brief systematic resumé of the more important tropical fruits and pomological literature.

Text, lectures and assignments.

Practice is given with such fruits as can be obtained during the season.

Prerequisite: Horticulture 303.

(Required in I, group 9).

402. Experimental Horticulture. (*1-4*).

Practical methods of planning and carrying out experiments, such as are in vogue by the most up-to-date experiment stations.

The student will be required to plan his experiment, prepare the land, mix and apply the fertilizer, sow the seed, cultivate, spray, and harvest

the crop and make a report on the results obtained. Projects must be selected by January 15.

(Required in I, group 9).

403. Subtropical Fruits. (*3-2*).

A study of all the species of subtropical fruits grown in this country. Special attention is given to the growing of citrus trees, figs, olives, dates, and other hardy varieties of subtropical fruits that are adapted to Texas.

Lectures and recitations.

Practice in the study of the various fruits and in the propagation of the different species of subtropical trees. Orchard heating to protect tender plants is given attention.

Text, lectures and recitations.

(Electives in I, groups 8, 9).

404. Commercial Horticulture. (*2-2*).

This course includes a study of the most satisfactory methods of harvesting, grading, packing, shipping, storage and selling of fruits and vegetables. Cooperation and the various other selling agencies receive attention.

Lectures and recitations.

Prerequisite: Horticulture 202, 303.

(Elective in I, group 9).

405. Bush and Vine Fruits. (*2-2*).

This course consists of a study of the propagation, culture, harvesting and marketing of small fruits, such as the blackberry, dewberry, strawberry, currant, grape, etc. Attention is given to the varieties best adapted to Texas conditions.

Lectures and recitations.

Practice is given in planning, planting, pruning, spraying and the general care of berry patches.

(Elective in I, group 9).

407. Introduction to Landscape Art. (*2-0*).

Same as course 307.

(Required in I, group 2).

408. Floriculture. (*2-2*).

This course is designed to give the student a detailed knowledge of the culture and use of the annuals, perennials, and bulbous plants especially adapted to our climatic conditions. Home adornment with flower beds, flower borders, window boxes, and plants for the living room will be the salient thought throughout the course.

Practice will be given in the growing, transplanting and care of a few of the most useful plants.

Text to be assigned.

(Required in I, group 10; elective in I, group 9).

409. Ornamentals. (*2-2*).

This course embraces a thorough study of the ornamentals adapted to Southern conditions.

Lectures and recitations.

Practice is given in the propagation and classification of ornamentals.

(Required in I, group 10).

412. Horticultural By-products. (*1-4*).

This course is designed to enable the grower to utilize waste products of the orchard and garden or to save by canning the higher grades when prices are low.

Lectures and recitations.

Practice is given in the manufacture of fruit juices, preserves, jelly, catsup, soup stock, canning, and drying.

(Elective in I, group 9).

415. Landscape Design. (*3-4*).

This course gives the principles underlying Landscape Art. It also deals with the solving and drafting of problems dealing with landscape work.

Illustrative lectures and recitations.

Text: Landscape Architecture, Hubbard and Kimball.

Prerequisite: Horticulture 307.

(Required in I, group 10).

416. Landscape Design. (*3-2*).

A continuation of course 415.

Text to be assigned.

(Required in I, group 10).

417. Civic Improvement. (*2-0*).

This course deals more especially with the proper laying out of towns and cities, and includes the fundamental principles of city planning; the study of streets, sidewalks, civic centers, and the general improvement of public and semi-public properties.

Text: City Planning, C. M. Robinson.

(Required in I, group 10).

FOR GRADUATES.

501, 502. Advanced Fruit Growing. (*3-4*).

This course will include an advanced study of fruit production. Special attention will be given to the problems of cultivation, fertilization, pruning, thinning of fruit and protection from frost and insect pests and disease. A special study will be made of the improvement of fruit by means of bud selection.

Prerequisite: Horticulture 301, 302, 401 or equivalent work.

503, 504. Advanced Vegetable Gardening. (*3-4*).

In this course an advanced study will be made of the latest methods used in the successful production of vegetables for market and truck gardening purposes. A special study will be made of the underground and overhead systems of irrigation. Considerable time will also be devoted to a study of the more advanced methods of forcing plants for

early market. This course will also include a study of the development of plants by breeding and selection.

Prerequisite: Biology 101, 102, Horticulture 202, 301, 412, or equivalent work.

505, 506. Advanced Landscape Art. (*2-4*).

Advanced landscape design, including the gathering of data, making of preliminary reports, detailed working plan, specifications, including nursery list of prices, and a finished water color rendering of the problem assigned.

Prerequisite: Civil Engineering 319, Drawing 316, Horticulture 407, 415, 416, or equivalent work.

FOR STUDENTS IN SHORT COURSES.

21. Plant Culture and Propagation. (*3-2*).

A modification of course 201. The first part is devoted to plant culture, and is followed by a thorough discussion of the propagation of plants, including all the fruits, ornamentals, and vegetables.

Lectures and recitations.

Practice work in the propagation of seedlings and the different forms of budding and grafting, layering, etc.

Text: Principles of Plant Culture, Goff.

(Required in C).

22. Vegetable Gardening. (*2-2*).

A modification of course 202.

(Required in C).

53. Tree and Vine Fruits. (*3-2*).

A comprehensive study of the various kinds of fruit orchards and vineyards, embracing the problems of location and soils, protection from insects and diseases, pruning, cultivating, harvesting and marketing.

Lectures and recitations.

Text: Productive Orcharding, Sears.

Practical exercises in laying out orchards, spraying, pruning, etc.

Prerequisite: Horticulture 21.

(Elective in C).

55. Spraying. (*1-4*).

A modification of course 301.

(Required in M; elective in C).

58. Nut Culture. (*2-2*).

A modification of course 304.

Prerequisite: Horticulture 21.

(Elective in C).

60. Horticultural By-products. (*1-4*).

A modification of course 412.

DEPARTMENT OF MATHEMATICS.

PROFESSOR PURYEAR, ASSOCIATE PROFESSOR R. F. SMITH, ASSISTANT PROFESSORS J. W. MITCHELL, MICHIE, GARNER, JONES, BOND, PORTER, HALE.

101, 102. Algebra. (*3-0*).

A rapid review of elementary topics, followed by the study of quadratic equations, the binomial theorem, variation, the progressions; complex numbers, theory of equations, logarithms, limits, undetermined coefficients.

Text: College Algebra, Reitz and Crathorne.

(Required in all four-year engineering courses).

Course 101 is repeated in the second term; course 102 is repeated in the first term.

103. Plane Trigonometry. (*3-0*).

Goniometry, review of logarithms, solution of right triangles, problems of heights and distances, properties of triangles, solution of oblique triangles, geometrical applications.

Text: Plane and Spherical Trigonometry, Taylor and Puryear.

(Required in all four-year engineering courses).

Course 103 is repeated in the second term.

104. Analytics. (*3-0*).

The straight line, transformation of coordinates, circle, ellipse, parabola, hyperbola, graphs of trigonometric, logarithmic and exponential functions, tangents.

Text: Analytic Geometry, Riggs.

Prerequisite: Mathematics 101, 103.

(Required in all four-year engineering courses).

Course 104 is repeated in the first term.

106. Trigonometry. (*3-0*).

Same as course 103.

(Required in XIV).

117. Solid Geometry. (*3-0*).

Definitions, lines and planes in space, dihedral angles, polyhedral angles, polyhedrons, the cylinder, cone and sphere.

Text: Solid Geometry, Wentworth-Smith.

(Required as an extra study of Freshmen in the School of Engineering who do not present solid geometry for admission).

Course 117 is repeated in the second term.

203, 204. Calculus. (*4-0*).

Differentiation, limits, infinitesimals, integration, maxima and minima, tangent and normal, areas, volumes, introduction to solid geometry, moment of inertia, center of gravity, radius of curvature, examples of differential equations.

Text: Calculus, March and Wolff. Supplementary exercises.
Prerequisite: Mathematics 104.
(Required in III, IV, V).

205. Calculus. (*4-0*).
A modification of courses 203, 204.
Prerequisite: Mathematics 104.
(Required in VI, VIII, IX).

FOR STUDENTS IN SHORT COURSES.

13, 14. Shop Mathematics. (*4-0, 3-0*).
An elementary course in algebra, geometry, and trigonometry, with special reference to practical applications to shop problems.
Text: Advanced Shop Mathematics, Norris and Craigo.
(Required in M).

DEPARTMENT OF MECHANICAL ENGINEERING.

PROFESSOR FERMIER, PROFESSOR H. E. SMITH, ASSOCIATE PROFESSOR MARTIN, ASSISTANT PROFESSOR BAKER, MR. CHAPPELLE, MR. PETERSON, MR. DECKER.

101, 102. Elementary Mechanics. (*1-0*).
The work of this course consists of lectures, quizzes, and problems involving those principles of mechanics which are more commonly used in all branches of engineering.
Each student is required to keep a note-book for the special problems, which are numerous.
Prerequisite: Mathematics 103.
(Required in all four-year engineering courses).

103. Woodwork. (*0-3*).
Shop practice in the use of the common bench tools and power machinery for working in wood, as applied to joinery, elements of construction, and cabinet making. Practice in the use of shop records, systems, etc., is also given. Special work will be provided for those who have had manual training before entering.
(Required in all four-year engineering courses).

104. Forging. (*0-3*).
Shop practice in the use of blacksmith and general forge tools in the working of iron and steel. Also tempering, annealing, welding, case-hardening, etc.
(Required in all four-year engineering courses).
NOTE.—Courses 103 and 104 together constitute a year's work, three hours a week. Freshmen in all four-year engineering courses will be divided into two groups at the beginning of the first term; one group will begin with course 103 and the other with course 104. At the beginning of the second term the groups will each change to the other work.

201. Pattern Making and Foundry Work. (*0-3*).

Shop practice in pattern making, molding, and casting in iron, brass, etc.

Prerequisite: Mechanical Engineering 103.

(Required in III, V).

202. Pattern Making and Foundry Work. (*0-3*).

A continuation of course 201.

(Required in III).

204. Principles of Manufacture. (*1-0*).

This course consists of recitations, lectures and quizzes (1) on hand and power tools and machines for working wood and metals, their construction, care and operation; (2) on the technological properties of materials of shop manufacture; (3) on processes of manufacture, and (4) on the scientific management of shops from the production standpoint.

Text: No text-book is required, but a note-book is required for lectures.

(Required in III).

205. Elementary Steam Engineering. (*2-0*).

This course aims to give the student such a knowledge of steam power plant equipment as will enable him to understand the operation of the same, and serve as a foundation for subsequent study and calculation along these lines. Valve gears, valve diagrams, and indicator practice are also included.

Text: Elementary Steam Engineering, Spangler.

Prerequisite: Mathematics 103, Mechanical Engineering 101, 102.

(Required in IV, VI).

206. Elementary Steam Engineering. (*3-3*).

An elaboration of course 205, with practice in mechanical engineering laboratory and power plant.

(Required in VIII).

207. Kinematics. (*2-3*).

Without taking account of the strength of the structure, this course takes up the study of motion, velocity ratios, comparative forces, etc., in machines and their elemental parts.

Text: Mechanism, Keown.

Prerequisite: Mathematics 104.

(Required in III).

211. Carpentry and Cabinet Making. (*0-3*).

Same as course 311.

(Required in XIV).

212. Engineering Mechanics. (*3-0*).

A study of pure mechanics as the foundation principles involved in the analytical solution of problems concerning the statics and dynamics

of a material point and of a rigid body; with numerous numerical examples from practical engineering questions.

Prerequisite: Mathematics 203, Mechanical Engineering 101, 102. Must be preceded or accompanied by Mathematics 204.

(Required in III).

214. Machine Shop Practice. (*0-3*).

The same as course 309.

(Required in V).

215, 216. Machine Shop. (*0-3*).

Same as courses 309, 310.

(Required in XIV).

302. Steam Engines and Boilers. (*5-0*).

A study of fuels; combustion; the generation of steam; the construction, operation, care, design and testing of boilers of various types, together with the design of chimneys and other means of producing draft. Also a study of the elementary thermodynamics of heat engines, the mechanics, construction, design, operation and testing of the steam engine.

Text: Heat Engines, Allen and Bursley.

Prerequisite: Mathematics 204, Chemistry 101, 102, Physics 203, 204.

(Required in V).

303, 304. Machine Design. (*0-3, 0-4*).

This course consists of practice in the design of machine elements, and their proper representation by finished shop drawings.

Text: To next is required, but each student is required to have a Mark's hand-book.

Prerequisite: Mathematics 204, Mechanical Engineering 212; must also be preceded or accompanied by Civil Engineering 305 and Mechanical Engineering 313.

(Required in III).

307. Kinematics. (*2-2*).

A modification of course 208.

(Required in V).

309. Machine Shop. (*0-3*).

Practice in bench and machine tool work in metals. This includes chipping, scraping, filing, babbiting, pipe fitting, drilling, turning, boring, grinding, milling machine work, etc.

Prerequisite: Mechanical Engineering 104.

(Required in III, VI).

310. Machine Shop. (*0-3*).

A continuation of course 309, including also tool making and heat treatment of steel.

(Required in III).

311. Carpentry and Cabinet Making. (*0-3*).

This course consists of the following two lines of practice:

(a) The carpentry of wood building construction, in which will be included making out bills of lumber and hardware for building, laying out rafters, stairs, etc., methods of framing, inside finish, etc.

(b) Cabinet making, including wood seasoning, accurate construction in hardwood, wood finishing, making of mill bills, also a limited amount of designing of simple cabinets.

Prerequisite: Mechanical Engineering 103.

(Required in XIII).

313, 314. Engineering Mechanics. (*3-0*).

A continuation of course 212, with special reference to dynamics of rotation. work, energy, friction, impact, etc.

(Required in III).

317. Engineering Mechanics. (*4-0*).

A modification of courses 212, 313, 314.

(Required in V).

319. Engines and Boilers. (*4-0*).

Same as course 302.

(Required in III).

320. Thermodynamics. (*4-0*).

This course embraces a study of the effects of heat upon gases, and the application of thermodynamic laws and principles to the steam engine, gas engine, hot-air engine, injectors, calorimeters, etc., together with a study of heat efficiencies of these machines and instruments.

Text: Applied Thermodynamics for Engineers, Ellis.

Prerequisite: Mechanical Engineering 319.

(Required in III).

403, 404. Engineering Laboratory. (*0-4*).

Instruction and practice in testing gauges, indicators, fans, pumps, boilers, engines, etc.; also a study of the actual mechanical operation of various machines.

In addition to the work with the apparatus, the student will be expected to make calculations and written reports on the investigations and the results obtained.

Prerequisite: Mechanical Engineering 319, 320.

(Required in III).

407. Thermodynamics. (*2-0*).

A continuation of course 320.

(Required in III, group 1).

410. Gas Engines. (*3-0*).

The application of the principles of thermodynamics to the design of gas engines. Also the study of the different cycles, methods of

governing, and some details of design construction, operation and care of various types of gas engines and other internal combustion motors.
Prerequisite: Mechanical Engineering 407.
(Required in III).

412. History and Biography. (3-0).
A study of the lives of men who have been contributors to engineering development. Also a study of the history of the development appliances and invention in mechanical engineering.
Lectures and reference reading are the sources of material for this course, for which no text-book is required.
Prerequisite: Junior or Senior classification.
(Required in III).

414. Steam Turbines. (2-0).
A study of the types and designs of steam turbines, their efficiencies and their operation.
Prerequisite: Mechanical Engineering 320.
(Required in III, group 1).

415, 416. Engineering Laboratory. (0-3).
A modification of course 403, 404.
(Required in V).

417, 418. Power Plants and Equipment. (2-4).
A study of the design of power plants, and their equipment is taken up in this course. Choice and arrangement of equipment are studied from the standpoint of economy of material and labor, as well as from the standpoint of general efficiency.
Prerequisite: Mechanical Engineering 320.
(Required in III, group 1).

419, 420. Industrial Engineering. (3-2).
A study of the industrial plant, including building and equipment; from the standpoint of health of workers as well as from the standpoint of suitability for the industrial processes involved.
Lectures and collateral reading are the chief sources in this course. Practice will include reports, also detailed sketches and drawings covering definitely chosen conditions.
Prerequisite: Senior classification.
(Required in III, group 2).

421, 422. Methods and Management. (2-0).
A study of the general principles of shop management and shop methods as used in plants and factories whose output is largely the product of machine tools and similar equipment.
(Required in III, group 2).

423, 424. Transportation. (2-0).
A study of general means of transportation from the standpoint of commerce as well as the conveying of materials in industrial plants and in construction work.

Lectures and collateral reading are the sources of subject matter for this course.
Prerequisite: Senior classification.
(Required in III, group 3).

425, 426. Railway Mechanical Engineering. (2-4).
A study of types and the design of railway rolling stock and a study of locomotive performance.
Prerequisite: Mechanical Engineering 319.
(Required in III, group 3).

FOR STUDENTS IN SHORT COURSES.

21, 22. Power and Heat. (4-0).
A study of shop mathematics, elementary mechanics, and the fundamentals of fuels, and heat as a source of power.
(Required in H, N).

25. Forging. (0-4).
A modification of course 104.
(Required in H, N.)

26. Woodwork. (0-4).
A modification of course 103.
(Required in H, N.)

61, 62. Foundry and Machine Shop. (0-3).
A modification of 71, 72.
Prerequisite: Mechanical Engineering 25, 26.
(Required in H, N.)

63, 64. Engineering Laboratory. (0-3).
A modification of course 403, 404.
(Required in H, N.)

71, 72. Foundry and Machine Shop. (0-5).
A modification of course 201, 214.
(Required in N).

75, 76. Steam Engines and Boilers. (4-0).
A modification of course 302.
Prerequisite: Mechanical Engineering 21, 22.
(Required in H, N).

DEPARTMENT OF MILITARY SCIENCE AND TACTICS.

COLONEL MULLER, LIEUTENANT-COLONEL DOUGHERTY, CAPTAIN LEACH, CAPTAIN DUNKUM, CAPTAIN JENKINS, FIRST LIEUTENANT WILSON, SERGEANTS HYLAND, BARKER, COOK, FOSTER, SCHULICH, LANGENBACHER.

INFANTRY.

101. (*1-2*).

(a) Theoretical: Theory of target practice, individual and collective; military organization; map reading; service of security; personal hygiene.

(b) Practical: Physical drill; infantry drill; School of the Soldier, squad and company in close and extended order; preliminary instruction, sighting, position and aiming drills, gallery practice, nomenclature and care of rifle and equipments.

102. (*1-2*).

(a) Theoretical: Lectures on military policy as shown by military history of the United States, and military obligation of citizenship; service of information; combat; infantry drill regulations to include School of the Company; camp sanitation for small command.

(b) Practical: Physical drill; infantry drill; School of the Battalion, ceremonies; manuals, bayonet combat; entrenchment; first aid instruction; range and gallery practice. (No target practice at present because of lack of ammunition.)

201. (*1-2*).

(a) Theoretical: Infantry drill regulations to include School of Battalion and Combat; Small Arms Firing Regulations; lectures as in 102 (a); map reading; camp sanitation and camping expedients.

(b) Practical: The same as course 102(b); combat firing.

202. (*1-2*).

(a) Theoretical: Lectures on recent military history; service of security and information; marches and camping.

(b) Practical: The same as course 102(b); signaling; semaphore and first aid; sand table work; range practice. (No practice at present because of lack of ammunition).

301. (*3-2*).

(a) Theoretical: Minor tactics; field orders; map maneuvers; company administration, general principles, papers and returns; Military History.

(b) Practical: Duties consistent with rank of Cadet officers or noncommissioned officers in connection with courses 101, 102, 201, 202; military sketching.

302. (*3-2*).

(a) Theoretical: Minor tactics; map maneuvers continued; elements of international law; property accountability and method of obtaining supplies and equipments.

(b) Practical: Same as course 301 (b).

401. (*3-2*).

(a) Theoretical: Tactical problems; map maneuvers; proceedings of court martial; international relations of America from discovery to present day; gradual growth of principles of international law embodied in American diplomacy, legislation and treaties; psychology of war and kindred subjects; general principles of strategy to show relations between the statesman and the soldier.

(b) Practical: Same as course 301 (b).

402. (*3-2*).

(a) Theoretical: Tactical problems; map maneuvers; rifle in war; lectures on military history and policy.

(b) Practical: Same as course 301 (b).

FOR STUDENTS IN SHORT COURSES.

11, 12. (*1-2*).

Same as courses 101, 102.
(Required in all two-year courses).

51, 52. (*1-2*).

Same as courses 201, 202.
(Required in all two-year courses).

ARTILLERY.

103. (*1-2*).

(a) Theoretical: Field Artillery Ordnance and Gunnery.—Guns, ammunition, sights, fire control instruments, telephones, projectors, etc., types, construction, mechanical principles, design, use and care.

(b) Practical: Battery foot drill, materiel, standing gun drill, the firing battery, equitation.

104. (*1-2*).

(a) Theoretical: The elements of the trajectory and the calculation of the same, gunners' instruction, calculation of firing data.

(b) Practical: Equitation, the school of the driver, the firing battery, materiel.

203. (*1-2*).

(a) Theoretical: Hippology, training of artillery horses, care and management of same.

(b) Practical: The battery mounted, occupation of position, the firing battery.

204. (*1-2*).

(a) Theoretical: Artillery trucks and tractors, gas engines, design, operation, care.

(b) Practical: The battery mounted, smoke bomb practice, subcaliber practice.

303. (*3-2*).

(a) Theoretical: Topography and orientation, French coordinates, hidden and visible areas, etc.

(b) Practical: Military map making, reconnaissance mounted, battery mounted and smoke bomb practice.

304. (*3-2*).

(a) Theoretical: Field artillery gunnery and conduct of fire as taught at the School of Fire, U. S. Army, at Fort Sill, Oklahoma, and corrections of the moment.

(b) Practical: Smoke bomb practice, tactical rides, selection of battery positions.

403. (*3-2*).

(a) Theoretical: Minor tactics and map maneuvers.

(b) Practical: Duties of the different regimental officers of field artillery, in the battery, battalion and regiment mounted; smoke bomb practice.

404. (*3-2*).

(a) Theoretical: Military history and the policy of the U. S. and the principles of military strategy.

(b) Practical: Same as in (b) 403.

SIGNAL CORPS.

105. (*1-2*).

Same as course 101.

106. (*1-2*).

(a) Theoretical: Lectures on the technical equipment used in the Signal Corps.

(b) Practical: Drill, visual signalling, field buzzer, international code, message coding.

(Credit for Electrical Engineering 110 will give credit for the theory of this course).

205, 206. (*1-2*).

(a) Theoretical: Lectures on Signal Corps organization, liason tactics, lines of communication, mapping, message coding and the technical equipment used by the Signal Corps.

(Credit for Electrical Engineering 209, 210 will give credit for this theory).

(b) Practical: Drill, flag, heliograph and projector signalling; use of field buzzer; construction of field telegraph, telephone and buzzer lines; military map work; buzzer practice, coding.

305, 306. (*3-2*).

(a) Theoretical: Communication Engineering.

(Credit for Electrical Engineering 309, 310 will give credit for this theory.

(b) Practical: Drill, construction of telegraph and telephone cir-

cuits, telephone line and cable installation, line testing, radio communication.

405, 406. (*3-2*).

(a) Theoretical: Advanced Communication Engineering.

(Credit for Electrical Engineering 409, 410 will give credit for this theory).

(b) Practical: Drill, supervision of erection and operation of wire lines of communication; use of undamped wave radio sets, direction finders, and radio telephones; installation of multiple telegraph sets, multiplex telephony.

FOR STUDENTS IN TWO-YEAR COURSES.

15, 16. (*1-2*).

Same as 105, 106.

55, 56. (*1-2*).

Same as 205, 206.

DEPARTMENT OF MODERN LANGUAGES.

PROFESSOR CAMPBELL, MISS YOLANDE RENSHAW.

In beginning courses a thorough drill in pronunciation, the essentials of grammar, and colloquial exercises, is given through daily oral and written exercises. The reading of simple texts is taken up as early as possible.

The work of the advanced courses consists in the reading of selected texts and magazines, with incidental grammar review and drill in the use of colloquial idioms. Short dictation exercises are frequently given. Special stress is laid upon sight reading. Parallel reading of from 150 to 300 pages of selected prose works is required. In French and German, the reading is gradually adapted to the scientific work of other departments; the texts read in Spanish will be literary and commercial.

The work in modern language is elective in all four-year courses, as shown under the several curricula.

311, 312. French. (*3-0*).

Grammar and easy reading.

313, 314. German. (*3-0*).

Grammar and easy reading.

315, 316. Spanish. (*3-0*).

Grammar and easy reading.

421, 422. French. (*3-0*).

Reading of scientific and other texts. Parallel reading.

423, 424. German. (*3-0*).

Reading of scientific and other texts. Parallel reading.

425, 426. Spanish. (*3-0*).

Reading of technical and commercial texts; business correspondence. Parallel reading.

DEPARTMENT OF PHYSICS.

PROFESSOR SILVEY, ASSISTANT PROFESSORS MCPHEETERS, DOUGLAS, MR. LACKEY, MR. BOWERSOX.

101, 102. Principles. (*2-2*).

This course includes the mechanics of solids, liquids, and gases, and the phenomena of heat, light, current electricity and magnetism. Instruction is given by recitations, quizzes, problems, and demonstrated lectures. The subject is treated primarily as a pure science, secondarily as a basis for the course in veterinary medicine. Emphasis is laid upon the fundamental physical principles rather than upon the mathematical processes involved.

The practice includes about thirty experiments in the subjects named above.

Text: Kimball's College Physics.

(Required in XI).

111. Agricultural Physics. (*4-3*).

This course includes the phenomena of mechanics, heat, magnetism, current electricity and light that have application in the study of agriculture and agricultural engineering. Instruction is given by recitation, quizzes, problems and demonstrated lectures.

The practice includes measurements involving the laws of concurrent forces, moments, simple machines, specific gravity, calorimetry, current electricity, and the use of lenses in the common optical instruments.

Required of students of agriculture not presenting physics for entrance.

203, 204. General. (*3-3*).

A general course in mechanics, heat, light, electricity and magnetism for engineering students.

In this course particular stress is laid on the derivation of the various formulas necessary for a thorough understanding of the mathematical relations existing in physical determinations. Much emphasis is placed on practical problems furnished by the instructors.

The practice includes about thirty experiments in the subjects named above. The work is, in general, quantitative.

Text: Reed and Guthe's College Physics.

Prerequisite: Mathematics 101, 103. (See Entrance Requirements).

(Required in all engineering courses except V).

206. Agricultural Physics. (*2-4*).

A course in the applications of mechanics, heat, magnetism, current electricity and light which function in the study of agriculture.

Prerequisite: Elementary Physics.

(Required in XII).

207, 208. General. (*2-2*).

This course is identical with course 203, 204, with the omission of electricity and magnetism.

Prerequisite: Mathematics 101, 103. (See Entrance Requirements).

(Required in V).

FOR STUDENTS IN SHORT COURSES.

11, 12. Elementary. (*2-2*).

Lectures, recitations, problems, and demonstrations in elementary mechanics, heat, sound, light, electricity and magnetism. The nature of the theory is indicated by the outline of the practice.

The practice includes measurements of precision with vernier and micrometer calipers and balances; curve plotting; accurate determinations of length, volumes, densities, forces, moments, stress, expansion, heat exchange, refraction and reflection of light by various forms of lenses and mirrors; velocity of sound and the laws of vibrating strings; measurements of voltage, current, and resistance.

Multiple sets of apparatus permit laboratory experiments to be run parallel to the lectures and recitations.

Text: Carhart and Chute's First Principles of Physics.

(See Entrance Requirements).

(Required in H, N).

DEPARTMENT OF RURAL SOCIAL SCIENCE.

402. Rural Sociology. (*3-0*).

This course attempts to apply the principles of general sociology to the social aspects of country life. A careful study is made of rural social institutions, including the rural home, rural school, the rural church and the rural social institutions functioning with reference to these institutions. Consideration is given to health and sanitary policies in villages and in the open country, and a study is made of rural charitable agencies. The population drift from community to community and from the open country to villages and to cities is studied with reference to causes and significance. Comparison of the open country with towns and cities with reference to birth rate, death rate, longevity, marriage, divorce, criminality and moral standards, is carefully considered. The psychology of rural public opinion is considered with reference to its influence on religion, politics, and social customs. The influence of the different types of land tenure is considered with reference to rural welfare. Throughout the course remedies are proposed in connection with the social diagnoses that are made. And, as far as practicable, the student is encouraged to make personal investigations of some aspect of rural life that comes within the field of this course.

Text: Vogt's Rural Sociology.

Prerequisite: Economics 306.

(Required in I, XII).

DEPARTMENT OF TEXTILE ENGINEERING.

PROFESSOR BAGLEY, ASSISTANT PROFESSOR LICHTE.

101, 102. Cotton Classing. (*0-2*).

This course includes practice in grading and stapling cotton, the methods of handling the crop from the field to the mill and other subjects of general interest to a cotton student will be presented in lecture form.

(Required in I).

203. Yarn Manufacture. (*0-4*).

Practice in operating the machinery used in the manufacture of cotton yarns.

(Required in VI).

204. Weaving. (*3-3*).

Recitations and lectures on the construction, operation and adjustment of the plain and fancy looms; a study of the timing and setting of the various parts, and weave room calculations.

Text: International Library of Technology, Vol. 80.

(Required in VI).

301, 302. Yarn Manufacture. (*5-3, 3-2*).

Recitations on the machinery and processes in the manufacture of coarse cotton yarns. Instruction is given with a view of imparting a general knowledge of the machinery and processes, including the study of the raw material; mixing; mixing machinery; construction and operation of feeder and picking machinery, carding, drawing, slubbing, roving, ring spinning, spooling, reeling, and twisting; calculations to determine the necessary gearing to produce given numbers, speeds and production.

Text: Cotton Mill Processes and Calculations, Tomkins.

International Library of Technology, Vol. 76.

(Required in VI).

303, 304. Fabric Designing. (*0-3*).

This course includes the classification of fabrics; the elementary principles of fabric structure; the explanation of various technical terms applied to designs and fabrics; the representation of drawing-in drafts and harness chains; the design of fancy shirting, madrases, and dress goods, etc.

(Required in VI).

305, 306. Weaving. (*3-3, 0-4*).

Continuation of course 204 together with fixing dobbies and Jacquards and the taking to pieces and rebuilding looms.

Text: International Library of Technology, Vol. 80.

Prerequisite: Textile Engineering 204.

(Required in VI).

401, 402. Yarn Manufacture. (*0-2, 3-4*).

Recitations and lectures; a continuation and more exhaustive treatment of the subjects of course 301, 302. In addition, the study of warp preparation and of the machinery necessary for the manufacture of fine cotton yarns, including the sliver lap machine, ribbon lap machine and comber, and a study of the spinning mule, organizations for the maufacture of all classes of yarns and the preparation of fancy warps.

Text: International Library of Technology, Vol. 77.
Prerequisite: Textile Engineering 302.
(Required in VI).

404. Fabric Analysis. (*1-0*).

Dissection of small samples with a view of reproducing them.
Prerequisite: Textile Engineering 303.
(Required in VI).

405. Sizing. (*3-0*).

This course includes a thorough study of all materials used in sizing cotton yarns. The best methods of testing for adulterants commonly found in these materials are given, as are also the most modern methods of their application to the yarns. The machinery and its operation are carefully studied.

Text: Chemistry and Practice of Sizing, Bean.
(Required in VI).

407, 408. Weaving. (*3-2, 0-4*).

Recitations and lectures on the construction, operation and adjustment of leno and Jacquard machines. A study of the different "tie-ups" used in Jacquard weaving. Sketching the most important motions on automatic and dobby looms.

Prerequisite: Textile Engineering 305, 306.
(Required in VI).

410. Mill Management. (*3-0*).

Lectures and recitations on the general management of cotton mills, including the study of fire protection, cost of production in the various departments, labor conditions and wages, care of mill and mill village.

Text: International Library of Technology, Vol. 78; Cotton Mill Commercial Features, Tomkins.
(Required in VI).

412. Magazine Review. (*1-0*).

Students will report in class on articles assigned them in the textile magazines.
(Required in VI).

413. Cotton Classing. (*1-2*).

Recitation and lecture on classification and stapling of cotton, buying spot cotton, papers used in the cotton trade and cotton exchanges.

Text: Cotton Trade Guide and Student's Manual, Miller.
(Required in VI, XII).

415, 416. Fabric Designing. (*0-3*).
A continuation of course 304.
Prerequisite: Textile Engineering 304.
(Required in VI).

FOR STUDENTS IN SHORT COURSES.

11, 12. Designing. (*0-3*).
A modification of course 303, 304.
(Required in H).

13. Yarn Manufacture. (*4-3*).
A modification of course 301, 302.
(Required in H).

16. Weaving. (*3-3*).
A modification of course 204.
(Required in H).

17. Cotton Classing. (*0-2*).
Same as course 101.
(Required in C).

51, 52. Yarn Manufacture. (*3-2, 3-4*).
A modification of course 401, 402.
(Required in H).

53, 54. Designing. (*0-3*).
A modification of course 415, 416.
(Required in H).

55, 56. Weaving. (*3-2, 3-4*).
A modification of course 407, 408.
(Required in H).

58. Fabric Analysis. (*1-0*).
Dissection of small samples with a view to the reproduction of fabrics; Jacquard designing, cutting cards from original designs.
(Required in H).

60. Mill Management. (*2-0*).
A modification of course 410.
(Required in H).

61. Cotton Classing. (*1-2*).
Same as course 413.
(Required in VI).

DEPARTMENT OF VETERINARY ANATOMY.

PROFESSOR FRANCIS.

111. Anatomy of the Domestic Animals. (*3-6*).

This will embrace a careful study of the bones, joints, and muscles.
Text: Anatomy of Domestic Animals, Sisson.
(Required in XI).

112. Anatomy of the Domestic Animals. (*2-4*).

During this term the thoracic and abdominal viscera will be studied.
Text: Anatomy of Domestic Animals, Sisson.
(Required in XI).

304. Anatomy and Physiology of Domestic Animals. (*2-2*).

This course is intended as an introduction to the study of Veterinary Medicine. It treats the fundamental processes of animal nutrition in detail, so that each student may be prepared to meet the problems that arise in the economic production of beef, pork, and dairy products.

Reference books: Physiology of Domestic Animals, Smith; Veterinary Anatomy, Sisson.
(Required in I, group 5).

211. Anatomy of the Domestic Animals. (*3-6*).

This will include a dissection of the circulatory system, the nervous system and the organs of special sense.
Text: Anatomy of the Domestic Animals, Sisson.
(Required in XI).

212. Histology and Embryology. (*3-4*).

A lecture and laboratory course.
Texts: Normal Histology, Stohr; Embryology of the Chick and Pig, Prentiss.
(Required in XI).

FOR STUDENTS IN SHORT COURSES.

52. Animal Diseases. (*3-2*).

A popular course on the common diseases of animals on the farm.
Text: The Horse in Health and Disease, Hadley.
(Elective in C).

DEPARTMENT OF VETERINARY MEDICINE AND SURGERY.

PROFESSOR MARSTELLER, ASSOCIATE PROFESSOR DUNN.

351. Non-infectious Diseases. (*3-0*).

This course consists of lectures and demonstrations on physical diagnosis.

(Required in XI).

352. Non-infectious Diseases. (*3-0*).

In this course instruction is given on diseases of the digestive, circulatory, respiratory and urinary organs.

(Required in XI).

361. General Surgery. (*3-0*).

In this course instruction is given in the principles of surgery, restraint of domestic animals, surgical diagnosis, surgical exercises and soundness.

(Required in XI).

362. General Surgery. (*3-0*).

This course is a continuation of General Surgery 361.

(Required in XI).

371. Clinics. (*0-7*).

372. Clinics. (*0-7*).

471. Clinics. (*0-7*).

472. Clinics. (*0-7*).

Hospital service is required of all students. They must give daily attention to cases assigned. In addition to hospital duty, laboratory diagnosis and post-mortem examination will be required whenever necessary. An ambulatory clinic is maintained. Students will, as occasion may require, make trips to other parts of the State to observe and study outbreaks of diseases. Cases in clinic are treated under hospital conditions. When necessary they are held for observation and study; thus the student is given an opportunity to see the entire course of these diseases and the results of treatment. About one thousand cases of non-infectious diseases, infectious diseases, and surgical diseases of animals and fowls are treated in clinic each year.

(Required in XI).

403. Animal Diseases. (*3-2*).

A discussion of common infectious and non-infectious diseases of domestic animals.

Text: Veterinary Medicine, Vols. 1, 2, 3, 4, 5, Law.

Prerequisite: Veterinary Anatomy 304.

(Required in I, group 5).

451. Diseases of Small Animals and Fowls. (*3-0*).

In this course special attention is given to non-infectious and infectious diseases in pet animals and domestic fowls.

(Required in XI).

452. Practice of Veterinary Medicine and Jurisprudence. (*3-0*).

The aim of this course is to acquaint the student with general business methods and State and national laws relating to the practice of veterinary medicine.

(Required in XI).

453. Infectious Diseases. (*3-0*).

This course involves the study of the symptoms, treatment and control of infectious diseases.

(Required in XI).

461. Obsterics. (*2-0*).

This course treats of accidents of breeding, diseases incidental to pregnancy, parturition and partum conditions. Attention is also given to diseases of the newly born.

(Required in XI).

462. Operative Surgery. (*3-4*).

In this course instruction is given in castrating, spaying, dentistry, lameness, shoeing. Surgical exercises are required.

(Required in XI).

DEPARTMENT OF VETERINARY PATHOLOGY.

242. General Pathology. (*3-2*).

This course deals with the elementary processes of disease, and their causes, including a study of the gross and minute appearance of the diseased tissues. Such disease processes as inflammation, gangrene, necrosis, atrophy, hypertrophy, ulceration; the various degenerations, infiltrations, pigmentations and tumor formations, will be considered. Practice work in addition to the microscopic study of the above pathological processes will include instruction in laboratory technique.

Texts: Text-book of Comparative General Pathology, Kitt; Pathological Technique, Mallory and Wright.

Must be accompanied by Anatomy 202.

(Required in XI).

341, 342. Special Pathology. (*2-2*).

A course of lectures on the special systematic pathology and morbid anatomy of the different organs. The pathology of the infectious and contagious diseases is particularly considered.

Practice work includes the demonstration of museum and fresh specimens, and an introduction to post-morten technique.

Text to be assigned.

(Required in XI).

343, 344. Special Bacteriology. (*2-2*).

The study of bacteria concerned in animal pathology is considered, including the modern methods of combating the diseases produced by them.

Practice work includes a study of the cultural and morphological characteristics, and pathogenicity of these forms of micro-organisms.

Text to be assigned.

(Required in XI).

441. Serum Therapy. (*0-4*).

The methods of manufacture and use of the various biological products are treated, special attention being given to those most commonly used, and of proven efficiency, such as anti-hog cholera, anti-anthrax, anti-blackleg sera and vaccines, and others.

(Required in XI).

442. Meat Hygiene. (*2-2*).

This course deals with the abattoir inspection of meats and meat products; the Federal regulations governing such inspection, condemnation and disposal of carcasses, also the regulations concerning interstate and foreign shipments of live stock.

(Required in XI).

444. Laboratory Diagnosis. (*3-0*).

The methods of procedure in the preparation of material for laboratory tests are given, and the technique of examination explained. Special attention is given to such biological tests as the tuberculin test; mallein test for glanders, and the complement-fixation and agglutination tests.

(Required in XI).

DEPARTMENT OF VETERINARY PHYSIOLOGY AND PHARMACOLOGY.

ASSISTANT PROFESSOR BLACKBERG, IN CHARGE.

121. Physiology of the Domestic Animals. (*3-2*).

Lectures on the physiology of nutrition and secretion, accompanied by practice in the laboratory, examining natural and artificial digestive juices, ferments, milk, urine, etc.

Text: Veterinary Physiology, Smith.

Laboratory Guide: To be assigned.

(Required in XI).

122. Physiology of the Domestic Animals. (*3-2*).

Lectures on the physiology of the muscular, respiratory, circulatory, and nervous systems, accompanied by laboratory practice in which the student will obtain graphic records of these phenomena.

Text: Veterinary Physiology, Smith.

Laboratory Guide: To be assigned.

(Required in XI).

231. Pharmacology. (*3-0*).

This course covers the preliminary work in pharmacology. First, it takes up definition; terminology, metrology, modes of administration and psosology of drugs. This is followed by a study of the derivation, doses, actions, therapeutics and indications of drugs acting on the circulatory system, nervous system, etc.

Text: Veterinary Pharmacology and Therapeutics, Milks; Veterinarian's Handbook, Udall.

(Required in XI).

331. Pharmacology. (*3-4*).

A continuation of course 231, covering the remainder of the drugs used in veterinary medicine. The practice covers actual work examining crude drugs, preparing, compounding, dispensing, tests for purity, and standardization of drugs.

Text: Veterinary Pharmacology and Therapeutics, Milks.

Laboratory Guide: Pharmacy, to be assigned.

(Required in XI).

432. Toxicology. (*1-2*).

In this course particular attention is paid to discussions of the common poisonous plants and mineral poisons, with the proper treatment and prevention. The practice covers methods of detecting these poisons and the symptoms produced by them on experimental animals.

(Required in XI).

PART V

RESEARCH, EXTENSION, SUMMER SESSION, AND OTHER ACTIVITIES.

THE AGRICULTURAL EXPERIMENT STATION.

B. YOUNGBLOOD, DIRECTOR.

The Texas Agricultural Experiment Station is one of the four coordinate divisions of the Agricultural and Mechanical College of Texas. Its function is the investigation of agricultural problems. It consists of a central station at College Station, and thirteen substations, located in various sections of the State, as follows:

Angleton, Beeville, Beaumont, Chillicothe, Denton, Lubbock, Nacogdoches, Pecos, Spur, Temple, Troup, Sonora, College Station.

These substations are used for extending the work of the Main Station, so that Statewide information may be secured upon the various phases of Station work. The Station at the present time is supported by $30,000 Federal and $180,970.40 State funds, for the year.

The work of the Station comprises the investigation of the more important problems of veterinary science, chemistry, horticulture, animal industry, entomology, agronomy, plant pathology and physiology, forestry, plant breeding, rural economics, and the Feed Control Service. The Station is a source of valuable information for students of agriculture and the farmers and stockmen of the State. It is looked to for facts by the School of Agriculture, the Extension Service, and other agencies for the dissemination of agricultural information.

The work of the Main Station, and of the Feeding and Breeding substation (Substation No. 10) presents to students very unusual opportunities both in theoretical instruction and practical experience.

A brief statement of the work of the Station, by divisions and substations, is as follows:

MAIN STATION.

VETERINARY SCIENCE.

The Division of Veterinary Science conducts researches covering the diseases of farm animals of various kinds. Special attention is being given to diseases affecting horses and mules, cattle, sheep, goats, and swine.

CHEMISTRY.

The Division of Chemistry conducts researches relating to feedstuffs, soils, fertilizers, irrigation waters, minerals, paints, and miscellaneous analyses; analyses of feeding stuffs for the Feed Control Service; and the enforcement of the State law regulating the sale of commercial fertilizers. The Chief of the Division of Chemistry is also State Chemist.

HORTICULTURE.

The Division of Horticulture conducts researches relating to fruits, vegetables, and ornamental trees and shrubs, and the introduction and propagation of new and promising varieties of fruits, vegetables and shrubs from foreign countries.

ANIMAL INDUSTRY.

Under the Division of Animal Industry researches are conducted with reference to the feeding, breeding, and management of various types of farm animals, including cattle, horses, sheep, goats, swine, and poultry. Substations No. 7, 10, and 14 are used somewhat extensively for various lines of research into problems relating to the animal industry of the State.

ENTOMOLOGY.

The Division of Entomology conducts researches relating to the various insect pests affecting the crops of the State, including life-history and methods of control of the various species, as well as researches relating to the beekeeping industry of the State. The chief of this division is also State Entomologist, and as such has immediate charge of the enforcement of the law regulating foul brood in bees.

AGRONOMY.

The Division of Agronomy conducts researches relating to the various farm crops adapted to the State, and pays special attention to the introduction and propagation of new and promising crops from foreign countries. Attention is also paid to soil fertility, and researches are conducted as to methods of application of fertilizers and green manures for soil improvement.

PLANT PATHOLOGY AND PHYSIOLOGY.

The Division of Plant Pathology and Physiology conducts researches relating to the diseases affecting plants of the State, with a view to developing methods of combating them. Both field crops and vegetable diseases are studied, as well as diseases of trees, ornamentals, and shrubs of various kinds.

FORESTRY.

The Division of Forestry conducts researches relating to the introduction, preservation and propagation of forest trees in various parts of the State, and the maintenance of an adequate timber supply for the State. The chief of this division is also State Forester, charged by law with the prevention of forest fires.

PLANT BREEDING.

The Division of Plant Breeding conducts researches that relate to the breeding of plants, and their improvement, including field crops, such as cotton, corn, the sorghums, and so forth, special attention being paid to inheritance, and determination of the Mendelian unit characters.

FARM AND RANCH ECONOMICS.

Formerly it was the custom for experiment stations to take up specific problems affecting farm practices, for solution by specialists. At the present time there is quite a general change in viewpoint which causes the experiment station to look upon all farm problems as being a part

of or having a bearing upon the more general problems of rural economics and sociology. In accordance with a nation-wide movement, there has been created in the Texas Station a Division of Farm and Ranch Economics, for the purpose of studying the economic problems effecting the agriculture of the State. In the future, therefore, the work of the specialists will be so arranged as to solve specific problems and at the same time throw light upon the more general economic problems.

FEED CONTROL SERVICE.

The State law regulating the sale of concentrated commercial feeding stuffs and the materials from which they are manufactured, provides for defining them, for prohibiting their adulteration, correct weighing and marking, and collecting of samples; it also provides for the expenses of enforcing the law, and for fixing penalties, and places the enforcement of the act in the hands of the Director of the Texas Agricultural Experiment Station. The Director is empowered to adopt names, standards and definitions; to refuse registration of any feeding stuff under a name which would be misleading as to the materials of which it is made up, or which does not conform to the standards, and after ten days' notice to cancel such registration as may be found in violation of the law or contrary to the names, standards and definitions in effect.

The purpose of the Feed Control Service, which is operated as a division of the Station, is to afford protection alike to buyers and sellers of feeding stuffs. Annual bulletins are issued, giving the names, standards and definitions; lists of firms registered for the purpose of selling feeds in Texas, and the feeds offered by them, as well as the chemical composition of these feeds, as determined by the chemist for the Feed Control Service.

The Feed Control investigates problems encountered in the enforcement of the law, with reference to the feeding values of various feeds and combinations of feeds. The results of these investigations are given to the people of the State through bulletins and circulars, issued from time to time.

SUBSTATIONS.

The thirteen substations, owned and operated by the State as a part of the Station are, as their name implies, subordinate to and a part of the Main Station. In the location of these substations due regard has been given to the need of outlying work within the several agricultural regions.

PUBLICATIONS.

The reports, bulletins and circulars of the Station are distributed to the farmers and stockmen of Texas, and others interested, free for the asking. Care is taken, however, to see that economical distribution is made. All requests for publications should be addressed to:

THE DIRECTOR, TEXAS AGRICULTURAL EXPERIMENT STATION,
A. AND M. COLLEGE OF TEXAS,
College Station, Texas.

THE ENGINEERING EXPERIMENT STATION.

J. C. NAGLE, DIRECTOR.

The Texas Engineering Experiment Station is composed of all the engineering departments of the College, and was organized for the purpose of affording a service to the industries of Texas similar to that afforded to the agricultural interests by the Agricultural Experiment Station; of assisting the urban population of the State in solving the technical problems of urban life; of investigating engineering and industrial problems of especial importance to Texas, and of disseminating information along these lines.

The Texas Engineering Experiment Station staff consists of the entire teaching force of the following departments of the College:

Architecture and Architectural Engineering.
Chemistry and Chemical Engineering.
Civil Engineering.
Economics.
Electrical Engineering.
Mechanical Engineering.
Physics.
Textile Engineering.

Bulletins have been issued as follows:

No. 1. Earth Roads.
No. 2. Relation and Value of Chemistry to Industry.
No. 3. The Comparative Value of Fuels.
No. 4. Highway Bridges and Culverts.
No. 5. Highway Engineering at the A. and M. College.
No. 6. Household Conveniences.
No. 7. Gravel Roads.
No. 8. Electricity in the Country Home.
No. 9. Cotton Classing and Marketing.
No. 10. Sewage Disposal for Country Homes.
No. 11. Purchasing by Specification.
No. 12. Demonstration Roads at the A. and M. College.
No. 13. The Financial Side of Road Improvement.
No. 14. Highway Engineering at the A. and M. College of Texas.
No. 15. The Organization of a State Highway Department for the State of Texas.
No. 16. Maintenance of Earth, Sand-Clay and Gravel Roads.
No. 17. The Physical Testing of Non-bituminous Road Materials.
No. 18. The Benefits of Good Roads.
No. 19. Sand-Clay Roads.
No. 20. The Value of Economic Geology.

For copies of these bulletins, and for information regarding the work of the Texas Engineering Experiment Station, address J. C. Nagle, Director, College Station, Texas.

THE EXTENSION SERVICE.

(Agricultural and Mechanical College of Texas and United States Department of Agriculture Cooperating).

T. O. WALTON, ACTING DIRECTOR.

Extension in agriculture and home economics is a work undertaken by the Agricultural and Mechanical College, under a joint cooperative agreement between the President and Board of Directors of this College and officials of the States' Relation Service of the United States Department of Agriculture, as provided for by the Federal and State governments under the terms of the Smith-Lever Act. The general purpose is to carry information from the College, the Experiment Stations, and other authentic sources of information to farmers and farm women. In addition to the regular State and Federal Smith-Lever funds that are available for the conduct of the work, several cooperative projects are maintained by the United States Department of Agriculture, under cooperative agreement between the College and department, these activities being correlated with and functioned through the Extension Department of the College. Besides the important undertakings of farm and home demonstration work through county agents, sustained jointly by the county, the College and the Department of Agriculture, the service includes information and demonstrations for the development of better farming and home-keeping, and in a broad way for the promotion of rural welfare. The funds available from the counties, the State and the Federal department have been sufficient to enable the College to maintain county agents in practically all of the more important agricultural counties in the State. The condition under which work is placed in a county is, that the county commissioners court or other local organization pay from one-third to one-half of the salary of the agent; the remaining portion of the salary and expense being borne by the College and department.

Application for this work should be addressed to the Director of Extension Service, College Station, Texas.

In addition to the county and home demonstration agents' organization, a staff of specialists is maintained at College. These men and women specialists will respond to requests for special service in communities where there is no agent and bulletins and literature will be sent free upon application. There is issued twice each month the Semi-Monthly Farm News, which gives seasonal advice, and numerous circulars are issued from time to time covering matters of general agricultural interest.

Besides the activities thus indicated, the Extension Service maintains the following undertakings:

ORGANIZATION AND MARKETING.

Members of the specialist staff, district, county and home demonstration agents are organizing community and county councils of agriculture in every county where agents are located, the purpose of these organizations being to stimulate cooperation among farmers in all mat-

ters of interest to the farm family and particularly to encourage co-operative marketing of farm products, and the improvement of the social and educational life of rural communities. It is hoped that within a very short time a sufficient number of communities and counties will have completed these organizations to an extent that will enable groups of farmers to secure equitable prices for the products of their gardens, farms, orchards and ranches. Many such cooperative enterprises in marketing have been undertaken during the past season and success has been obtained in most instances. Further information will be furnished concerning these cooperative efforts on application.

HOME ECONOMICS.

The farm home is an essential part of the farm establishment. It is more than a dwelling place, and the work of the housewife is a vital factor in the success of the farmer. The national Congress in considering the Smith-Lever Act, wisely provided funds for disseminating information to farm housewives through the home demonstration agents, and these agents are accomplishing gratifying results in home management, dairying, gardening, orcharding and poultry keeping, as well as in other phases of home betterment, and by means of organized groups, farm women are enabled to keep fully informed with reference to modern methods in dealing with household problems. This phase of the Extension Service has been a large factor in the betterment of the rural home.

BOYS AND GIRLS' CLUBS.

The primary mission of an educational institution is to look after the rising generations, and while the Extension Service has not neglected adult farmers, it has realized the importance of properly training the youth of the State during the formative period; therefore, special effort has been made under trained leadership and by diligent instruction to give the boys and girls the proper understanding of agriculture and home economics and to prepare them for successful and happy life in the country. The particular projects maintained are boys' agricultural club work, boys' live stock club work, girls' canning club work, and girls' poultry club work.

SUMMER SESSION.

GENERAL STATEMENT.

The Summer Session of the Agricultural and Mechanical College of Texas has been established for the following well defined purposes:

1. To provide courses of instruction in agriculture, domestic economy, manual training, cotton classing, rural sanitation and rural sociology, for the benefit of teachers, rural ministers, farmers, farm women and others who may be interested in any phase of agricultural oo rural development.

2. To offer to young men having sufficient preparation the opportunity of taking courses for college credit, and also to permit students of the College to remove deficiencies or to pursue further courses toward graduation.

3. To provide instruction for young men who need to review or to take additional work as a preparation for examinations to enter this College.

4. To provide instruction in the various subjects required for State teachers' certificates.

ORGANIZATION.

The work of the Summer Session will be given in five divisions as outlined below:

1. The Rural Life School. (Six weeks).

The work of this division will be given largely by the regular teaching staff of the College and will include courses in agricultural education, agricultural engineering, agronomy, animal husbandry, dairying, rural home economics, horticulture, military science, and the organization and teaching of athletics in secondary schools.

These courses are so planned as to be of special interest to teachers as well as to furnish valuable training for persons not intending to teach. Teachers of agriculture and domestic economy in secondary and rural schools will find in this division opportunities for extending their knowledge of these subjects that are unequalled elsewhere in the State Not only will the student have at his command all of the regular teaching equipment and facilities of the College, but to this will be added the opportunity for contact with the research work of the Experiment Station, particularly along the lines of soil fertility, crop production, horticulture, dairying and live stock feeding, breeding and management.

2. The Summer Normal. (Six weeks).

In this division the subjects required for all grades of teachers' certificates will be offered, including primary methods.

Instruction will be given by successful school superintendents, assisted by members of the regular teaching staff of the College.

The Summer Normal is organized under the authority of the State Superintendent of Public Instruction. The instruction in the subjects required for teachers' certificates will conform to the outlines, recommended text-books, laboratory requirements, etc., of the State Super-

intendent of Public Instruction. The final examinations will be held on the official dates as authorized by the State Department of Education.

The College offers unusual advantages to teachers who desire not only to build to State certificates of higher grades, but to increase their professional attainments by taking college courses not included in the Summer Normal.

3. The College. (Twelve weeks).

In this division courses carrying college credit will be offered for the benefit of students who desire to make up deficiencies or to take additional work toward graduation and for others who desire college credit. Three groups of courses will be offered as follows:

(1) Courses beginning at the opening of the Summer Session in June and continuing through a period of eight weeks.

(2) Courses beginning at the opening of the Summer Session in June and continuing through a period of six weeks. These courses have been planned to meet the special needs of those persons who are beginning the work of Vocational Agriculture under the provisions of the Smith-Hughes Act.

(3) Courses beginning at the close of group 2, described above, and continuing six weeks. These courses are given for the benefit of those persons who have completed the course in group 2, and who desire additional work preparatory to teaching Vocational Agriculture.

The right is reserved to withdraw any course for which less than five students register.

4. The School of Cotton Classing. (Six weeks).

The object of the School of Cotton Classing is to prepare young men for cotton buying and the managing of cotton warehouses, and to offer to farmers the opportunity to increase their knowledge of the leading farm product of Texas.

A study is made of the elements which determine the commercial grades of cotton; the influences which affect the price of cotton; the system of financing the crop from field to factory and the relation of exchanges to the business in general. New samples are put each day on the cotton tables for practice and the work is patterned somewhat after that of a cotton office.

Special attention will be paid to the staple of cotton and an expert in this branch will give instruction in this subject. Many samples of various lengths of staple will be provided for students taking up this branch of the work.

The government standards for classing cotton, which have been adopted by nearly all the leading exchanges, with the exception of New York, will be used.

5. Farmers' Short Course. (One week).

This course is planned to meet the needs of practical farmers, business men and women who desire to farm on a better basis, to make farming more profitable, and to make farm life more comfortable and attractive. The work will be given in three subdivisions as follows:

Agriculture—Separate courses will be offered in the following departments: Agricultural Engineering, Agronomy, Animal Husbandry,

Dairy Husbandry, Horticulture, Poultry, Plant Diseases and Insects, Veterinary Medicine.

Home Economics.—The work in home economics will be especially adapted to the needs of girls and women from rural communities. The work will consist of lectures and demonstrations in cooking, canning, basket making and household art.

Agricultural Education—This work will be designed especially to meet the needs of public school teachers of the State who are teaching agriculture.

The teaching staff of the Farmers' Short Course will be composed of officers from the teaching division, the Experiment Station and the Extension Service of the College. In addition, there will be several speakers of national reputation.

ADMISSION REQUIREMENTS.

In the College division the courses will be offered subject to the same general requirements as in the regular session.

There are no fixed requirements for admission to the Rural Life School, the School of Cotton Classing, or the Farmers' Short Course. Applicants for the Summer Normal certificates must meet the legal requirements with reference to age.

For bulletin giving detailed information concerning the Summer Session, address

THE REGISTRAR,
College Station, Texas.

FERTILIZER CONTROL SERVICE.

G. S. FRAPS, STATE CHEMIST.

The chemist of the Texas Experiment Station is designated by law as State Chemist, and has charge of the enforcement of the fertilizer law. Under his direction fertilizers are inspected, sampled for analysis, the samples analyzed, and the results published as bulletins of the Experiment Station. It is also the duty of the State Chemist to investigate the composition, properties, and agricultural values of fertilizers, of fertilizer materials, and to conduct experiments relative to the value of fertilizers. Such investigations are being made, and the results published from time to time. The people of the State are furnished with information concerning fertilizers, by means of personal letters, bulletins, and otherwise. Cooperative fertilizer experiments are made with farmers, so that they can test the effects of various combinations of fertilizers on their own land.

Analyses are made of soils, irrigation and domestic waters, fertilizers, etc., when the analysis would be of public benefit along the lines of agricultural chemistry, and when the samples are taken in accordance with the requirements necessary to secure a suitable sample. Persons who desire to secure an analysis should request further information and instructions for sampling, as samples must be properly taken if the analysis is to have any value.

Analyses of feeding stuffs for Feed Control Service, and chemical investigations of their composition and properties, are also made by the State Chemist.

OFFICE OF STATE ENTOMOLOGIST.

F. B. PADDOCK, STATE ENTOMOLOGIST.

By law the entomologist of the Texas Agricultural Experiment Station is ex-officio State Entomologist, and his headquarters are at College Station. The State Entomologist is charged with enforcing the laws of the State relative to diseases of honey bees. Under this law, it becomes the duty of every citizen to report the presence of any disease of honey bees to the State Entomologist. The law empowers the State Entomologist to issue such regulations as may be necessary to control of diseases of bees. These regulations as they are now issued restrict the shipment of bees and appliances capable of transmitting disease into quarantine counties. These quarantine counties are organized with inspectors to eradicate the diseases of bees. A certificate must be secured for the movement of bees within the State, as it is unlawful for common carriers to accept for shipment any bees or appliances except as provided for by the State Entomologist. The State Entomologist is required to publish such information as is neecssary on the methods and directions for treating, eradicating and suppressing diseases of honey bees. It is unlawful for anyone to seek to prevent the inspection of bees, honey or appliances by the State Entomologist or his assistants. In addition to enforcing the law relative to the diseases of bees, the State Entomologist furnishes the citizens of the State with information concerning injurious insects and their control.

OFFICE OF STATE FORESTER.

E. O. SIECKE, STATE FORESTER.

By act of the Thirty-fourth Legislature the office of State Forester was established, together with a department of forestry at the Agricultural and Mechanical College, with a division of forestry of the Agricultural Experiment Station with headquarters at College Station. In accordance with the law the State Forester has direction of all forest interests and all matters pertaining to forestry within the jurisdiction of the State. He is charged with the duty of enforcing all laws pertaining to the protection of forests and woodlands, preventing and extinguishing forest fires, collecting data relative to forest conditions, and cooperating with counties, towns, corporations and individuals in preparing plans for the protection, management and replacement of trees, wood lots and timber tracts. Under the forestry act the State is authorized to accept gifts of land to the State to be used so as to demontrate the practical utility of timber culture, water conservation and as refuges for game. The board of directors has the power to purchase lands in the name of the State, suitable chiefly for the protection of timber, as State forests, using for such purposes any special appropriations or any surplus money not otherwise appropriated which may be standing to the credit of the State forestry fund. All moneys received from the sale of wood, timber, minerals, or other products from the State forests and penalties for trespassing thereon shall be paid into the State Treasury and shall constitute a State forestry fund.

MILITARY EDUCATIONAL ACTIVITIES.

F. C. BOLTON, DIRECTOR.

During the war the facilities of the College were used in training soldiers for special technical branches of the miltiary service.

A total of 3648 men were trained. These men were distributed among the following courses.

Auto mechanics and vulcanizers	1,731
Radio electricians and mechanics	1,305
Blacksmiths	56
Horseshoers	30
Machinists	32
General mechanics	6
Carpenters	82
Surveyors	12
Topographical draftsmen	6
Meteorologists	338
	3,648

PART VI

REGISTER

REGISTER OF STUDENTS.

GRADUATE STUDENTS.

Conner, Arthur Benjamin.....College Station.
B. S., A. and M. College of Texas, 1904.
Candidate for the degree of Master of Science.

Leidigh, Arthur Henry.....College Station.
B. S., Kansas State Agricultural College, 1902.
Candidate for the degree of Master of Science.

Moore, Fleming George.....College Station.
B. S., A and M. College of Texas, 1908.
Candidate for the degree of Master of Science.

Regenbrecht, Edward Michael.....College Station.
B. S., A. and M. College of Texas, 1918.
Candidate for the degree of Master of Science.

Wermelskirchen, Louis.....College Station.
B. S., Kansas State Agricultural College, 1911.
Candidate for the degree of Master of Science.

UNDERGRADUATE STUDENTS.

Abbreviations.

Ag. Ed.—Agricultural Education.
Ag.—Agriculture.
Ar.—Architecture.
ChE.—Chemical Engineering.
CE.—Civil Engineering.
EE.—Electrical Engineering.
ME.—Mechanical Engineering.
Sci.—Science.
TE.—Textile Engineering.
VM.—Veterinary Medicine.

c.—Two-Year Course in Agriculture.
f.—Two-Year Course for Electricians.
h.—Two-Year Course in Textile Engineering.
m—Two-Year Course in Agricultural Engineering.

'19—Senior.
'20—Junior.
'21—Sophomore.
'22—Freshman.
Sp.—Special Student.
1—First Year of Two-Year Courses.
2—Second Year of Two-Year Courses.

Abernathy, John Clayton.....'22 Ag.....Alief.
Abicht, Ralph Rupert.....'19 Ag.....Sherman.
Abrams, Norman Hughes.....'22 CE.....Sherman.
Abshier, Lenard Boyd.....1 f.....Raywood.
Adair, Odis Jones.....'22 EE.....Cooper.
Adams, Joseph Gerard.....'21 Ag.....Crockett.
Adams, James Q. Anderson.....1 f.....Ferris.
Adams, Louis Joseph.....'22 ChE.....Waco.
Adams, Randolph.....1 f.....Velasco.
Adams, Temple Emory.....'22 Ag.....Marshall
Adkisson, Albert Wesley.....'20 CE.....Denton.
Agopian, Pete Hagop.....1 f.....Brookshire
Akin, Earl T.....'20 EE.....Breckenridge
Akin, Henry Lee.....1 f.....Breckenridge.
Albritton, John Allen.....1 C.....Kerens.
Alderman, Ezra Fester.....2 C.....Cotulla.
Alexander, Ralph Kimball.....'22 ME.....Weatherford.
Alexander, Scott.....'20 Ag.....Gainesville.
Alford, Fred Fergus.....'22 CE.....Wills Point.
Allen, Don Harmon.....'22 Ag.....Gainesville.
Allen, Harry Durwood.....1 C.....El Campo.
Allen, Huron M.....'20 EE.....McGregor.
Allen, Willis Lang.....'22 Ag.....Marlin.

Allenson, Frank William	1	f	El Campo.
Allison, Gilbert Eli	'22	ME	Teague.
de Almeida L. A.		Sp. Ag	Brazil, S. A.
Amsler, Neill Fred	'22	ME	Brenham.
Anderson, Guy Dillard	'20	ME	Wichita Falls.
Anderson, Howell Rufus	'21	CE	Haskell.
Anderson, William Townsend	1	f	Calvert.
Andrews, Clifford Kincaid	'22	Ag	Marshall.
Andrews, Horner Esteen	1	C	Anarene.
Andrews, William Henry Bryan	'22	EE	McKinney.
Anschicks, Carl Sommer	'22	CE	Calvert.
Antilley, James Homer, Jr	'22	ME	Sour Lake.
Armstrong, Marshall	1	f	Mercedes.
Armstrong, Paul Wendell	'22	CE	Amarillo.
Armstrong, Robert Volney	'20	Ag	Bryan
Arnspiger, James Henry	'22	EE	Sherman.
Aschenbeck, Walter Balamy	'22	EE	Wharton.
Ashford, John Cecil	1	f	College Station.
Ashley, Joseph Jarrette	1	f	Beaumont.
Atchison, Henry Clay	'20	Ag	Hindes.
Atkins, Hardin Louis, Jr	'22	Ag	Bandera.
Atkinson, Vernon Elias	'22	EE	Lovelady.
Atteberry, William	'21	Ag	Marshall.
Axe, Paul	'21	ME	Texas City.
Backer, Robert Paul	'22	ME	Paris.
Bagnall, William Wendell	1	h	Corpus Christi.
Bailey, Ben Hill, Jr	2	c	Caddo Mills.
Bailey, Richard Taylor	'22	CE	Comanche.
Bain, James Frank	'22	EE	San Antonio
Baker, Peter Willis	'22	ChE	Carthage.
Baldridge, Bismark	1	c	Ennis.
Ball, Eli Raymond	1	c	Lillian.
Ballard, Andrew Leslie	'20	ChE	Bryan.
Ballard, William Lambert	'22	Ag	Dallas.
Ballew, William Fletcher	'22	CE	Corsicana.
Barber, Ivan Wilmot	'20	CE	Strawn.
Barber, John Loper	1	f	Fort Worth.
Barclay, Watt	'22	CE	Kennard.
Barlow, Hayden Samuel	1	f	Kerens.
Barlow, Thomas Jefferson	'20	Ag	Eastland.
Barnes, Bonner Herbert	'21	ChE	Santa Anna.
Barnett, Khrone Herring	1	f	Caldwell.
Barnett, Walter	1	f	Rosebud.
de Barros Lima, Hermez Cunha		Sp. Ag	Brazil, S. A.
Barry, Worth William	1	c	Navasota.
Barton, Esley Charles	'21	Ag	Martin.
Bartlett, Benjamin Franklin		Sp. EE	Corpus Christi.
Bartlett, Charles Henry	'22	Ag	Marlin.
Baskett, John Lewis	'22	CE	Dallas.
Bass, Nelson Ives	'22	EE	Hubbard.
Bateman, Clarence Ervin	'22	CE	Fort Worth.
Battelstein, M. Abraham	1	f	Houston.
Batterson, Travis Monroe	1	f	Houston.
Bear, Joe Bailey	'22	Ar	Denison.
Beard, Octavius King	2	f	Edge.
Beatty, Robert Edward	'22	Ag	San Antonio.
Beauchamp, Carrol Fred	'22	EE	Orange.
Beazley, William Henry	'22	ME	Crockett.
Beck, John Weatherly	1	c	Runge.
Beck, Robert	1	f	Weatherford.
Becker, Louis Charles	'19	Ag	Laredo.
Beckman, Ellwood	1	f	El Campo.
Beerman, Cecil Irwin	1	f	Mercedes.
Beesley, Ben Branson	'22	CE	Dallas.
Bell, Ernest Perry	'22	CE	Tyler.

Bell, Francis Leonard	'21	EE	Marshall.
Belser, Dewey David	'22	ME	Nacogdoches.
Benedict, Emmet Norman	1	f	Midland.
Bennett, Vol, Jr	'21	Ag	Hochheim.
Benton, Loren William		Sp. Ag	Welcome, Minn.
Benton, Thomas Hill	'22	Ag	Bryan.
Bernard, Donald Montfort	'22	Ag	Corpus Christi.
Bernheim, Alphonse Gilbert	'20	EE	Galveston.
Bertschler, Frank Lee	'21	Ag	Bryan.
Bettis, Irvin Hunter	'21	ME	Beaumont.
Beverly, Vernon Christopher	1	f	Dodge.
Bierschwale, George Herman	1	f	Morris Ranch.
Bigham, Floyd Douglas	1	f	Rogers.
Bigham, George Thomas	1	f	Rogers.
Billingsley, Bruce Calder	'22	CE	Galveston.
Bimmerman, Harry Gordon	'22	ChE	Sherman.
Bimmerman, Paul Henry	'22	CE	Sherman.
Binkley, Frederick Earnest	2	c	Cotulla.
Binz, Arthur Jacob, Jr	'22	EE	Houston.
Bizzell, William Sangster	'22	CE	College Station.
Black, J. D	1	f	Jarrell
Black, Leon Springfield	'22	ME	Buffalo.
Blackburg, Dr. S. N		Sp. Ag	College Station.
Blackwell, David Allison	'22	Ag	Mercedes.
Blair, Thomas Lloyd	1	f	Mesquite.
Blake, J. P., Jr	'22	Ag	Dallas.
Blakely, Bassett	1	c	Houston.
Blakesley, Elson William	'22	CE	Pasadena.
Blevins, Robert Llewellyn	'22	CE	Seguin.
Bludworth, B. Port, Jr	'21	Ag	Flatonia.
Blumberg, Ralph Deitz	'20	EE	Seguin.
Blumenthal, Charles	'21	Ag	Houston.
Bohn, Herman Marwitz	'20	CE	Austin.
Bolin, Lodwick Timothy	'21	EE	Houston.
Bonewitz, Edwin Arthur	'22	CE	Houston.
Boone, James LeRoy	'22	Ag	Alief.
Boothe, Job Orvill	1	c	Gonzales.
Boren, Cecil Culberson	'22	CE	Waxahachie.
Boriskie, Frank William	'22	CE	Bryan.
Bosl, Mathias Louis	'22	Ag	Temple.
Bossy, Herbert Grant	'22	EE	Fort Worth.
Bost, Leon Theodore	1	c	Robstown.
Boulden, Cecil Ford	'20	CE	Columbus.
Bourke, Lionel Joseph	'22	EE	Yoakum.
Bowden, Edward Lane	'22	CE	Lockhart.
Bowden, Guillermo	'22	Ag	Lima, Peru.
Bowen, Hobert H	'22	EE	Lampasas.
Bowles, Carey Edwin		Sp. Ag. Ed	Denton.
Boyd, James Wright	'22	EE	Taylor.
Boyd, William Welder	'19	ME	Port Lavaca.
Boykin, Garland Lester	'22	Ag	Polytechnic.
Bozeman, Paul Browning	'22	Ag	Rosebud.
Braden, Clarence Camille	'19	CE	Jefferson.
Bradshaw, Weldon Leroy	'21	Ar	San Antonio.
Brady, Virgil Rue	'19	CE	Denton.
Brannen, Virgil	'22	ME	Bynum.
Branstetter, Otho Chandler	1	f	Edna.
Bratton, Howard Basil	'20	Ag	Weatherford.
Breg Wilbur Carroll	'22	CE	Dallas.
Brennan, William Raymond	'22	CE	Houston.
Bressler, Raymond George	'19	Ag. Ed	State College, Pa.
Brewer, Charles Lee	1	c	Gainesville.
Brewer, Roy Allan	'19	Ag	Cleburne.
Brewster, Carl Glendon	1	f	El Campo.
Bridges, Robert Earle	'22	EE	Tyler.
Briggs, George Edmond	'21	CE	Barstow.

Bright, Clyde Bailey	'21	Ag	Gonzales.
Brim, Joseph Clifford	'22	CE	Denton.
Brinkmann, Edgar	'21	CE	Comfort.
Briscoe, Andrew Clyde	2	c	Gaston.
Briscoe, Ephram Wray	'22	CE	Dallas.
Brison, Fred Robert	'21	Ag	Pittsburg.
Broaddus, Murray Frank	'22	ChE	Caldwell.
Broadfoot, Malcolm Graham	'22	EE	Longview.
Broadfoot, William Clifton	'22	CE	Longview.
Brooks, Doyle Garner	2	c	Maypearl.
Brooks, George Foley	'22	Ag	Belton.
Brown, Charles Owen	1	f	Jourdanton.
Brown, Richard Clyde	'22	CE	Fort Worth.
Brown, Robert Heardsbedth	1	f	Runge.
Brown, Rodgers Porter	'19	ME	Dallas.
Brown, Sam Beverly	'22	EE	Longview.
Brown, T. Floid	1	f	Winona.
Brown, Wayne Crawford	1	f	Linden.
Broxton, Malcolm Irwin	'22	Ag	Bryan.
Bruce, Curtis Ray	1	f	Dallas.
Brunner, William James		Sp. CE	Taylor.
Bryan, Alvis Chappel	'22	ME	Bryan's Mill.
Bryant, Martel Prideaux	'22	EE	Sulphur Springs.
Buchan, Fritz Emil	'22	ChE	Galveston.
Buchanan, John Franklin	'22	Ag	Plainview.
Buck, John Preston	'19	Ag. Ed	Austin.
A. B., Baylor University, 1916.			
Buckingham, Ralph Glenn	'22	Ag	Gainesville.
Buenz, Ernest Otto	'22	Ar	Laredo.
Buescher, LeRoy August	'22	CE	Moulton.
Buescher, Norman Emil	'22	Ag	Smithville.
Buie, Forrest Peyton	'21	CE	Mertens.
Buie, T. Augustus	'21	EE	Fort Worth.
Bullen, Thomas Kitterson	1	c	Houston.
Bunge, Lester P. W	1	c	Eagle Lake.
Burditt, Jesse N	'21	Ag	Lockhart.
Burke, James Seipel	'22	CE	Galveston.
Burkes, William Marion	'20	Ag	Reagan.
Burks, Henry Lucius	'21	Ag	Tyler.
Burnett, Howell Aubrey	'20	ME	Laredo.
Burns, Charles Ernest	'22	Ag	Kosse.
Burns, Waller Thomas	'20	Ag	Houston.
Burr, James Ballantyne	'22	EE	Smithland.
Burroughs, Asa Brice	'22	Ag	Little Rock, Ark.
Burton, Archie Baker, Jr	1	f	Crockett.
Buster, Leonard	'22	CE	Weatherford.
Butchee, Cecil Lyles	'22	Ag	Cameron.
Butschek, Frank Joseph	1	f	Moulton.
Byrd, Jewel Weldon	'22	ME	Nacogdoches.
Byrom, William Kinyon	'21	CE	Whitney.
Byron, Leonard Attwell	'22	ME	Weatherford.
Cabaniss, Doc David	1	f	Maypearl
Cade, Albert Whitney	'20	CE	Chandler.
Cade, G. Leon	1	c	Rockwall.
Cadenhead, John I	'22	CE	Deberry.
Caldwell, John House	1	f	Velasco.
Caldwell, Joe Martin	'21	Ag	Midland.
Caldwell, M. L	4	Ag. Ed	College Station.
Caldwell, Overton Jones	'22	EE	Gainesville.
Cale, William Henry	1	f	Floresville.
Calhoun, John Clinton, Jr	'22	ME	Houston.
Calhoun, John Sebastian	2	c	Teneha.
Calhoun, Powell Thompson	1	c	Charco.
Callahan, Neel Latham	1	f	San Antonio.
Callan, Jackson Barnett	'22	EE	Waco.

Camp, Robert Shaw	'19	Ag	Navasota.
Camp, Thomas Felton	'22	Ag	San Gabriel.
Campbell, Crockett	'22	ChE	Lufkin.
Campbell, Robert Haynes	1	c	Richardson.
Cantrell, Thomas Hubert, Jr	1	f	Polytechnic.
Cape, John Dewey	'21	CE	San Marcos.
Cardwell, Jesse Don	'22	CE	Lockhart.
Cariker, Albert Hugh	'21	EE	Cushing.
Carlisle, John Taylor	'22	Ag	Houston.
Carlisle, Willie Glen	'20	Ag	Plano.
Carlton, Dwane William	1	c	Fort Worth.
Carlton, Robert Ardine	'22	EE	Fort Worth.
Carmichael, Donald Richard	1	c	Clayton.
Carothers, Reuben Burt, Jr	'22	EE	Sulphur Springs.
Carpenter, John Walter	'22	CE	Silsbee.
Carr, Charlie Eldred	'21	Ag	Bay City.
Carr, Vollie Calhoun	'20	EE	Stockdale.
Carrington, Henry Franklin	'22	Ag	Bay City.
Carrion, Manuel Gregaris	'22	ME	Piura, Peru.
Carruthers, Robert Loney	'22	ChE	Fort Worth.
Carsey, John Dale	'22	ME	Greenville.
Carson, Charles Willis	'22	CE	Eagle Pass.
Carson, Robert Lee	'21	CE	Bryan.
Carter, Charles Edward	'20	Ag	Mexia.
Carter, Robert Elmar	1	c	Kingsbury.
Casady, George Hossal	'22	EE	El Campo.
Castillo, Cesar Augustin	'20	Ag	Mexico City.
Castleton, Ed Ligon	'22	CE	Bay City.
Catlin, Charles William	'22	ME	Terrell.
Casto, Clair Rice	'22	EE	Strawn.
Cauthorn, Joe Wheeler	'22	EE	Brownwood.
Cavitt, Hugh Samuel	2	c	Holland.
Cavitt, James Carter	'22	EE	Holland.
Cavitt, Volney	'21	CE	McGregor.
Chadwick, James Noble	1	m	Carthage.
Chambers, Chester Hall	'22	Ag	Corpus Christi.
Chandler, Addison Alexander		Sp. Ag	Allen.
Channing, Charles Ford	'22	CE	Orange.
Chapman, George Henry	'22	Ag	Lockhart.
Chappell, Lenard Will	1	f	Gerwood.
Chappelle, Hugh Lyman	'19	Ag	College Station.
Cheeves, Thomas A	'20	Ag	Marlin.
Cherry, Edgar Louis	'22	CE	Beaumont.
Chesley, Joseph T	'22	EE	Hamilton.
Childress, George Fulsom	'22	Ag	Cameron.
Childress, James Monrce		Sp EE	Loganport, La.
Chilton, William C	1	f	Comanche.
Chimene, Irvin Edward	'22	EE	Houston.
Chrisman, Leo Erroll	'22	Ag	Onalaska.
Christenberry, James Isaac	'22	EE	El Campo.
Christman, Paul Omar	'22	Ag	Waco.
Chr stopher, J. W., Jr	'22	EE	Abilene.
Christopher, Uriel Echols	'22	Ag	Plano.
Clampitt, Dewey Elmo	1	f	El Campo.
Clanton, Raleigh Wells	'22	EE	Dallas.
Clanton, William Webb	'22	EE	Dallas.
Clark, Charles Harrison	'19	Ag	Hico.
Clark, Charles Richard	'22	ME	San Antonio.
Clark, David Seeger	'22	ME	Amarillo.
Clark, Fred O'Neil	1	f	Austin.
Clark, Walter Rhea	1	f	Teague
Clarke, Charles Cecil	'22	EE	Hope, Ark.
Clarke, Lawrence Sullivan Ross	'21	CE	Waco.
Clarkson, William Fred	2	c	Robstown.
Clay, Rufus G	'21	CE	Dublin.
Clayton, Robert Lee	'21	CE	Waco.

Clement, George Kilgore	'22	EE	Cameron.
Clinton, Daniel Darius	'21	Ag	Commerce
Clinton, Samuel Houston	1	f	Waco.
Cloer, Venus Uranus	'22	ChE	Pilot Point.
Cobb, Henry Thomas		Sp. Ag	Fate.
Cochran, Alvis Stafford	2	f	El Paso.
Cochran, Burrell Banister	'22	CE	Blackwood.
Cockrell, Thomas Jefferson	1	h	Dallas.
Coffee, William Cleveland	'21	EE	Miami.
Coffey, Homer Lycius	1	f	Aubrey.
Cogburn, Henry Hall	'22	ME	McKinney.
Coit, John C	'21	ChE	Winter.
Coker, Burness Leon	'22	Ag	Georgetown.
Cole, Charles Mason	'20	TE	Bryan.
Coleman, Eddie Eugene	1	f	Smithville.
Coleman, Jack Jenning	'22	Ag	Paris.
Coleman, Millard	1	f	Comanche.
Collins, Leon Liddell	'22	CE	Sanger.
Colston, Raleigh	'22	ME	Kingsville.
Combs, Bernard Griffith	'22	ME	Pilot Point.
Combs, George William	1	h	Cleburne.
Comstock, Carl Edwin	'22	Ag	El Campo.
Comstock, Cecil Wayne	'21	CE	El Campo.
Connelly, Webb	'22	Ag	Austin.
Conroe, Elbert Isaac	'22	Ag	Conroe.
Conway, Thomas J		Sp. Ag	Bryan.
B. S., Cornell University, 1914.			
Cook, Lee Edwin	'20	EE	Jasper.
Cooper, Albert Mason	'21	Ag	Bryan.
Cooper, Forrest Waller	1	c	Center.
Cooper, Hugh Herman, Jr	1	f	Houston.
Cooper, Melbourne John	'22	CE	Waco.
Cooper, Robert Theodore	'21	Ag	Georgetown.
Copeland, Sam P	'22	ME	Wichita Falls
Cordell, Ben Early	'22	ChE	San Antonio.
Cortez, Herman		Sp. Ag	Piura, Peru.
Cousins, Milton Vilas	'22	EE	Pineland.
Covey, Bob Bryan	'22	EE	Thorp Springs.
Cox, Joseph Brinkley	1	f	Arcadia.
Cox, William Mills	'22	Ag	Dublin.
Cox, Wallace Hughes	'20	EE	Haskell.
Cox, Willard Wilkes	'21	CE	Smithville.
Craddock, Samuel Weldon	1	f	Crockett.
Crain, Jack Reid	1	c	Cleveland, Ohio.
Crawford, Alvin Guy	'22	ME	Alpine.
Crawford, Clarence Eugene	'22	ME	Freeport.
Crawford, Charles William	'19	ME	Bryan.
Crawford, John Crisp	'22	ChE	Nacogdoches.
Cretien, Paul	'22	ChE	Dallas.
Criley, George Gordon	'21	EE	Galveston.
Crippen, Walter	'21	ME	Waco
Crisp, Marshall Claiborne	4	Ar	Cuero.
Crites, Edwin Albert	'22	ChE	Houston.
Critsinger, James Osborne	'22	EE	Weatherford.
Crocker, Royal Adison	1	f	Dublin.
Crockett, William Davie, Jr	1	c	Chapel Hill.
Crook, George Morgan	'20	Ag	Paris.
Crow, James Jasper	'22	CE	Plano.
Crow, Leroy	'22	EE	Belton.
Crow, Walter Craige	'22	CE	Waco.
Crowell, Frank Thomas	'22	CE	San Marcos.
Cruickshank, John Pownall	'22	EE	Gregory.
Culver, George	'22	TE	Lampasas.
Cunningham, Eli Russel	1	f	Maypearl.
Cunningham, Walter Smith	'22	Ag	Gainesville.

Dabney, Virgil Claud	'22	CE	San Antonio.
Dahme, William Henry	1	f	Falfurrias.
Dailey, Smelker Cree	'22	EE	Terrell.
Daniel, Edwin Fincher	1	c	Waxahachie.
Daniel, Joseph S., Jr	'21	Ag	Corsicana.
Darsey, George Reason	1	f	Grapeland.
Dasch, George Robert Cook	1	f	Mesquite.
Dascomb, Edmund Brooks	'22	ME	San Antonio.
Daughtry, James Hill	'22	ME	Richmond.
Davey, Martin Anthony, Jr	'22	EE	Palestine.
Davidson, Ashworth Jasper	'22	Ag	New Boston.
Davidson, Charles Eugene	'21	EE	Bay City.
Davidson, Ernest Carl	1	f	Hamilton.
Davidson, George Alexander	'21	EE	Bryan.
Davidson, Green Atkins	'20	TE	Caldwell.
Davidson, Norman Bentley	1	m	Eagle Lake.
Davis, Andrew Russell	1	f	Houston.
Davis, Charlie Howard	'22	EE	Waxahachie.
Davis, Finis Earl	1	c	Grandview.
Davis, George Marion	'19	Ag	Milford.
Davis, Hugh Augustus	'22	EE	McGregor.
Davis, Hubert G	'22	CE	Leonard.
Davis, John L., Jr	1	f	Breckenridge.
Davis, James Thomas	'19	Ag. Ed	Navasota.
A. B., University of Texas, 1918			
Davis, Noble	1	c	Tenaha.
Davis, Paton Alphonso	1	f	Bon Wier.
Davis, Robert	'22	TE	San Antonio.
Davis, Robert Collis	'22	EE	Nacogdoches.
Davis, Roger Floyd	'22	CE	Ector.
Davis, Roy Francis	'22	CE	Nacogdoches.
Davis, Thomas Jefferson	'19	Ag	Leonard.
Davis, William J. Bryan	1	f	Hillsboro.
Davis, William Larimore	1	f	Howe.
Davis, Willie M	'22	CE	Belton.
Davis, William Rufus	1	c	Bon Wier.
Dawson, Clarence August	'22	CE	Weatherford.
Dawson, Leland Bond	'22	Ag	Floydada.
Day, Alfred Ellsworth	2	c	Garrison.
Dean, Benjamin Devor	'21	CE	Hugo, Okla.
Dean, Clarence Calaway	1	f	Mineral Wells.
Decker, Herbert H	'22	A....g	Hondo.
DeLee, Herbert Everard	'21	EE	Dallas.
Delhomme, Curtis Breaux	1	f	Jennings, La.
de Maret, Daniel Taliaferro	'22	Ag	Bryan.
Denison, Ethelbert Bunker	'22	EE	Waco.
Denison, George Ames	'21	ChE	Tyler.
Denison, James Swayne		Sp. CE	Temple.
Denny, William Murdoch	'20	EE	Crockett.
Dermody, Ira Pierce	'22	CE	Uvalde.
DeWolfe, Homer Clyde	'22	Ag	Lampasas.
Dieterich, Arthur Frederick	'22	Ag	Dallas.
Dietert, William Edward	'19	Ag	Kerrville.
Dillingham, Harley Clay	'22	EE	Commerce.
Dinsmore, Vernon Jewel	'22	CE	Campbell.
Dinwiddie, Otto Dudley	'22	Ag	Tulia.
Dixon, Jesse Burton	'22	CE	Burton.
Dixon, William Ernest	'22	Ag	Houston.
Doak, Fred Ananias	'22	ME	Snyder.
Dockum, Oscar Leonard	'22	ME	Corsicana.
Doell, Walter Emil	'22	EE	Cuero.
Dolch, Lee Buckley		Sp. EE	Eagle Pass.
Doney, Walter Ferguson	'22	Ag	Corpus Christi.
Donohue, Daniel Leonard	'22	CE	Dallas.
Dooley, Robert Harry	'22	CE	Fort Worth.
Dougherty, Harry, Jr	'22	EE	Hot Springs, Ark.

Douglas, Gordon Meadows	'22	EE	Electra.
Douglas, Warren Hamilton	2	f	Bellevue.
Douthit, J D	1	f	Leuders.
Douthit, Lawrence Henry	1	f	Dallas.
Dowell, Jablonowski	1	c	McKinney.
Dowlen, Carney Lee	'22	CE	McKinney.
Doyle, Thomas Murray	'22	CE	Waco.
Drake, Clarence Ray	'21	EE	Maypearl.
Dreeke, Harold Lewis	'22	Ar.	San Antonio.
Drummett, Paul Wright	'21	EE	Houston.
Drury, Cooper Cecil	1	c	Calvert.
Duecy, Charles	1	f	Waco.
Duke, John Frank	1	c	Melissa.
Duncan, Arthur B	1	c	Floydada.
Dunn, Sul Ross	'21	VM	Bryan
DuPuy, William Hamlett	2	c	Tennessee Colony.
Duvall, George Stanley	'22	ME	Paris.
Dyer, Claude	'21	Ag	Tulia.
Dykes, Jefferson Chenowth	'22	Ag	Dallas.
Eads, George Coleman	'22	ME	Belton.
Easley, Ray K	'21	ChE	Fort Worth.
Easterly, Samuel Homer	1	f	Dallas.
Eaves, Robert A		Sp. Ag	Doucette.
Ebling, Leo Reynold	'22	ME	Plainview.
Edmiston, Charles Lanier	'22	EE	Crockett
Edmonston, William Jesse, Jr	'21	CE	San Marcos.
Edwards, Arthur Irwin	'20	Ag	Millican.
Edwards, Clyde Henry	'21	ME	San Antonio.
Edwards, Charles Vernon, Jr	'22	EE	Fort Worth.
Edwards, Kenneth Johnson	'20	Ag	Gainesville.
Edwards, Murray Ardis	'22	CE	Weatherford.
Edwards, Philip Clarence	1	c	Tennessee Colony.
Ehlert, Robert Jerome	'22	Ag	Houston.
Eichenberg, Herbert	1	f	Galveston.
Eisen, Jacob Loeb	'21	CE	Tyler.
Elam, Kyle Carter	'21	CE	Beaumont.
Eldredge, Ward Capps	'21	CE	Fort Worth.
Elliott, LaBaume Elmer	'22	EE	Waco.
Ellis, James Milton	1	f	Brownwood.
Elrod, Lawrence Benjamin	'22	CE	Palestine.
Emshoff, Fred Henry	1	f	Bleiblerville.
Engleman, Frank A	'21	EE	San Antonio.
Enloe, George Calvin	'22	ME	Mobile.
Ervin, Oscar Dewey	2	f	Gainesville.
Eschenburg, Herbert Walter	'21	Ar	Floresville.
Evans, Coxey	'19	CE	Crowley.
Evans, J. T	1	f	Navasota.
Evans, Sterling Cicero	'21	Ag	Melon.
Eversberg, Charles Edward		Sp. Ag	Brenham.
Ewers, James Franklin	'20	Ag	San Juan.
Fabian, Carl Mann	'19	ChE	Dallas.
Fahey, Gerald Calhoun	'22	Ag	Navasota.
Faltin, Chester Paul	2	c	Comfort.
Fancher, Rollie	'21	Ag	Seymour.
Farmer, Jolly	1	f	Fort Worth.
Farmer, James Rockett	'21	Ag	Marshall.
Farmer William Harold	'22	CE	San Benito.
Farrar, Simon Bowden	1	f	Waxahachie.
Farrell, James Leonard	'21	ChE	Humble.
Farrow, Cecil Norris	'22	EE	Waco.
Fason, Eugene Bester	'22	EE	Waco.
Faubian, Earle Maurice	'22	CE	Deweyville.
Faulkner, Richard Campbell	'22	CE	Sherman.
Faure, Leonard Leopold	1	f	Houston.

Fay, Owen James	'22	EE	Taft.
Fein, Jerome	1	f	Columbus, N. M.
Felder, Robert Lee	2	m	Chapel Hill.
Felts, George Brookman	'22	Ag	Belton.
Ferguson, Reece Woolly	'22	Ag	Mt. Calm.
Ferrell, Ira Jackson	1	c	Allen.
Field, George Addison	1	f	Calvert.
Fields, Owen Griffith	'22	Ag	Terrell.
Figari, Charles	'22	Ag	Lima, Peru.
Figari, Earnest	1	f	Lima, Peru.
Figari, George	'21	Ag	Lima, Peru.
Findlater, John Corscaden	'19	EE	San Angelo.
Fink, Charles Adolph	'22	EE	McAllen.
Finn, Dave James	'21	EE	Little Rock, Ark.
Finney, Clarence Jack	'22	Ar	Wills Point.
Fischer, Chester Fred	'22	CE	New Braunfels.
Fischer, Robert Melville	1	m	Fresno.
Fiser, Willis Calvin	'22	EE	Lorena.
Fisher, Thomas Barnour	'22	CE	Dallas.
Fitz, Marvin Bishop	'22	Ag	Timpson.
Fitzgerald, James K	'21	EE	Beaumont.
Fitzsimmons, George Dudley	1	f	Corpus Christi.
Flach, Christopher	1	f	Comfort.
Fladger, Ralph Hartgrove	'22	EE	Royse City.
Fletcher, William Andrew	'22	Ag	Beaumont.
Flewharty Thomas Wynona	'22	EE	Sulphur Springs.
Flinn, Fontaine Edward	'22	Ag	Cameron.
Foley, Roland F	'19	CE	Denison.
Forbes, Arthur Lee	'21	CE	Houston.
Ford, William Clytus	1	c	Cameron
Forman, Frank Wilson	1	c	Plano.
Forrest, Edward Ernest		Sp. Ag	Waxahachie.
Forsythe, David Manson	'21	ME	McKinney.
Foster, Conrad Allen	'22	Ag	Carthage.
Foster, Frank Edminton	1	f	Crockett.
Foster, John Tyler	1	f	Kingsville
Foster, Ralph Hale	'22	ME	Throckmorton.
Foster, Thomas Orion	'22	CE	San Antonio.
Foster, Willett Sims	'22	Ag	Marlin.
Fouraker, Robert Winston	'22	ChE	Dallas.
Fowler, William Henry	'20	Ar	Oakhurst.
Fox, Robert Waldo	'21	EE	Dallas.
Fox, Tom Robert	'22	ME	Denton.
Fram, Philip	1	f	Dallas.
Frame, William DeVere	'21	EE	Denison.
Francke, Paul Conrad, Jr	'22	EE	El Campo.
Franke, Bonie Leland	1	m	El Campo.
Franklin, Isaac Newton		Sp. Ag	Beeville
Franks, Walter Leslie	'22	EE	Gonzales.
Frazer, Albert Conroe	'20	ME	Conroe.
Frazier, Brice Harold	'20	Ag	San Benito.
Frazier, Earl Craig	'22	ME	Hillsboro.
Frazier, James Ansell	1	f	FortWorth.
Frazier, Oscar Howard	'22	Ag	Hillsboro.
Frede, Leo Henry	'22	Ag	Lagrange.
Freeberg, Arthur James	'22	EE	El Campo.
Freed, Abbye Lipper	1	h	Houston.
Freeman, Ernest Maynard	'22	CE	Marshall.
Freeman, Ted	'22	ChE	Dallas.
French, William George	'22	Ag	Lockhart.
Frensley, Ed Leon	'22	EE	Alvord.
Fricke, George S		Sp. Ag	St. Louis.
Friedlander, Cecil Edgar	1	f	Fort Worth.
Friedlander, Louis Herman	'22	CE	Calvert.
Friley, Charles Edwin	'19	Ag. Ed	College Station.
Fry, Aaron Carlisle	2	c	Burnet.

Fry, Frank Callinson	'22	Ag	Paducah.
Fry, William Francis Ballard	2	h	Shiner.
Fuchs, Joseph	'22	ChE	Cypress Mills.
Funk, Owen True	'22	CE	Bridgeport.
Furneaux, William Frederick	'22	Ag	Dallas.
Gaddis, Marion Lewis	'21	CE	Cotulla.
Gaines, Frank	2	c	Proctor.
Gaines, Richard Cochran		Sp. Ag	Bay City.
Galley, William	'22	Ar	Mineral Wells.
Galloway, Harry Shook	'21	CE	Lockhart.
Gammill, George Albert	'22	ME	Shreveport, La.
Gandy, Rema Ester	'22	Ag	Bryan.
Gans, Edward	'22	EE	Tyler.
Gans, Melbourne Selig	'22	ME	Houston.
Gardner, Marion Bernard	'22	Ar	Tyler.
Garnett, Edward Wynne	'22	CE	Denton.
Garrett, Leon Samuel	'22	CE	Fort Worth.
Garrison, Kenneth Alfred	'22	CE	Houston.
Garrison, Phillip Money	'22	ChE	Beaumont.
Garth, James William, Jr	'21	CE	Beaumont.
Gearreald, N	'19	Ag. Ed	
Gebhardt, Herbert Ernest	1	f	San Antonio.
Gentry, Henry Lynn	1	c	Houston.
Gerodetti, Attilio	'22	CE	San Antonio.
Gholson, John D	'22	Ag	Ranger.
Gibb, Richard Russell	2	c	Corpus Christi.
Gibson, Charles Basil	'22	Ag	Bonham.
Gibson, Daniel Morgan	'22	CE	Snyder.
Gibson, Joe Foster	1	f	Calvert.
Gilbough, James Montgomery	1	c	Dallas.
Giles, Dorris David	'22	VM	Houston.
Giles, Edgar Eugene	'22	ME	Dallas.
Gill, Harry Cecil	'22	ME	Denison.
Gilliam, Edwin George	'22	CE	Tyler.
Gilliam, John Paul	'22	Ag	Bay City.
Gist, Marcus	1	c	Odessa.
Givens, Ben Mathew	'19	Ag	Dallas.
Givens, George Thomas	'20	CE	Dallas.
Glass, Frank Sidney	1	c	Gonzales.
Glaze, Ben Cable	'22	CE	Goliad.
Glezen, Hugh Norman	'20	CE	Gladewater.
Goeth, W. A	2	c	Marble Falls.
Golden, Charlie Harry	'22	EE	Denison.
Goldstucker, Michael Gans	'22	EE	Tyler.
Golenternek, Phillip	'22	ChE	Tyler.
Goodman, James Mathew	'22	ME	Franklin.
Goodman, Robert Blair		Sp. Ag	Corsicana.
Gore Virgil Thomas	1	c	Minerva.
Goree, Langston James	22	CE	Navasota.
Gorman, John Alexander	'22	VM	Beaumont.
Gorman, James Gerald	'22	ME	Tyler.
Goss, Harvey Theo	'22	ME	Abilene.
Gouger, Gratz Bryan	'20	EE	San Antonio.
Graber, William James, Jr		Sp Ag	Brenham.
Graeter, Edwin Alvin	'22	CE	Reisel.
Graham, Calhoun McCulloch	'22	Ag	Bryan.
Graham, Earl Emmett	1	f	Floresville.
Graham, Earl Scott, Jr	'22	ME	Dallas.
Graham, Malcolm Montrose	1	m	Galveston.
Graham, Richard Carrol	'20	Ag	Floresville.
Graham, Roy Jewell	2	c	Anarene.
Granau, Edgar Lucian	'20	EE	Bellville.
Grantham, Walter Earle	'22	EE	Snyder.
Graves, Bernice Courtney	'22	ME	Canyon.
Graves, John Warren	1	h	Meridian.

Gray, B F	1	c	Slocum.
Gray, Elmo Kelem	'22	CE	Halsell.
Greaner, Alfred Hardwick	1	f	Houston.
Gregory, William Stanford	1	f	Stowell.
Greiner, C. W	'22	CE	Paris.
Grenader, Alex	'22	ChE	Houston.
Gresham, Wilbur Owen	'20	EE	Smithville.
Griffin, Edmund J	'22	Ag	Rye.
Griffin, Edward Ormond, Jr	'22	Ag	St. Louis.
Griffin, Lester Lafayette	'22	ChE	Bryan.
Griffin, Ray Hammond	'22	ChE	Kosse.
Griffin, T. P., Jr		Sp. Ag	Hearne.
Griffith, Francis, Edward	'22	Ag	Terrell
Griffith, Walker	'22	EE	Conroe.
Groce, George Cuthbert	'22	CE	Waxahachie.
Groce, Walter Mock	'22	EE	Waller.
Groesbeeck, Frank Johnston	'22	Ag	San Antonio.
Grundy, Arthur Scott	1	f	Galveston.
Guinn, Newbern William	'21	CE	New Braunfels.
Gunter, Louis Allison	2	c	Thornton.
Gunter, Luster T	'22	Ag	Denton.
Gurwitz, Jacob Alexander Marcus	'22	EE	San Antonio.
Guynes, John Rice	'22	ME	Chatfield.
Hail, William Dudley	'22	Ar	Crockett.
Haizlip, William O'K	'22	ChE	Nederland.
Hale, Fred	'22	Ag	Tulia.
Hale, George Varenus	'21	EE	Tyler.
Hale, Paul Cecil	1	f	Bryan.
Haley, Lois Cleburne	1	f	Lubbock.
Haley, William Alfred	1	c	Houston.
Hall, Francis Malcolm		Sp. Ag	Bryan.
Hall, James T	1	f	Clareville.
Hall, Patrick Burney	'22	CE	Hearne.
Hall, Russell Winston	'22	ChE	Brownsville.
Hall, Travis	'21	Ag	Hightower.
Hall, Walter Henry	'20	ME	Wichita Falls.
Hallman, Ben Calvin	'22	Ag	Wills Point.
Hallmark, William Paschal	'21	EE	Dublin.
Haltom, Evanda Pollard	2	f	Fort Worth.
Hamblen, Texas Theodore	'21	CE	McGregor.
Hamilton, Harold Marion	'22	EE	Plainview.
Hamilton, James Lloyd	'21	ChE	Corsicana.
Hamilton, Kenneth Colville	'22	ChE	Laredo.
Hamilton, William Brooke	'22	ME	Houston
Hamilton, Walter Fenton	'20	ME	Denton.
Hamm, Angus Barton	1	c	Fort Worth.
Hammock, Clarence Green	'22	ME	Denison.
Hancock, Austin Pruitt	1	f	Fort Worth.
Hancock, Carl Elmo	'19	ME	Cooledge.
Hancock, Earl Elias Austin	1	c	San Juan.
Hancock, Percy	'19	EE	Dallas.
Handley, Peter W	'22	Ar	Garland.
Haner, Harold Arnold	2	c	Muskogee, Okla.
Hanly, Benjamin Franklin	2	m	Eagle Lake.
Hanly, Edward William	'22	Ag	Eagle Lake.
Hannaford, William Edwin	'22	CE	Grandbury.
Hannah, Clytres Sayers	1	f	South Bosque.
Harder, Charles Mabry	'22	CE	Beaumont.
Harding, Arthur Gilman	'21	EE	Victoria.
Hargrove, Herman	1	c	Keller.
Hargrove, Jesse C		Sp. Ag	San Augustine.
Hargrove, R. S	'22	EE	Dallas.
Harkrider, William Bean	'20	EE	Fort Worth.
Harper, Clyde McConnel	'22	EE	Mt. Calm.
Harpole, Howell	'22	EE	Snyder.

Harrington, Marion Tom	'22	ChE	Plano.
Harris, Brogg Maurice	1	f	Bishop.
Harris, Eugene Elliot	'21	CE	Nevada.
Harris, Francis Homer	'22	Ag	Texarkana.
Harris, Grady Woodfin	'22	Ag	Mobeetie.
Harris, Harold Gordon	2	c	Wichita Falls.
Harris, Joe Wheeler	1	f	Temple.
Harris, Karl V	'22	Ag	Gainesville.
Harris, Robert Alexander	'20	CE	Bryan.
Harris, William Raymond	'22	CE	Tyler.
Harrison, Asa	1	f	Marshall.
Harrison, Richard Henry	'20	VM	Bryan.
Harrison, Sam Evetts	'22	Ag	Bryan.
Harrop, Alfred Henry, Jr	'22	EE	Denton.
Hart, Tim J	'22	EE	San Antonio.
Hartgrove, Winfield McKenney	'22	Ag	Millersview.
Hartley, J. R	1	f	Denton.
Hartung, George Hermann	'22	ME	Houston.
Harvey, James Ray	'22	ChE	Caldwell.
Harvey, M. J	'21	Ag	Palestine.
Harvin, Charles Miller	'19	Ag	Southland Springs.
Harvin, Edwin Lawrence	'22	Ag	San Antonio.
Harwood, Pierce Alexander	1	f	Boerne.
Hastings, Benjamin Noflet	'22	Ar	Alief.
Hatley, Adolf Earl	'21	ME	Laredo.
Hawkinson, Charles Ellison	'22	EE	El Paso.
Hawtof, Emanuel	1	f	Waco.
Head, Richard Royston	1	c	Giddings.
Healer, Floy Dias	1	f	Richland.
Heard, Cecil Emory	'20	Ag	Stoneham.
Hector, Phillip Togson	'22	ME	Alpine.
Held, John A, Jr	'22	EE	Bryan.
Hemphill, Thomas Henry	'22	EE	Gainesville.
Henderson, Clyde Douglas	'21	Ag	Sulphur Springs.
Hendricks, John David	'22	CE	Cooper.
Henry, Marion Bryan	'22	CE	Shelbyville.
Hensarling, Theron Andrew	'22	Ag	Bryan.
Herbst, Edgar Frank	'22	ChE	Caldwell.
Herod, Albert Bernard	1	f	Houston.
Herring, Lloyd Miller	1	c	Lometa.
Hess, Craig Stults	1	f	Mereta.
Hester, Harland Hester		Sp. TE	Blum.
Hetrick, J. Floyd	1	c	San Jauan.
Heuerman, Milton C	1	f	San Antonio.
Heye, Gus	2	c	La Grange.
Hibbard, Walter S	1	f	Denison.
Hickerson, Robert Clarence	'20	CE	Crawford.
Hickman, James Butler	1	c	College Station.
Hicks, Royce Leon	1	f	Kaufman.
Higdon, Roy	'22	Ag	Quinlan.
Higginbotham, Ben Shaduck	1	f	Dallas.
Higginbotham, Frank Clifton		Sp. Ag	Holland.
Higginbotham, John Taylor	1	f	Dallas.
Higginbotham, Roswell Gunby		Sp Ag	Howe.
Higgins, Chick	1	f	Whitesboro.
Hill, Allen Bryan	'22	ME	Frisco.
Hill, E. B	1	c	Wills Point.
Hill, Hubert High	1	c	Lufkin.
Hill, J. Wade	1	c	Corpus Christi.
Hill, Sherman Cooper	'22	CE	Lufkin.
Hilton, Neal Hamilton	2	c	Alta Loma.
Hoag, Harry LeRoy	'22	CE	Fort Worth.
Hobson, Oscar Thurmond		Sp. ME	Chillicothe.
Hodge, Marion Martin		Sp. EE	Waco.
Hodges, Clifford Hamlin	'22	Ag	Palestine.
Hodges, Lester B	'22	VM	Abilene.

Hodges, Robert Ford	1	c	Chatfield.
Hodo, James Joseph, Jr	'22	CE	Ennis.
Hoefle, Herbert Oswald	1	f	Velasco.
Hoff, Ray Thomas	'22	CE	Comanche.
Holbrooks, Chalbrooks Aaron	'22	CE	Stilson.
Holik, William Veazey	'20	EE	Chriesman.
Holleman, Joe Herbert	1	f	Guys Store.
Hollis, Harry Gilbreath	1	f	Amarillo.
Holloway, Herman Grady	'22	CE	Jean.
Holloway, Lewis William	'22	EE	Ennis.
Hollowell, Glenn Alonzo	1	f	Albany.
Holman, William Lee	1	f	Corsicana.
Holman, William Shields	'22	EE	Bay City.
Holmes, Hardy Winston	1	f	College Station.
Hooper, Dwight Winship	'19	CE	Marble Falls.
Hooper, Joel H	'22	Ag	Lorena.
Hopkins, Edward Desmond	'19	CE	San Marcos.
Hopkins, Welly Kennon	'22	EE	Gonzales.
Hoppe, Adolf Bill	'22	ME	Marble Falls.
Hoppe, Roland Charles	'19	ME	Cypress Mills.
Horger, James Caughey	'20	EE	Hondo.
Horn, Calvin Marvin		Sp. Ag.	Comanche
Horn, Henry Brown	'21	Ag	Del Rio.
Houseman, Hal LeRoy	1	f	Houston.
Houston, Frank Norman	'21	CE	Lake Charles, La.
Houston, George Abner	'21	CE	Lockhart.
Howell, Douglas Wister	'19	Sci	Bryan.
Howell, Eugene Jody	'22	ChE	Waco.
Hudson, Glenn William	'22	Ag	Houston.
Hudson, Horace Seymour	'20	Ag	Pearsall.
Hudson, John L	1	c	Alvarado.
Hudson, Walter Edgar	'22	Ag	Palestine.
Hudson, Willis Robert	1	c	Baileyville.
Huff, Roy Prewett	'22	EE	Waco.
Huffman, Augustus L	1	c	Chatfield.
Huffman, Fred C	1	f	Weatherford.
Hughes, Fred Morris	'22	EE	Holmesneil.
Hughes, Taylor Joseph	1	c	Houston.
Hughes, Thomas Luther	1	f	Lyford.
Hughes, William Hobson	'22	Ag	Lyford.
Hugon, Lee Russell	'21	EE	Gainesville.
Hull, Joseph Henry	'20	VM	Carthage.
Humphreville, George Dewey	'19	ME	Houston.
Humphrey, Thomas Bascom	'22	ME	San Antonio.
Hunsucker, John Leslie	'20	Ag	Beaumont.
Hunt, Asa Eugene	'22	EE	Dallas.
Hunt, Ted	'22	Ag	Plantersville.
Hunter, Edgar William	1	f	Galveston.
Huppertz, Fred William	1	f	San Antonio.
Hurley, Charles Webster, Jr	'22	CE	Houston.
Hutchison, Downs Barcus	1	c	Temple.
Ingle, Lloyd	'21	Ag	Grandview.
Inglish, Jim Ned	'22	ME	Bonham.
Irvine, James	1	f	Weatherford.
Jackson, Moody Stone	'22	Ag	Livingston.
Jackson, Raymond W	1	f	Houston.
Jacobs, Ellwood Carroll	'22	CE	Blytheville, Ark.
Jacobs, Isadore M	1	f	San Antonio.
Jaeggli, Rudolph Christopher	'22	CE	Moulton.
Jahn, Oran Henry	'22	CE	Hempstead.
James, Sterling Walker	1	f	Houston.
Jamison, Earle Warner	'22	EE	Boyd.
Jancik, Alvin Frank	'22	ChE	Caldwell.
January, Alaric C	1	c	Lampasas.

Japhet, Curtis Bismark	2	c	Houston.
Japhet, Doris Jackson		Sp. TE	Houston.
Japour, Maxcine Joseph	'21	ChE	Port Arthur.
Jarrell, William Fountain	'22	EE	Denton.
Jenkins, B. L.	'22	Ag	Clarendon.
Jenkins, Raymond Gibson	1	f	Winnie.
Jennings, George J.	'22	ME	Canadian.
Jeter, Louis Floy	1	f	Rogers.
Jinks, Leon Carlton	'21	Ag	Wadsworth.
John, Arnold Albert	'22	EE	Brenham.
John, Englebert George	'21	ChE	Taylor.
Johnson, Albert Sidney	'22	ChE	Dallas.
Johnson, Burl Hays	'22	EE	Crisp.
Johnson, Guy Lee	'22	ME	Gainesville.
Johnson, Harrell Barkley	1	f	Marquez.
Johnson, John Burton	1	f	Dallas.
Johnson, J. S.	1	f	Winona.
Johnson, Russell Aubrey	1	f	Bandera.
Johnson, Roy Eldredge	1	c	Houston.
Johnson, Walter Theodore	'21	VM	Galveston.
Johnston, Jerry McDaniel	1	f	Centerville.
Jonas, Henry Fulton	'20	Ag	Houston.
Jones, Bert	2	c	Como.
Jones, Earl E.	'22	ME	Denison.
Jones, John Harrell	'22	Ag	Windthorst.
Jones, Leigh	'22	Ag	San Juan.
Jones, Wilbert Eaton	'22	EE	Gordon.
Jopling, Celmus Clarion	'22	ME	Texarkana.
Jordan, Conway Ferguson	'22	EE	Cooper.
Jordan, Edward Lee	'22	ChE	Tulia.
Jordan, Joseph Julian	'21	Ag	Beckville.
Jordan, Willie Rogers	'22	Ag	Lufkin.
Josey, James Edward	'22	Ar	Hempstead.
Jungman, Arthur H.	'20	CE	Hondo.
Karrer, Walter Herman	1	c	Hondo.
Keen, Lowell Stockton	'22	Ag	Kerens.
Keen, Walter Burger	'22	ME	McKinney.
Kehoe, Thomas Read	'22	EE	Houston.
Keith, Arthur Clinton	'22	ChE	Fort Worth.
Keith, Dick Laport	'22	ME	Beaumont.
Kellam, Jesse Coge	'22	CE	San Marcos.
Keller, Henry Earl	1	f	Houston.
Keller, Lawrence Rogers	'22	CE	Dublin.
Kellogg, Henry Kirksey	'22	CE	Franklin.
Kelly, Ludlow Igantius	'22	CE	Beaumont.
Kelly, Thomas James	'19	CE	Beaumont.
Kelly, Verner O.	'22	EE	Santa Anna.
Kemp, Robert Edwin	'22	ME	Galveston.
Kempen, George Justus, Jr.	'21	CE	Seguin.
Kendrick, McIlhaney Richardson, Jr.	2	c	Plano.
Kennard, Marcus Cummings	1	f	Anderson.
Kennedy, John Patrick	'22	CE	Natchez, Miss.
Kennedy, Robert Pinckard	'22	EE	Beaumont.
Kennon, James Daniel	'22	Ag	House.
Kerr, Eugene James	'22	ME	Havana, Cuba.
Kerr, Horace Scott	'22	CE	Amarillo.
Key, Davis Leonidas	'22	Ag	Floresville.
Key, Lee	'22	Ag	San Angelo.
Kight, Max H.	'22	EE	Dublin.
Kincheloe, William Stephenson	'22	ChE	Hubbard.
King, Norman Francis	'22	ME	Denison.
King, Robert	'21	EE	Gatesville.
King, Robert Morris	'22	ME	Blytheville, Ark.
King, William Clark	'21	Ag	San Antonio.
Kingsley, Glennon Meade	2	c	San Antonio.

Kirksey, Foster Jackson	1	f	Troy.
Klattenhoff, William John	1	f	Slaton.
Klock, Neil Haven	'19	Ag	Cheneyville, La.
Knapp, Francis Everett	'21	Afr	Calvert.
Knapp, John Andrew	'22	CE	Calvert.
Knapp, Walter Lee	'22	Ag	Calvert.
Knauth, Herbert R	2	c	Burkburnett.
Knickerbocker, Arthur Balfour	'21	CE	Brownwood.
Knight, Feagin James		Sp. Ag	Point.
Knight, Joe Bert	'22	Ar	Hearne.
Knolle, Guy Edmond		Sp. Ag	Brenham.
Knox, Edward Warren, Jr	'22	EE	San Antonio.
Knox, Landes Maxwell	'22	EE	Houston.
Knupp, John William	'22	EE	Plainview.
Koehler, Egon	'21	EE	La Grange.
Kokernot, Herbert Lee, Jr	'22	Ag	San Antonio.
Koons, Robert Innis	1	f	Garwood.
Krause, Edwin Julius	1	f	Burlington.
Krausse, Rudolph Matos	1	f	Houston.
Kribs, Charles Lovell	'21	CE	Dallas.
Kubena, John Arnold	2	m	Fayetteville.
Kubena, Jerome John	'20	ME	Fayetteville.
Kuempel, Max	1	c	Pflugerville
Kuhne, Cecil Crawford	'19	ChE	Runge.
Kurtz, Alexander	1	c	Gilmer.
Kush, John William	'22	EE	San Antonio.
Kyle, George Finley	1	f	Fort Worth.
Kyle, Volney Howard, Jr	1	f	Houma.
Lackey, Talmage Patrick	'20	TE	Floresville.
Lahourcade, Henry Carrol	'22	Ag	Houston.
Lancaster, Alexander Pope	'22	EE	Marshall.
Landa, Maynard Ivan	'19	EE	Eagle Lake.
Landers, Roger Q	1	c	Corpus Christi.
Landon, Rowley McKaine	'20	ChE	Kaufman.
Landram, Addison Bering	'22	Ag	Houston.
Landry, Harold Ray	'22	ME	Mission.
Landry, Ras	'22	ME	Beaumont.
Lane, William D	'22	Ag	Comanche.
Lane, William Idus	1	c	Comanche.
Lang, Edgar Fred	1	f	Gonzales.
Lang, John Joseph, Jr	'22	EE	Dallas.
Langston, John Harold	'21	Ag	Crockett.
Langston, Webster Samuel	1	f	Crockett.
Lanier, Elmo Edd	1	c	Marquez.
Lattimore, Durward Bryan	2	c	Wolfe City.
Lattimore, Robert Baker	'20	Ag	Fort Worth.
Lawhon, Royal David	'22	Ag	Dallas.
Lawrence, Daniel Clarence	1	f	Lolita.
Lawson, Glenn Edward	'22	Ag	Brownsville.
Lawson, Homer Wynn	'22	Ag	Bryan.
Leary, John Benjamin Rex	'19	Ag	San Antonio.
Lebo, Miles Bishoff	'20	Ag	Waynesville, Pa.
Ledbetter, Allan	1	c	Pasche.
Lee, Charles Otis	1	f	Lissie.
Lee, John Adam	'22	EE	Childress.
Lee, Robert Stein	'21	Ag	Cisco.
Lee, Samuel Dwight	'22	EE	Elizabeth, La.
Lee, William Ralph	1	f	Teague.
Lees, Herbert G	'22	Ag	Big Spring.
Legg, Aubrey Stewart	'21	EE	McGregor.
Leidolf, Emil J	'21	EE	Weimar.
Leinweber, Elmer Joe	1	f	Hondo.
Leiper, Sam Edward	'22	Ag	Weatherford.
Lenschow, Alfred Carl	'22	ME	La Grange.
Leon, Manuel	'20	CE	Mexico City.

Lester, James Arthur	'22	EE	Cooper.
Leverett, Frank Marshall	'21	ME	Kilgore.
Levison, Bennie Richard	'22	Ag	Houston.
Levy, Albert K	'22	CE	Corsicana.
Levy, Gus	'22	ME	Waco.
Lewis, Albert McMahan	'22	ME	Bay City.
Lewis, Cleon Summers	'22	Sp. Ag	Forney.
Lewis, Floyd Horace	'22	Ag	Rockdale.
Lewis, James Frankie	'22	CE	Dublin.
Lewis, Tom Barrett	'22	Ag	Valley Mills.
Lipschitz, Louie I	'22	ME	Hearne.
Lipscomb, John Jackson	1	f	Houston.
Livingston, Claud	2	h	Runge.
Livingston, George Dahmer	'21	Ag	Marshall.
Livingston, John Calhoun	'22	EE	Marshall.
Livingston, William Edwin, Jr	'19	Ag	Fort Worth.
Lloyd, Arthur Canty	'22	Ag	Reagan.
Locke, Leon Bernard	'22	EE	Bryan.
Lockfield, Collin Aldrich	1	f	Crockett.
Lockhart, Omicron Pi	1	c	Rogers.
Lofland, O. D	1	c	Rockwall.
Logan, Robert McDougald	1	c	Fort Worth.
Long, James Virgil	'22	Ag	Temple.
Long, Louis Frank	'20	ME	Galveston.
Longcope, Edmund McLeod	'20	CE	Houston.
Lott, Otto Christian	'22	ChE	Galveston.
Love, Walter Meigs	'22	Ag	Milford.
Loveless, William Marvin	'22	EE	Plainview.
Loving, Oliver, Jr	'21	CE	Jermyn.
Lowrance, John Moran	'22	CE	Blossom.
Lowther, Horace Cecyle	'22	ME	Anderson.
Lucchese, Salvator Frank	'22	Ag	Victoria.
Luckett, Chester Alfred	'22	ME	Waco.
Luker, Cyril	'21	Ag	Proctor.
Luna, Lloyd Henry, Jr	'22	CE	Dallas.
Luper, Marion Edgar	1	f	Frisco.
Lyall, Alexander, Jr	'22	ME	Eagle Pass.
Lynch, William Wright	'22	EE	Alexander, La.
McAdams, Doyle Frederick	'21	Ag	Huntsville.
McAfee, Alfred Claudius	'22	CE	Cisco.
McAnally, Dwight	'21	EE	Cameron.
McCartney, Ewell Pierce	'22	Ag	Waxahachie.
McCarty, T. J	'22	CE	Cisco.
McCauley, Ambrose	1	c	Sulphur Springs.
McClary, Ross Albert	'21	CE	Dodd.
McCollough, Clifford Holms	'22	ME	Ennis.
McConnell, Edward		Sp Ag	Crockett
McConnell, Mack	1	c	Crockett.
McConnell, Patrick Henry	1	f	Crockett.
McCormac, Frederic James	1	f	Marshall.
McCormick, Bruce Robert, Jr	'22	CE	Blooming Grove.
McCullough, Harold Menefel	1	f	Houston.
McDaniel, Charles Hanofor, Jr	'22	EE	Abilene.
McDonald, Earl Dayton	1	f	Mineral Wells.
McDonald, Edward Pace	1	c	Palestine.
McDuff, Frank	1	c	Grandview.
McElrath, Frank Pierce	'21	CE	Corsicana.
McElroy, Hazeal Milton	1	c	Victoria.
McGary, Edwin Rash	'22	CE	Portland.
McGee, Elmo Edwin	1	f	San Antonio.
McGee, Frank Martin	'22	CE	San Marcos.
McGee, Harvey Webster	'21	Ag	Marshall.
McGuire, Lester Kelley	'22	EE	Conroe.
McIver, Alexander Gordon	1	c	Caldwell.
McKean, Ewert Edwin	'21	CE	Quinlan.

McKenzie, George Dwight..... '22 CE..... Goliad.
McKinsey, Logan..... '21 ME..... Weatherford.
McKnight, Byron McPherson..... '22 CE..... Bryan.
McKnight, T. William..... '22 CE..... Hallettsville.
McKoy, Emmett Clifford..... '21 CE..... Rockwall.
McLeod, Francis Strafford..... '22 EE..... Yoakum.
McManus, Daniel Stone..... '20 EE..... Thomaston.
McMillan, William Garrett..... '21 Ar..... Calvert.
McMurrough, James Claude..... 1 c..... Dobbin.
McNamara, William Farren..... '22 TE..... Austin.
McNelly, Charles Bowman..... '22 CE..... Uvalde.
McOsker, William Paul..... '19 ChE..... Amarillo.
McPheeters, W. H..... Sp. Ag..... Bryan.
B. S., Oklahoma A. and M. College, 1909.
McQuatters, Roy..... 1 c..... Waxahachie.
McQuillen, Everett Eugene..... '20 Ag..... Cleburne.
McRee, Fitzhugh Lee..... '22 CE..... Merkel.
McReynolds, Joe M..... '22 ME..... Mineola.
McRimmon, Myrle..... '22 EE..... Troup.
McSpadden, Fitzhugh Lee..... '22 ME..... Alpine.
McSwain, Guy Clayton..... 1 c..... Wellborn.
McWhorter, Carl Meggs..... 1 c..... Douglassville.
Maas, Herbert L..... 1 f..... Houston.
MacLeod, Charles T..... '22 EE..... San Antonio.
de Magalhaes, Mario Ferraz..... Sp. Ag..... Brazil, S. A.
Magee, William Fred..... '22 EE..... Quanah.
Mahan, Carl Shefield..... '22 ME..... Baird.
Mahan, Harry..... '22 ME..... Gainesville.
Mahan, Jack Francis..... '20 Ag..... Gainesville.
Malone, Morris Levelle..... '22 TE..... Ballinger.
Mangham, Earl B..... '22 EE..... Clayton.
Mangold, Charles Adam, Jr..... 2 c..... Dallas.
Mann, Joseph Bailey..... '22 ME..... Colmesneil.
Mann, Joseph Daniel..... '22 ME..... Waco.
Manning, Ray..... '20 Ag..... Leonard.
Maresh, Henry Joe..... 1 c..... Caldwell.
Margerum, Lou Greenham..... 1 f..... Palacios.
Marmion, Wilbert Henry..... '20 EE..... Beaumont.
Marrs, George Ralston..... '22 ME..... Galveston.
Marsh, Guy Jaques..... '22 ME..... Livingston.
Marsh, Malcolm Ray..... '22 EE..... Dallas.
Marshall, James Robert..... '22 EE..... Hillsboro.
Marshall, William Worthington..... 1 f..... Dallas.
Martin, Alfred DeLoach..... '21 EE..... Marshall.
Martin, Dewey..... '22 CE..... Big Spring.
Martin, George Walten..... '21 Ag..... Dallas.
Martin, James Woodward..... '22 ChE..... San Antonio.
Massengale, Albert E. Earl..... 1 c..... Mineola.
Matney, Edwin Arthur..... '21 EE..... Fort Worth.
Matthes, Allen..... '22 Ag..... Laredo.
Matthes, Cecil Lawton..... '22 EE..... Laredo.
Matthes, Louis Herbert..... '20 EE..... Abilene.
Matthews, Harvey Rogers..... '21 Ag..... Chapel Hill.
Matthews, N. S..... '22 ME..... Kountze.
Matthews, Ray Reid..... '22 EE..... Marshall.
Matthews, Verner..... 1 m..... Eagle Lake.
Matthews, Walter Gilbert..... '22 EE..... Uvalde.
Matthias, Harold Llewellyn..... '22 Ag..... Fort Worth.
Maudlin, Derward..... '22 CE..... Haskell.
Maxson, Thomas Emerson..... '22 CE..... Fort Worth.
Maxwell, Ross..... 1 c..... Markham.
Maxwell, Richard Henry..... '21 Ag..... Austin.
Maxwell, William Whortham..... '19 Ag..... Austin.
Mayer, William Lyndon..... Sp. Ag..... Durhamville, N. Y.
Mayfield, John D. Lorraine, Jr..... '22 CE..... Waco.
Mayfield, Sidney A..... 1 c..... Shamrock.

Mayo, John Wayland	'22	ME	Dallas.
Mebane, Fulton Douglas	'22	TE	Lockhart.
Meitzen, Robert Jewel	'22	Ag	Corpus Christi.
Melch, Walter Henry	'22	ME	Mission.
Menke, Walter Morris	'22	Ag	Hempstead.
Mercer, Matthewson Olon	1	c	Maypearl.
Merchant, Arthur Herman	1	f	Sealy.
Merchant, Myron Willard	'21	EE	Giddings.
Merrell, Robert Erroll	'19	Ar	Keller.
Merrick, Sanders Brit	'22	EE	Seymour.
Mersfelder, Lester Carlyle	'22	EE	Markham.
Messer, W. A	'22	EE	Belton.
Metcalf, William Darrel	'22	CE	Tyler.
Mewhinney, Preston Blake	'22	Ag	Holland.
Meyer, Charles Otto	2	c	Ellinger.
Meyer, Eugene Louis	'22	CE	Austin.
Meyer, Simon	'21	ChE	San Antonio.
Meyers, Fred Pierce	'21	CE	Cameron.
Mgebroff, Dietrich	1	c	Brenham.
Milazzo, Lee	'22	EE	Texarkana, Ark.
Miles, Howard Ellsewood	'22	ME	Marshall.
Miles, William John	'22	Ag	Mineral Wells.
Miley, Sydney Hill	'19	Ag	Bastrop.
Milhollin, Robert Mabry	'22	CE	Lipan.
Millard, George Henry	'22	Ag	Nacogdoches.
Miller, Garland Burleigh, Jr.	'20	EE	Bastrop.
Miller, Joe	'22	CE	Goodnight.
Miller, Jesse Clinton	'22	Ag	Elgin.
Millican, Samuel Evans	'22	ChE	Fort Worth.
Mills, John Campbell	'22	Ag	Comanche.
Mims, Morrill Powell	'22	Ag	Cleburne.
Mistrot, Robert Benson	'21	CE	Houston.
Mitchell, Charles S		Sp. CE	Lolita.
Mitchell, Frank Hudson	'22	EE	Sabinal.
Mitchell, Joel Stephenson	'22	Ag	San Antonio.
Mitchell, John Willie	'22	ChE	Little Rock, Ark.
Mitchell, Travis Edwin	1	c	Grapeland.
Mitchell, Virgil Lee	'22	ME	Weatherford.
Mitchell, Wendell		Sp. CE	College Station.
Mitchell, Wilbur Clifford	'22	CE	College Station.
Mizell, John Love		Sp. Ag	Waxahachie.
Mockford, James Phillips	'21	VM	Greenville.
Mohle, Theodore Westerfeld	'21	Ag	Lockhart.
Molteni, George Constantine	'22	Ag	San Antonio.
Monsur, Louis	'22	EE	Beaumont.
Montfort, Peter Thorp		Sp. Ag	Roane.
Montgomery, Morris Stevens	'21	CE	Tynan.
Montgomery, Samuel Albert	1	f	Troy.
Montgomery, William Alexander	'21	ME	Galveston.
Montgomery, Vol Hardwick	2	m	Eufaula, Okla.
Moody, Rayford C	1	f	Rockdale.
Moore, Claude Bentley		f	Cuero.
Moore, Dallas Hansen	'21	EE	Eagle Lake.
Moore, John Calvin	'22	TE	Fort Worth.
Moore, Johnnie Criswell	'22	ChE	Matador.
Moore, James Phillip	1	f	Cuero
Moore, Robert Brown	'22	ME	Clifton.
Moore, Robert Frank	'22	EE	Springfield, Mo.
Moore, Thomas Jefferson	'21	Ag	San Saba.
Moore, William Morton	'21	Ag	San Saba.
Moosberg, John Olof	'22	Ag	Wills Point.
Morein, Sol	'22	CE	Fort Worth.
Moreland, Robert L	'21	EE	Galveston.
Morgan, Vernis	'22	ME	Shreveport, La.
Morris, Asbury Bratten	1	c	Cedar Hill.
Morris, George Cooper	'19	EE	Dallas.

Morris, Lee A	'22	CE	Seymour.
Morrison, Thomas Edward	1	f	Wharton.
Morrow, Clair Walter	1	f	Houston.
Mortensen, Ernest	'22	Ag	Chocolate Bayou.
Morton, John Fred	'22	Ag	Alpine.
Moseley, Harry Lee, Jr	'22	CE	Weatherford.
Moseley, William Clark	1	f	Erwin.
Moseley, Weyman Miles	1	f	Erwin.
Mossiker, Jake	'22	EE	Orange.
Mosteller, Walter A	'22	EE	Pilot Point.
Mowery, Ray Clifford	'21	Ag	Almeda.
Mullane, William Adrian	'21	CE	Houston.
Mulvey, William Bernard	'22	EE	Houston.
Munsch, Cornelius Alsysius		Sp. Ag	Rosebud.
Murph, Claude Louis	'20	CE	Wichita Falls.
Murphree, David Douglas	'22	EE	Thomastown.
Murphy, Clarence Shuford	'22	Ag	Wolfe City.
Murphy, Rex August	1	h	Gainesville.
Murrah, Frank Volney	'19	EE	Plano.
Murrah, William Erwin	'22	EE	Plano.
Murray, Frederick Alexander	'20	VM	College Station.
Murray, Horton Burnett	'22	EE	Cisco.
Myers, August E	1	f	Richmond.
Myers, Joseph Allen	'20	Ag	Bryan.
Myers, William Peary	'22	ME	Mart.
Nabours, Charlie	'22	ME	Cameron.
Neater, Ewald	1	m	New Baden.
Nagel, August Rudolph	'22	ME	Cuero.
Naschke, Bertram Brison	'22	ME	Galveston.
Neal, Truett George	'22	CE	Weatherford.
Neeley, Marion J	'22	TE	Cotulla.
Neitsch, Fred Ernest	'22	EE	Giddings.
Nelson, Granville Curridene		Sp. Ar	Elderville.
Neuman, Victor Otis	'22	EE	Hondo.
Newland, William Elvis	'22	CE	Pittsburg.
Newton, Eugene Clifford	1	f	Houston.
Newton, V. C. J	'22	EE	San Antonio.
Neyland, Archie Jerome	'20	Ag	Goliad.
Neynaber, Clarence	'21	ME	Galveston.
Nichols, Clay	'20	CE	Luling.
Nichols, Richard Samuel	'22	ME	Lampasas.
Nicholson, Frank Russell	1	c	Sanger.
Niebuhr, William Arthur	'22	CE	Brenham.
Nixon, Sam Ab	1	f	Calvert.
Noble, Lawrence Everman	'22	CE	Houston.
Norfleet, Frank Ellwood	'22	Ag	Hale Center.
Northcutt, William Davis	'21	Ag	Longview.
Northington, Rucker Lee	1	c	Lampasas.
Norton, Roy D	'22	ME	San Antonio.
Norton, William Joy	1	f	San Antonio.
Notestine, Edmund	'22	Ag	Big Spring.
Novich, Joe Abe	1	f	Waco.
Oakes, Sam H	'22	Ag	Marlin.
Oakley, Ralph Sidney	'22	EE	Port Neches.
Oden, John T	'22	Ag	Tyler.
Ogburn, Hamill Pickett	1	c	Brazoria.
Oliver, Hollis	'20	Ag	Lampasas.
Oliver, John Walthall	2	c	Belton.
Oliver, Leon	1	f	Lampasas.
Opryshek, Karl	'22	ChE	New Braunfels.
Orr, Joseph Anderson	'22	CE	Blytheville, Ark.
Ortolani, Walter Albert	'22	EE	Fort Worth.
Orts, Ernest Paulsen	'22	Ag	Gonzales.
Osburn, Robert Earl	'22	ME	Paris.

O'Tell, Harry	1	c	El Campo.
Outley, Robert Freddie	1	f	Runge.
Overton, Robert Chauncy		Sp. CE	Mexia
Owen, Joe		Sp. Ag	Dallas.
Owen, Monte E.	'21	CE	Waco.
Owen, Tom N., Jr	'22	ME	Navasota.
Pace, Edward	'22	Ag	Temple
Page, James Stafford	'22	ChE	Weatherford.
Palmer, Frank Storm	1	f	Alta Loma.
Pancoast, George Judson	'21	ChE	San Antonio.
Pare, Horace Hoyle	'22	CE	Royse City.
Parish, Thomas Lee	'22	ME	Beaumont.
Park, Cecil Rudolph	1	c	Stockdale
Park, Forrest Lee	'21	CE	Dallas.
Park, John Thompson Sankey	'21	ME	Bryan.
Park, Phocion Sheeks, Jr	'22	ME	Bryan.
Parker, John Major	'22	ChE	Fort Worth.
Parker, Noel Roland	1	m	Eagle Lake.
Parker, Wallis Prescott	'22	EE	Baird.
Parkman, Jessie Duard	1	f	Teneha.
Paschall, Fred Lynn	'22	ChE	Terrell.
Patterson, Buthen Bruce	'22	EE	Corpus Christi.
Patterson, Benjamin Lowery	1	f	San Antonio.
Patterson, John Duff	1	f	Trinity.
Patterson, Myrl Bowman	2	f	Frost.
Patton, Joseph Alfred	'22	Ag	Goss, La.
Pawelik, Anthony I	1	h	Falls City.
Payne, William Allsbrook	'22	ChE	Gainesville.
Peavy, Clifford Paschall	'22	EE	Garland.
Pechin, Pierre William	'22	ChE	Wichita, Kan.
Peck, Benjamin Nicholas	'22	CE	Gonzales.
Peeler, Stanley Walker	'21	CE	San Antonio.
Penn, Bryant		Sp. EE	Whitewright.
Percy, Albert William, Jr	'21	Ag	Waco.
Perdue, Raymond Leo	'22	EE	Reagan.
Perkins, Edwin Hardeman	1	h	Nacogdoches.
Perkins, Joseph Andrew	'22	CE	Beaumont.
Perkins, William Lloyd	'22	Ag	Batson.
Perry, Wallis Pope	'22	CE	Rockdale.
Persohn, John William	'22	ME	Keller.
Persons, Thomas K	'22	EE	Hico.
Perussina, John Thomas	'22	ME	Galveston.
Peteet, George Walton	'21	Ag	College Station.
Peter, Adolph August	'21	EE	Giddings.
Peter, Rudolph Alvin	1	m	Yoakum.
Peterson, Joseph Arvid		Sp. ChE	Louise.
Pfaff, John Steenly	1	f	Alvin.
Phillips, Henry Johnson	1	f	Crockett.
Phillips, Leland Holland	'22	EE	Belton.
Phillips, Vaugn Hill	'21	ChE	Kaufman.
Phillips, Wendell Merton	'22	EE	Blytheville, Ark.
Phipps, Kenneth Crosby	'21	ChE	Austin.
Pierce, Edward Curtner	'22	Ag	San Antonio.
Pierce, John Allan	'22	EE	Denton.
Pike, John Stanley	1	f	Temple.
Pingenot, Oscar Bryan		Sp. CE	Eagle Pass.
Pinion, Bory Boyd	1	f	Maypearl.
Pinson, Harry Tom	'22	Ag	Proctor.
Piper, Lon H	1	c	San Juan.
Pitt, Amos B	'22	CE	Lindale.
Pittman, E	1	f	Fort Worth.
Pitts, Fred	'22	CE	Fierro, N. M.
Poage, William Robert	'22	Ag	Waco.
Poindexter, John W	1	f	Rockdale.
Pomeroy, Eltweed, Jr	'22	ChE	Donna.

Pomeroy, Thomas Alfred	'22	ME	Beaumont.
Pope, Robert P.	1	c	Boyd.
Porter, James	'19	EE	Graham.
Porter, James Walter	'22	CE	Terrell.
Porter, Jimmie M	1	c	Maypearl.
Porter, John Buren	'22	ME	Calvert.
Potthast, Eugene B	'20	ME	Weimar.
Potts, Tom Paine	'21	Ag	Valley Mills.
Powell, Lamar Barrett	1	f	Navasota.
Powell, Paul Taylor	1	c	Mineola.
Powell, Roger Q. Mills	2	h	Austin.
Powell, Stone Newland	'19	CE	Bangs.
Powell, Vance Edward	'21	CE	Anna.
Powers, George L., Jr.		Sp. Ag. Ed.	Bryan.
A. B., Baylor University, 1916.			
Powers, William L		Sp. Ag. Ed.	Bryan.
Preston, Allan Hill	'22	ChE	Dallas.
Price, Eben	'22	ME	Kerens.
Price, Pinkney B	'20	CE	Honey Grove.
Price, Ramey Russell	'21	Ag	Clarksville.
Prickett, Paul Smith	'22	ChE	Fort Worth.
Prideaux, George Dewey	'21	Agg	Farmer.
Pridgeon, Russell Lea	1	h	Houston.
Priest, Robert Barney	'22	ME	Greenville.
Proctor, Charles Newt		Sp. Ag	Winters.
Pugh, Ralph Allen	'22	CE	Beaumont.
Pullen, Robert George	1	f	Corrigan.
Pulliam, William Emory		Sp. Ag	Yoakum.
Pustejovsky, Vladik Jerry	'21	EE	Moulton.
Putney, Jack D	'22	CE	Eagle Lake.
Rae, Charles Spurgeon		Sp. Ag	Talpa.
Ragsdale, Earl	'22	ME	McKinney.
Ragsdale, Theron W	'21	CE	Jacksonville.
Raine, John Randolph, Jr.	'22	EE	Rockdale.
Rainer, C. S	'22	ME	Swan.
Ramsey, Robert Howard	'22	Ag	Goliad.
Randall, Albert Lee	'20	CE	Hereford.
Rapp, Edward Camille	'22	ME	Houston.
Rasch, Albert Adolph	'22	CE	Houston.
Rea, Homer Earl	'22	Ag	Rosebud.
Real, Caspar	'22	Ag	Kerrville
Red, Samuel Bliss	'21	EE	Wortham.
Redditt, Thomas Guyten	'22	CE	Center.
Reed, Lee Rotan	'21	Ag	Sterling City.
Rees, Roy Allen	'19	Ag	Center Point.
Reese, James Seaborn	'22	EE	Pennington.
Reese, Joseph Travis	1	f	Freeport.
Reichert, Paul Dyson	1	c	San Juan.
Reid, Louis Albert	1	f	Oglesby.
Reitch, Howard Earl	'22	Ag	Palestine.
Reming, Charles P	1	f	Brackettville.
Renick, Ronald Arendall	'22	CE	Smithville.
Reynaud, Oscar Field	'22	ChE	Houston.
Reynolds, Ewell Ellison	'20	Ag	Mt. Calm.
Reynolds, James Milton	'22	Ag	Mt. Calm.
Rhew, Austin Redus	1	f	Kingsville.
Ribble, William Carnace	1	f	Megargel.
Ribble, Rufus	1	c	Rice.
Rice, Fred Dobbs	1	c	Lindale.
Rice, Wayne Fitzgerald	'21	Ag	Lindale.
Richards, William Barn		Sp. EE	Kilgore.
Ridings, John Gilbert	'22	CE	Amarillo.
Ridley, Henry	'22	ME	Hillsboro.
Riffenburg, Harry B		Sp. ChE	Bryan.
M. A., University of Denver, 1917.			

Riffle, John William	1	c	Caldwell.
Riley, Hobart Samuel	1	c	Wills Point.
Risinger, Ervis B	1	f	Tulsa, Okla.
Roberts, James Benjamin	'22	CE	Crawford.
Robertson, Albert Louis	'19	Ag	Gainesville.
Robertson, Albert McKey	1	f	Fort Worth.
Robertson, James Orion	2	c	Marietta.
Robertson, Osburn Bragg	'22	CE	Smithville
Robertson, Oldham Hill	1	f	Houston.
Robertson, Vincent Milton	'22	Ag	Beaumont.
Robertson, William Walter	'22	CE	La Grange.
Robey, James Milton	'22	ME	Hillsboro.
Robey, Wiley Clay	'22	CE	Uvalde.
Robinson, Brittain Bragudnier	1	c	Galveston.
Robinson, Elbert Lionel	'21	EE	Bryan.
Robinson, George F	'22	Ag	Temple.
Robinson, Howard Curtis	'21	Ag	Bartlett.
Robinson, John H	1	f	Beaumont.
Rogers, Archie Clifton	'21	EE	Cameron.
Rogers, Charles Clinton	1	f	Hondo.
Rogers, Elbert William	'22	EE	Sulphur Springs.
Rogers, H. T	'22	EE	Waxahachie.
Rohde, Robert Emmette	2	c	Hearne.
Roitsch, Conrad Robert	2	c	La Grange.
Rollins, Jesse Thomas	'20	Ag	China.
Rooks, William Causton	'22	CE	Beaumont.
Roper, William Nunn	'22	ME	Rosebud.
Rosborough, James Fears	1	c	Marshall.
von Rosenberg, Hilton Otto	'20	VM	Hallettsville.
Rosenberg, Mortimer Louis	'22	ChE	Taylor.
Rosen, Eph Gordon	'21	Ag	Fort Worth.
Rothe, Clinton Herbert	'21	Ag	D'Hanis.
Routon, John Pyro	1	c	Bobville.
Royder, Jeff Pettus	2	c	Wellborn.
Runge, Louis Herman	2	c	Galveston.
Russell, Jef Chaison	'22	CE	Beaumont.
St. Clair, John Robert, Jr	'22	CE	Dublin.
Safford, Harry Melsom	2	c	Waring.
Sallas, Earl Albert	'22	Ag	Crockett.
Sammons, Ollie Perry	'22	CE	Denison.
Sample, Cyrus M	1	f	Stamford.
Sanders, Cecil Parr	'21	Ag	Hillsboro.
Sanders, Harold Devoe	'22	CE	Bryan.
Sanders, Horace Murdock	'22	Ag	Lavernia.
Sanders, Joshua Sale	'21	Ag	Mansfield, La.
Sanders, Neal Wesley	1	f	San Angelo.
Sanders, Sam Houston, Jr	1	f	Franklin.
Saunders, Harry Merritt	'22	ME	Greenville.
Savage, Marshall Edward	'19	CE	Florence.
Scales, Robert Henry	'22	CE	San Antonio.
Schaedel, Frank Walker	'21	EE	Bay City.
Schaefer, Henry Joseph	'21	CE	Schulenberg.
Schaefer, Quentin Bryan	'22	EE	Schulenberg.
Schaer, Robert	'19	ChE	Chapel Hill.
Schiller, M. E	1	c	Sealy
Schiwetz, Edward M	'21	Ar	Cuero.
Schlather, Erich George	'22	EE	Cibolo.
Schley, John Frank	'22	CE	Gatesville.
Schmidt, George Edward	'22	ME	Palestine.
Schmidt, Herbert Edward	'22	EE	Galveston.
Schow, Horace	'22	EE	Clifton.
Schow, Questad	'21	EE	Clifton.
Schultze, Walter M	1	f	San Antonio.
Schulze, Ferdinand	1	f	Kerrville.
Schumacher, John W	1	f	Navasota.

Schwartz, Joseph William	'22	Ag	Schulenberg.
Schwartze, Henry		Sp. Ag	Brenham.
Scott, Marvin Ignatius	'22	Ag	Bay City.
Scott, Samuel Urban	'21	EE	Dickson.
Scudder, Carl Fredrick	'21	EE	Dallas.
Seelke, Adolph G	'22	EE	Giddings.
Seidel, William Howard	'22	ChE	Goliad.
Self, Donald Ellis	'22	ME	Hornbeck, La.
Sellingsloh, Delmar Ray	'22	Ag	Houston.
Seminario, Luis Guillermo	1	c	Lima, Peru.
Sessions, Charles Boone	'22	Ag	Rockdale.
Sessions, Claude T	1	f	Poolvile.
Severn, John Mack	'22	Ag	Elgin.
Sewell, Thomas Newton	'22	Ag	Forney.
Sexauer, George Hardy	'22	EE	San Antonio.
Shacklett, Gordon	'22	CE	San Antonio.
Shannon, Albert Williford	'22	EE	New Baden.
Shannon, Nat Hill	1	c	Bobville.
Shannon, William Thomas	'21	Ag	Houston.
Sharp, Henry Arnette	1	c	Detroit.
Shattuck, Lorrence Loriston	'22	ChE	Beaumont.
Shaw, James Ben	'22	CE	Sherman.
Shaw, Lawrence Edwin	'22	EE	Victoria.
Shaw, Lail Hamilton	'22	EE	Kaufman.
Shaw, Renel A	'22	VM	Troup
Shepard, Gabe Jack	'22	CE	Sherman.
Sheram, Carlton Anthony	'21	CE	Greenville.
Sherley, William Meredith	1	c	Anna.
Sherman, Ralph Percival	'22	ME	Houston.
Sherrill, Charles Warren	'22	Ag	Kerens.
Sherrill, Malcolm		Sp. Ag	San Marcos.
Shields, Allan Clark	'21	Ag	Victoria.
Shires, Jack	'22	EE	Italy.
Shotts, Edward A	1	f	Fort Worth.
Shult, Walter Rudolph	'22	EE	El Campo.
Sides, William Roy	1	c	Canton.
Silvus, Walter Emory	'22	EE	Dallas.
Simmons, William Edwin	'22	CE	Sulphur, La.
Simon, Steve, Jr	'22	EE	Laredo.
Simpson, John P	1	f	Lubbock.
Sims, Bryan J		Sp. EE	Galveton.
Singleton, David Alexander	'20	ME	Lufkin.
Sisson, Boyd Brown	'22	ME	Bonham.
Skidmore, Edward Vernon	1	f	Shreveport, La.
Skidmore, H. C	1	f	Shreveport, La.
Sladczyk, Geörge Arden	'22	CE	La Grange.
Slaughter, B	1	f	Kaufman.
Slay, John Richardson, Jr	'19	Ag	Frost.
Small, Howard A	1	f	Amarillo.
Smallwood, A. Jack	'22	CE	Hillsboro.
Smith, Alfred Bramlett	'20	Ag	Rotan.
Smith, Aubrey Delvin	'22	EE	Italy.
Smith, Arthur Lee	'19	Ag	Blanco.
Smith, Asy Waskom	'22	Ag	Marshall.
Smith, Brandon Lillie	1	Ag	Stockdale.
Smith, Chester Addison	1	f	Stockdale.
Smith, Carr Brumbsmade	'22	ChE	Waco.
Smith, Clarence Joseph Weldon	'22	CE	Harrisburg.
Smith, Charles Russell	'21	ChE	Dallas.
Smith, Cecil Young	1	f	Winnsboro.
Smith, Ed	'22	ME	Canton.
Smith, Embre Warren	2	c	Austin.
Smith, Frank Ennis	'21	Ag	Bynum,
Smith, Horace Clifford	'22	Ag	Bryan.
Smith, Herbert Gibson	'22	Ag	Fostoria.
Smith, Henry Louis	'22	CE	Longview.

Smith, Jess Warren	1	f	College Station.
Smith, Lee Andrew Allen	'22	ChE	Fort Worth.
Smith, Littleton Ellis	1	f	Nacogdoches.
Smith, Leslie Wells	1	f	Wichita Falls.
Smith, Mayette	1	c	Austin.
Smith, Marc Bertrand	'22	Ag	Fort Worth.
Smith, M. V. Farr, Jr	'22	EE	Belton.
Smith, Thomas Decker		Sp. Ag	Alba.
Smith, Thomas Frank	1	f	Crockett.
Smith, Tate Gabbert	1	f	Senatobia, Miss.
Smith, William Henry	1	f	Houston.
Smith, Walter J	'22	Ag	Pittsburg.
Smith, Walter Robbins	2	c	Asherton
Smyth, Leon L	'21	EE	Mart.
Snell, Casber	1	c	Lampasas.
Snell, Maynard Goldman	'21	Ag	Lampasas.
Snider, Andy J	'22	CE	May.
Solomon, Bennett David	'22	ME	Belton.
Sorelle, Irving Frederick	'20	Ag	Clarendon.
Southwell, Wilson Pryor	'21	Ag	San Antonio.
Spessard, William Bryant	'22	Ag	Taft.
Spreen, Herbert Frederick		Sp. CE	Welcome.
Staerker, Otto	'19	CE	Cuero.
Stallings, Allen Bacon	1	f	Melrose.
Stamps, William Thomas	'22	EE	Terrell.
Stanford, Paul H	'22	EE	Canton.
Stanley, Arthur Kemp		Sp. Ag	Beeville.
Stanley, Wayland	1	f	Amarillo.
Stark, James Albert		Sp. Ag	Sealy.
Starling, James Horace	'22	CE	Mart.
Starling, Richard Lee	2	c	Mart.
Steadman, Webb Ballard	'22	EE	Eola.
Stedman, Ed., Jr	'21	Ag	Beaumont.
Steele, Dewitt Durham	'22	Ag	San Antonio.
Steele, Junius	'22	ME	Marshall.
Steele, Rezin Brinsmade	'22	EE	Houston.
Steger, Robert Brooke	'22	CE	Dallas.
Stell, Noble David	1	f	Robinson, Ill.
Stell, Robert, Jr	'22	EE	Corsicana.
Stephens, Governeur Robert	'22	CE	Mission.
Stephens, Glen Walton	1	f	Gilmer.
Stephenson, George Walter	'22	CE	Gainesville.
Sterling, Thomas M	1	c	Rockdale.
Sterrett, Sam L	1	f	Albany.
Stevenson, John Brooke	1	f	Bryan.
Stewart, Grafton Mason	'22	Ag	Houston.
Stewart, John Sylvester	'19	Ag	Houston.
Stiegler, Frank G	1	c	Hondo.
Stiles, Robert Winfield	'22	ChE	San Marcos.
Stitt, John Garland	1	c	Rogers.
Stockton, Thomas Powell	2	f	Kenedy.
Stockwell, William Palmer	'20	Ag	Alvin.
Stocker, Irwin	'22	Ag	San Antonio.
Stoll, Jacob		Sp. Ag	Brenham.
Stolz, Clinton R	'21	Ag	La Grange.
Stoneburg, Charles Erick	1	f	Magnolia.
Stoneham, John W	1	f	Yarboro.
Stovall, John Thomas	'21	Ag	Hubbard.
Strain, Ellis White	'22	Ag	Lancaster.
Strandberg, Albert Richard	'22	ChE	Marshall.
Strange, John Howard	'22	EE	Mart.
Strange, John Rufus	'21	Ag	Bryan.
Strange, William Thomas, Jr	'21	Ar	Bryan.
Strasburger, Roy	'22	Ag	Temple.
Strawn, John Smith	1	c	Hondo.
Stribling, Ralph Copeland	'22	ME	Rockdale.

Strieber, Leslie John	'22	EE	Runge.
Strong, Alan Tullis	'22	CE	San Francisco, Cal.
Stubbs, Chilton Clay	1	c	Robstown.
Styles, Thomas Wright	'21	ChE	Brenham.
Suderman, Callis Peter	'22	EE	Galveston.
Sullivan, Bernard Francis	'22	ME	Temple.
Sullivan, Harold	'22	CE	Centerville.
Sullivan, William Matthews	'22	ChE	Caldwell.
Sumner, Lawrence Earl	'20	Ag	Blanket.
Sutherland, Owen Jeremiah	1	c	Melissa.
Sutherland, William McCampbell	'22	ChE	Corpus Christi.
Sutton, Horace Shelton	1	c	Melvin.
Sutton, Kenneth Edwin	'22	ME	Beaumont.
Swain, Mark Simms	'21	CE	Brenham.
Swayze, James Prentis	1	c	Center Point.
Talbert, Paul Houston	'22	CE	Fort Worth.
Tanner, Seaborn Harvey	'22	CE	Caldwell.
Tartt, Boling Grafton, Jr	1	c	Galveston.
Taylor, Bill Northcutt	'19	CE	Longview.
Taylor, Clarence Eugene	'21	Ag	Eagle Pass.
Taylor, Clifford J	'21	Ag	Cumby.
Taylor, Clint Leroy	'22	ME	Fort Worth.
Taylor, Ed	'20	ChE	Mt. Vernon.
Taylor, Eulis	1	f	Rosebud.
Taylor, Francis Grant	'22	TE	Waco.
Taylor, Leroy William	1	f	Galveston.
Taylor, William Allen		Sp. Ag	Waco.
Taylor, William Harrison, Jr	'21	CE	Houston.
Teague, Basil Jennings	1	f	Hamlin.
Teas, Bryan Strand	1	h	Denison.
Temple, James Roland	'22	EE	Dallas.
Terry, Francis Curtis	'22	EE	Lampasas.
Thomas, Charles Wright	'22	CE	La Grange.
Thomas, Douglas Voss	'21	EE	Texico, N. M.
Thomas, Eustace	1	c	Leggett.
Thomas, Roderic Bruce	'22	CE	Dallas.
Thomas, Ralph Rogers	'21	Ag	Marfa.
Thomas, William M	'21	ME	Kaufman.
Thompson, Blaine	'22	ME	Milford.
Thompson, Elvin Reese	1	c	Snyder.
Thompson, Frank Annon	'21	ChE	Denison.
Thompson, Harry Witford	'22	EE	Hubbard.
Thompson, Othman Clarence	'22	CE	Fort Worth.
Thrash, T. C	'22	CE	Nacogdoches.
Thrasher, Robert Edward		Sp. CE	Austin.
Thrasher, William Broadway	'20	ChE	Austin.
Tieman, Edwin Fritz	'22	ME	LaGrange.
Tighe, Louis Thomas	'19	EE	Sour Lake.
Tippitt, Robert Ray	'22	Ag	Alpine.
Tobin, John Jenkins	1	f	Austin.
Todd, Charles Carroll	'20	CE	San Antonio.
Tomlinson, Joe Landrum	'22	ME	Lott.
Tompkins, James Franklin		Sp. CE	Corpus Christi.
Tonahill, William Joseph, Jr	'22	Ag	Palestine.
Topham, Luther Latimer	1	f	Luling.
Touchstone, William Weatherford	1	c	Sherman.
Towles, Homer Wood	'22	CE	Ennis.
Townsend, William Wilford	'21	Ag	Del Rio.
Trice, Whaley Powell	'21	Ag	Waco.
Trousdale, James William	1	c	El Campo.
Trow, George Barnes	1	f	Trinity.
Tucker, Hyden Lydell	'22	EE	Blum.
Turk, Columbus Farley	1	f	Hallettsville.
Turley, Ray Clarence	1	f	Mercedes.
Turner, Grady Weldy	'22	CE	Dalhart.

Turner, Lovell Metcalfe	'22	EE	Dallas.
Tuttle, Lyman Dewey	'22	EE	Poteet.
Tyson, Clyde Porter	'22	Ag	Maysfield.
Tyson, Powell Martin	'21	Ag	Maysfield.
Tyson, Roy Randolph	'22	ME	Maysfield.
Underwood, Alfred Thompson	'21	CE	Corsicana.
Van Court, Clifford Golten	'20	Ag	San Angelo.
Vanderburg, J. Ercell	'20	ChE	Silsbee.
Vanderstucken, Charles Edgar	'22	EE	San Antonio.
Vandervoort, Arthur Stewart		Sp. Ag	Houston.
Vandigriff, James Worth	'22	CE	Carthage.
Vanek, Ladislay Joseph	'21	CE	La Grange.
Van Tuyl, Andrew	'22	CE	Fort Worth.
Varnell, Earl Henry	'21	Ag	Barry.
Varner, Malcolm Eric	1	c	Stockdale.
Vaughan, Dal Ramsey	'22	ME	Texarkana.
Vaughan, Robert Givens		Sp. Ag	Hillsboro.
Vaughan, Walter Dial	'22	ME	Honey Grove.
Vestal, Carl	'22	CE	Quanah.
Vinther, Percy Nelson	'21	EE	Georgetown.
Vivrett, William Nurton, Jr	'22	CE	Waco.
Voelkel, Kenney Reese	'22	CE	Ballinger.
Vrazel, Max Charles	2	c	Gonzales.
Wageman, Patrick Henry	'22	ME	Houston.
Wagstaff, John Perry	'21	CE	Abilene.
Waide, Wayman Marshall	1	c	Sanger.
Walker, Charles Meriott	1	f	Muskogee, Okla.
Walker, Elmo Milton	'21	CE	Azle.
Walker, Jordan Alfred	'21	CE	Rockwall.
Walker, Jack Forrest	'22	CE	Cooper.
Walker, Luther Earl	'21	ChE	Dallas.
Walker, Waldo Harrison		Sp. ChE	Macon, Mo.
Wallace, Allen Bronson	1	f	Mineral Wells.
Wallace, John Doyle	'22	CE	Mt. Calm.
Wallace, William Leslie	2	c	Holland.
Waller, Wesley William	1	f	Wichita Falls.
Walling, George Griswold	'22	EE	Houston.
Walters, George Abraham	'22	CE	San Saba.
Walters, John T	1	c	San Saba.
Waltrip, Oliver Harold	'22	EE	Fort Worth.
Ward, Clyde	1	c	Yancey.
Ward, Estwill Chisholm	'21	Ag	Tishomingo, Okla.
Ward, Elgin K., Jr	1	c	Midlothian.
Warford, Joseph Richardson	'22	CE	Dallas.
Warndof, Charles Richard	'21	TE	Savannah, Ga.
Watkins, M. B	1	f	Asherton.
Watson, John William	'22	EE	Strawn.
Waugh, Alexander	'22	CE	Bastrop.
Weary, Gerald Wilfred	'22	CE	Texarkana.
Weatherby, James Harold	'22	CE	Hubbard.
Webb, Ernest	'22	ME	San Antonio.
Webber, Absalom Theodore	'22	ME	Freeport.
Webster, Daniel Homer	'22	EE	San Antonio.
Weinert, McDonald Donegan	'21	CE	Seguin.
Weir, Charles	'22	EE	San Antonio.
Weir, William Calvin	'22	CE	Georgetown.
Weisbrich, Rudolph August	'22	EE	San Antonio.
Welch, Richard Frank	'22	Ag	Marshall.
West, Jaque Clark	1	f	Waco.
Westberry, Albert Rainie	1	f	Itasca.
Westerhoff, Adolph Gustav	'21	ME	Moulton.
Westmoreland, Cecil Sylvester	'22	EE	Waco.
Wetherell, Clarence Oswald	'22	Ag	San Antonio.

Weyland, Alvin Harold	19	EE	Taft.
Wheat, Harry Van Culen	'21	EE	Dallas.
Wheeldon, Harry	'21	EE	Big Spring.
Wheelus, Cleveland Bartch	'22	ME	San Benito.
White, Bonnie	1	c	Fate.
White, Billie Harvey	'22	EE	Rosebud.
White, Dillon Elmore	'22	EE	Dallas.
White, Lauren Lucian	'22	CE	Hillsboro.
White, Leonard Philip	'22	ME	Mexia.
White, Raleigh L	'22	CE	Stephenville.
White, Robert W	'20	Ag	Brady.
Whiting, Richard Robert	1	f	Houston.
Whitlock, Robert Edward Lee	1	c	Austin.
Whitman, Charles Dewey	'21	Ag	Waco.
Whitsett, Marshall Justine	1	f	Weatherford.
Whittenberg, Delmar	'22	ME	Bonham.
Whitworth, Clarence Vaughan	1	f	Rocksprings.
Wicks, Albert Henry	1	f	Mission.
Wiedenfeld, E	2	c	Comfort.
Wiesen, Thomas Ferdinand	'20	Ag	Fort Worth.
Wilburn, Tilghman Hilghery		Sp. EE	Omaha, Neb.
Wilcox, Joe Edward	'22	Ag	Waco.
Wilkinson, Charles Wheeler	'22	EE	Itasca.
Wilkinson, John S		Sp. Ag	Mineral Wells.
Wilkinson, L. C	'22	Ag	
Willard, Alvin Ray	1	c	Celina.
Willard, Herbert Bernley	'21	ChE	Port Arthur.
Willard, Tom Bailey	1	f	Giddings.
Williams, Henry Walton	2	c	Jolly.
Williams, James Chittim	'22	CE	Eagle Pass.
Williams, James Stanley	'21	ChE	Bishop.
Williams, James Wishart	'19	CE	Hamilton.
Williams, Roland Lee	1	f	Springs.
Williams, Thomas Harold	1	f	Comanche.
Williams, Tracy John	1	c	Sulphur Springs.
Williams, Theodore Victor	1	f	Oden.
Williams, William Howell, Jr	'22	EE	Houston.
Williamson, Charles Donovan	'20	Ag	Fort Worth
Williamson, John Albert	'19	Ar	San Antonio.
Williamson, William Malcolm	'22	ME	Eagle Lake.
Willis, Claude Channing	'22	Ag	Whitewright.
Willis, James L	1	f	Temple.
Wilshusen, William Paul	1	f	Galveston.
Wilson, Clarence Raymond	'22	CE	Denton.
Wilson, Edwin Butler	1	f	Bellville.
Wilson, Eugene Stanley	'19	ChE	Denton.
Wilson, Edward Sylvester	'22	CE	Wichita Falls.
Wilson, Joe Clay	'20	Ag	Normangee.
Winder, Mona Roy	1	f	Richmond
Windham, Harlan Gable	1	f	Waxahachie.
Windrow, Ralph Sanders	'21	CE	Hondo.
Winerich, William Holmes	1	f	San Antonio.
Winkenhower, August Oliver	'21	Ag	San Antonio.
Winn, William Edward	'22	ChE	Dallas.
Winstead, George Byron	'22	CE	Houston.
Wintz, Elmir Cary	'22	ME	Kountze.
Wise, Richard Darden	'22	EE	Weatherford.
Witmer, Brewer Ferrell	'20	EE	Mercedes.
Witte, Gilbert Ross	'22	Ag	Henrietta.
Witten, Farrar Brooks	1	c	Waxahachie.
Wittman, Frank Philip	'19	Ag	Bryan.
Witty, Joseph Stephen	'22	CE	Hamilton.
Wohlberg, Lester	'22	Ag	Waco.
Womack, Frank Eugene	'22	EE	Beaumont.
Womack, Rufus Howard	'22	CE	Sherman.
Wood, Jessie Earnest	1	f	Ennis.

Wood, Ralph	'22	Ag	Victoria.
Woodard, Philip Hardin	'22	EE	Blooming Grove.
Woods, Joseph Elbert	'21	EE	Corsicana.
Woodward, H. Andrew	'22	CE	Corpus Christi.
Woolsey, Vernon Gens	'22	Ag	Bay City.
Works, Maurice Milton	'22	CE	Amarillo.
Wormser, Marcus Royle	'19	Ag	Laredo.
Wortham, Robert Raymond	'22	EE	Fort Worth.
Worthington, Allan Sherman	'22	Ag	Carthage.
Wotipka, Edgar Anton	1	f	Smithville.
Wrape, Ambrose M	'22	EE	Little Rock, Ark.
Wrape, W. D	'22	EE	Little Rock, Ark.
Wray, George Hamilton, Jr	'21	CE	Dublin.
Wright, Clarence John	'22	CE	Houston.
Wright, Donovan Bruce	'22	Ag	Bellevue.
Wright, Hall Wyatt	1	f	Gause.
Wright, James Dewey	1	f	Lott.
Wright, Samuel Robert	'22	EE	Weatherford.
Wright, William Ace	'22	Ag	Leming.
Wyly, James John, Jr	'22	EE	San Benito.
Wynn, Leonard Lee	1	f	Maypearl.
Yale, Charles B	1	c	Fort Worth.
Yardley, Homer Noel	'22	ME	Ben Arnold.
Yater, John Allen	'22	ME	Cleburne.
Yates, Jimmie Earl	'22	CE	Alpine.
Yates, Leslie Earl	'22	CE	Lubbock.
Yeager, Abraham Austin	'21	CE	Mineral Wells.
Yearwood, John Francis, Jr	1	c	Georgetown.
Yerby, Harold Vincent	'22	CE	Hugo, Okla.
Yoakum, Hallie Owen	'22	Ar	Cooper.
Young, Chester Haywood	1	c	Lockhart.
Young, George T	'22	Ag	Fort Worth.
Young, John Madison	'20	Ag	Rotan.
Youngblood, James Martin	'22	EE	Waxahachie.
Youngblood, William Lee	'22	CE	Waxahachie.
Zachry, Henry Bartell	'22	CE	Uvalde.
Zappe, Arthur William	'22	VM	Ballinger.
Zegarra, Enrique Coronel	'20	Ag	Lima, Peru.
Zerwekh, Charles Ezera	2	f	Galveston.
Zienter, John Vincent	'22	ME	Denison.
Zuber, Philip Arthur	'20	ChE	Houston.

EIGHT WEEKS COURSE IN AUTOMOBILES AND TRACTORS.

Enrollment from January 1, 1919, to May 1, 1919.

Ashford, J. C	College Station.
Baker, George Dewey	College Station.
Bladwin, Vance Theorn	Victoria.
Balzer, Guss A	Sagerton.
Bouchard, Henry James	Burnet.
Boyd, G. G	Palestine.
Brett, Owen Edward	Port Lavaca.
Browning, Elmer Lee	Winona.
Browning, Grayson Douglas	Winona.
Bunge, L. P	Eagle Lake.
Cade, Leon	Rockwall.
Camp, Hosea Aubrey	Emerson.
Collier, C	College Station.
Cornelius, Luther William	Eustace.
Culbertson, C. P	Bay City.
Daniels, B. C	Elkhart.
Dawson, Joe Willis	Bryan.
Fitzgerald, Barrett Horace	Jefferson.

Gray, Thomas Albert	Dallas.
Griffin, Guy Lee	Bryan.
Heard, C. L	Refugio.
Hearn, Titus Leroy	Enloe.
Hock, Albert Henry	Austin.
Hudson, George Ferris	Mt. Enterprise.
Jones, H. G	Bryan.
Joseph, William Montgomery	Cove.
Josserand, Pierre	Galveston.
Kellerman, Harry Willie	San Marcos.
Kuehn, Otto Emil	Taylor.
Leffland, Paul Walter	Victoria.
Leonard, Obie Paul	Linden.
Lofland, O. D	Rockwall.
McCullough, James	Sherman.
McNeil, Leonard Appleton	Avinger.
Martin, James Ervin	Canton.
Matthews, T. L	Hortense.
Miller, Alan Newton	Waco.
Nelson, George W	Rosenberg.
Nots, Sam	Bryan.
Oakley, Carl Glenn	Needland.
O'Hara, Sidney	Piggatt, Ark.
Patten, Tom Conway	Waco.
Petersen, Hans, Jr	Chocolate Bayou.
Quarles, Norman Payton	Elkhart.
Rodenbeck, Willie O	Thorndale.
Ross, Edwin Joseph	College Station.
Russell, Eddie Benjamin	Chatfield.
Salem, Olai C. S	College Station.
Sandidge, George Roy	Altoga.
Shiller, B. F	Victoria.
Selstad, Nels Erickson	Angleton.
Sparkman, Mack	Crisp.
Tait, Charles William	Columbus.
Vivroux, Eugene	Seguin.
Watt, J. Gilbert	El Campo.
Whitehead, W. L	Sinton.
Wilson, R. K	Bryan.
Wilson, R. M	Bryan.
Winfield, Maurice David	Chapel Hill.

SUMMER SESSION, 1918.

Allen, C. R	Cotton Classing	Burlington, Kans.
Allen, Martha Rivers	College	Bryan.
Anderson, Sallie	Normal	Winnboro.
Appleby, R. G	Cotton Classing	Cherokee, Okla.
Attebery, W	College	Marshall.
Benst, Sister St. Rose	Normal	Bryan.
Bethany, C. M	Normal	Bryan.
Bizzell, Sangster	College	College Station.
Blackwell, J. D	College	Austin.
Blankfield, Meyer	Cotton Classing	Galveston.
Bowden, Guillermo	College	Lima, Peru, S. A.
Boyette, Katherine	Normal	Bryan.
Brannen, John	College	Westville.
Bressler, R. G	College	Austin.
Brooks, James R	Rural Life	Pilot Point.
Brown, Charles E	College	San Marcos.
Buchanan, Ona	Normal	Bryan.
Burdick, L. W	Cotton Classing	Coleman.
Burgess, Willie R	Cotton Classing	
Cahill, Mary	Normal	Bryan.
Caldwell, M. L	Rural Life	Marlin.
Calhoun, A. O	Rural Life	Jacksboro.

Carpenter, A. J.	Normal	Vernon.
Carrion, Manuel G.	College	Piura, Peru, S. A.
Carver, A. B	Rural Life	Yoakum.
Cavitt, Volney	College	McGregor.
Clark, Joe H	Cotton Classing	Blum.
Cleveland, Exie	Rural Life	Falfurrias.
Cleveland, N. A	Rural Life	Falfurrias.
Cole, Dewey	Cotton Classing	Kemp.
Cook, Ima M	College	Bryan.
Cooper, J. W.	Rural Life	Garrison.
Cortes, H	College	Piura, Peru, S. A.
Covey, R. S.	Rural Life	Oklaunion.
Crabb, Lillian M.	Normal	Provident City.
Crabb, Mary Lorena	Rural Life	Provident City.
Crenshaw, Thelma	Normal	Winnsboro.
Cyrilla, Sister Mary	Normal	Bryan.
Davis, C. W.	Cotton Classing	
Dean, B. D	College	Hugo, Okla.
de Maret, Daniel Taliaferro	College	Bryan.
Dewald, J. P	Rural Life	Pendleton.
Dickson, Ida Mae	Rural Life	Winnsboro.
Dixson, Floyd F.	Rural Life	Jacksboro.
Dougherty, Harry, Jr.	College	Hot Springs, Ark.
Durst, Charles L	Normal	College Station.
Dyer, M. J.	Cotton Classing	Cisco.
Earnest, Dave	Normal	West Point, Miss.
Edge, Altha	Normal	Bryan.
Edwards, Arthur I	College	Millican.
Elder, R. E	Rural Life	Groesbeck.
Evans, George	Rural Life	Tehuacana.
Farrar, S. B., Jr	Cotton Classing	Waxahachie.
Ferguson, Mrs. H. C	Normal	Waller.
Figari, Charles	College	Lima, Peru, S. A.
Figari, Ernest	College	Lima, Peru, S. A.
Figari, G.	College	Lima, Peru, S. A.
Fischer, Mrs. Willie E	Normal	Brenham.
Forrest, Lyman E.	Rural Life	De Leon.
Foster, Allen	College	Carthage.
Foster, Mrs. Minnie B.	Normal	Wellborn.
Fountain, James Milton	Normal	Bryan.
Frazier, Ethelwyn	College	Tyler.
Fuchs, Helmuth T	Rural Life	Cypress Mill.
Gearreald, Neal	College	Plainview.
Gross, Clarence A.	College	Kempner.
Gunn, Mayme	Normal	Waelder.
Hall, Ethyle	Rural Life	Gainesville.
Hall, Pansy	College	Bryan.
Harris, Edna	Normal	Bryan.
Harris, Florence	Normal	Midway.
Hart, J. L.	Rural Life	Carthage.
Hart, Rosie	College	Bryan.
Hempfling, Eulalior	Normal	Millican.
Henry, Lena	Normal	Bryan.
Hensarling, Velma	Normal	Bryan.
Herrington, Lynne	Normal	Orange.
Hickman, T. C	Rural Life	Hondo.
Hodges, Ruth M.	Normal	Cawthon.
Holmes, A. J	Rural Life	San Augustine.
Homeyer, W. C.	Rural Life	Marshall.
Hoppes, Norma M	Rural Life	Tiffin, Ohio.
Howell, Vivienne	Normal	Bryan.
Hudgins, C. F	Cotton Classing	Richardson.
Huff, Mrs. W. W.	Rural Life	College Station.
Humbert, E. P	Cotton Classing	College Station.
Hyland, Gilbert	Normal	College Station.
Jackson, Florrie	Rural Life	Miami.

Jackson, Mary E	Rural Life	Celina.
Jones, George M	Rural Life	Charco.
Keefer, A. H	Cotton Classing	North Zulch.
Kemp, Sophie	Normal	Lott.
Kern, Carolyn	Rural Life	Bryan.
Kern, Virginia	Normal	Bryan.
Knox, T. K	Rural Life	Austin.
Lane, Ada Lou	Normal	Franklin.
Lane, Josephine	Normal	Franklin.
Lawler, Ruth C	College	Bryan.
Leathers, S. L	Cotton Classing	Middleton.
Lee, Charles O	Normal	Lissie.
Legg, A. S	College	McGregor.
Lewis, T. B	Normal	Fort Worth.
Lloyd, A. C	College	Reagan.
Lloyd, Mrs. Ellen	Normal	Bryan.
Locke, Annie Mae	Normal	Bryan.
McCullough, Myrtle	Normal	Bryan.
McDonald, D. J	Rural Life	North Zulch.
McGregor, Ruth E	College	Millican.
McKnight, Bernardine	Normal	Bryan.
McVey, Bettie	Normal	Bryan.
Malone, Joseph	Normal	Bryan.
Manahan, Iona	Rural Life	Fairfield.
Mathis, J. W	Cotton Classing	Madisonville.
Mayo, Norris A	College	Winnsboro.
Mike, Frances	College	Bryan.
Miller, E. A	Cotton Classing	Yorktown.
Mills, Frances	Normal	Winnsboro.
Monroe, S. W	Rural Life	Terrell.
Moore, Fleming G	College	College Station.
Notley, W. D	Rural Life	Corpus Christi
Oliver, Eugene	Rural Life	Livingston.
O'Quinn, W. A., Jr	Rural Life	Lufkin.
Parker, Bessie	Rural Life	Palestine.
Patrick, Irene	Normal	Winnsboro.
Patterson, Eula	Normal	Rosebud.
Peace, Janie	Rural Life	Provident City.
Peteet, George W	College	Bryan.
Peyton, Richie	Normal	Marlin.
Ramsey, R. H	College	College Station.
Richardson, Mrs. Ona	Rural Life	Bryan.
Richardson, Thomas C	Rural Life	Bryan.
Risinger, Bertie	Normal	Bryan.
Rittner, Doris	Rural Life	Yoakum.
Roberson, J. A	College	Devine.
Rotisch, C. R	Rural Life	La Grange.
Rollins, J. T	College	China.
von Rosenberg, H. O	College	Hallettsville.
Ranison, A. F	Normal	College Station.
Rushing, O. J	Rural Life	Jasper.
Safford, H. M	Normal	Comfort.
Schneider, Sister Margaret Mary	Normal	Bryan.
Selman, Wilmoe	Rural Life	Frankston.
Seminario, L. W	College	Lima, Peru, S. A.
Seraphine, Sister Mary	Normal	Bryan.
Shelton, Mack	Normal	Winnsboro.
Shoultz, J. C	Rural Life	Woden.
Simpson, J. B	Cotton Classing	Dallas.
Sims, C. T	Rural Life	Grapeland.
Skinner, A. A	Rural Life	
Smith, C. E., Jr	Cotton Classing	Palacios.
Smith, Mrs. Eula	Normal	Bryan.
Smith, Jess W	Normal	College Station.
Smith, Lloyd	Normal	Bryan.
Smith, Mamie	Rural Life	Mason.

Smith, T. A	Cotton Classing	Lockhart.
Smyth, L. L.	College	Mart.
Spivey, John R	Rural Life	Bellville.
Squyres, Arthur	College	Yoakum.
Stuart, Stella B.	Normal	Bryan.
Stamps, D. F.	Cotton Classing	Dime Box.
Stevenson, Brooke	College	Bryan.
Suber, Elizabeth	Normal	Bryan.
Sullivan, Gladys V	Rural Life	Coahoma.
Tanner, Mrs. B. M	College	Ada, Okla.
Taylor, Kathleen	Rural Life	Edgewood.
Taylor, Rosalie	Normal	Bryan.
Taylor, Ruth.	Normal	Bryan.
Taylor, W. G.	Cotton Classing	Holland.
Terry, Mrs. Laura	Rural Life	Copperas Cove.
Thomsen, Mrs. Gosche, Jr.	Rural Life	Oklahoma City.
Thomson, Earnest M.	Cotton Classing	Waxahachie.
Thompson, F. A.	College	College Station.
Timmons, E. S.	Cotton Classing	Elysian Fields.
Tobias, Mrs. Edna	Normal	Bryan.
Tobias, Ethel	Normal	Kurten.
Vance, F. M.	Normal	Bryan.
Wagner, John Van	Cotton Classing	Pleasanton.
Wallace, Mary	Normal	Brenham.
Watts, J. C.	Rural Life	Abilene.
Weber, R. P.	Cotton Classing	Nixon.
Wennmohs, Fritz	Rural Life	Cypress Mill.
Wennmohs, Victor	Rural Life	Cypress Mill.
Whisenant, J T	College	Dublin.
Whitton, Lela.	Rural Life	Timpson.
Wilser, J. B.	Cotton Classing	Fredericksburg.
Wilkins, C. A	Rural Life	Crawford.
Wilkinson, L. C.	College	Edna.
Wilson, Harry	Rural Life	Paris.
Winerich, W. H.	College	San Antonio.
Wittman, Amelia	Normal	Bryan.
Woods, Lloyd	Normal	Milano.
Zegarra, E. C.	College	College Station.
Zuber, Margaret	Normal	Bryan.

SUMMARY OF ENROLLMENT, SESSION 1918-19.

REGULAR COURSES.

	Agr.	Ag.Ed.	Sci.	V.M.	Arch.	Ch.E.	C.E.	E.E.	M.E.	T.E.	Total.
Graduate	5	..	..	..	..	...	...	...	...	..	5
Senior	23	6	1	..	3	5	12	8	6	..	64
Junior	42	..	..	4	1	6	17	19	10	3	102
Sophomore	77	..	..	3	5	18	56	47	12	1	219
Freshman	192	..	..	5	12	58	208	198	140	8	821
Special	46	3	..	..	1	3	9	8	1	2	73

TWO-YEAR COURSES.

	C	F	H	M	
Second Year	42	8	3	4	57
First Year	138	260	10	9	417
Total, Regular Session					1758

Regular Session			1758
Eight Weeks Course in Automobiles and Tractors, to June 1, 1919			59
Summer Session 1918:	College	50	
	School of Cotton Classing	26	
	Summer Normal	62	
	Rural Life School	54	
	Farmer's Short Course	750	
Total			942
Grand total			2759

DEGREES AND HONORS CONFERRED AT THE FORTY-SECOND ANNUAL COMMENCEMENT.

(May 28, 1918.)

Master of Science.

Frank Funn Kan,
B. S., Oregon Agricultural College, 1916.

Hilmer Henry Laude,
B. S., Kansas State Agricultural College, 1911.

Nathaniel Elmer Winters,
B. S., Oklahoma A. and M. College, 1911.

Bachelor of Science.

In Agriculture.

Boyd, C. T.
Carson, A. D.
Crawford, R. D.
Flach, E. K.
Ford, M. H.
Haas, J. K.
Hagan, T. E.
Hensarling, A.
Hockaday, F. J.
Hudgins, J. L.
Kingswell, J. W.
Lawrence, W. H.
Leffel, R. C.
McKnight, J. B.
Martin, S. W.
Melton, J. H.
Myers, H. S.
Nagle, E. T.
Nash, E. C.
Phillips, J. M.
Ray, W. J.
Regenbrecht, E. M.
Rigney, E. E.
Von Rosenberg, W. E.
Schiller, I.
Shiner, V. J.
Starnes, J. L.
Warren, G. R.
Wipprecht, C.

In Architectural Engineering.

Watkins, W. H.

In Chemical Engineering.

Bates, W. W.

In Civil Engineering.

Baker, D. E. Bone, L. B. Kenan, W. Martin, D. E. Snow, O. L.

In General Engineering.

Morgan, G. B.

In Electrical Engineering.

Cooper, F. A. Copeland, C. M. Lipscomb, T. G. McLean, A. R.
Miller, J. B. Priester, L. E. Sexauer, W. G.

In Mechanical Engineering.

Pereira, C. G. Rose, M. A.

In Textile Engineering.

Sanders, A. N.

Honor War Certificates.

In Agriculture.

Alfred Herman Alex
Dallas Robert Andrews
Hardy Moulton Benson
Guy Manville Bittle
Roy Allen Brewer
Frank Cadwell Brunnemann
Lester Holman Carnahan
Norman G. Crocker
Thomas Jefferson Davis
Louden Charles Doney, Jr.
John Guy Ervin
Clifford Freeman
Carlos Philip Timothy Griesenbeck
Sam Fuqua Hurt
John Benjamin Rex Leary
Benjamin Franklin Looney
John Clyde McKimmey
William Wortham Maxwell
Fritz William Mogford
Dudley Spencer Moore
Jack Moncure Norment
Claude Albert Nussbaum
J. H. Smilie
Arthur Lee Smith
P. L. Sneed, Jr.
Shelby Grant Tarkington

In Architecture.

Jacob Born

In Civil Engineering.

George Dunlap Anderson
Clarence Camille Braden
Coxey Evans
Joe William Grace
Thomas James Kelly
Harry Clayton Knickerbocker
Otto Staerker
James Knox Walker
James Wishart Williams

In Electrical Engineering.

Arthur Max Reisman
Louis Thomas Tighe

In Mechanical Engineering.

Felix Elbert Whitley

In Textile Engineering.

Agee Kimbel
Champ Lee Taliaferro, Jr.

CERTIFICATES IN TWO-YEAR COURSES.

In Agriculture.

Breeden, P. F. Foster, W. R. Fuchs, A. Pereira, D. G. Safford, H. M.

For Electricians.

Stephenson, J. J.

In Textile Engineering.

Japhet, D. J.
Sparks, W. M.

SUMMARY OF DEGREES CONFERRED.

Advanced Degrees:			
Master of Science			3
Baccalaureate Degrees:			
Bachelor of Science:	In Agriculture	29	
	In Architectural Engineering	1	
	In Chemical Engineering	1	
	In Civil Engineering	5	
	In Electrical Engineering	7	
	In General Engineering	1	
	In Mechanical Engineering	2	
	In Textile Engineering	1	
			47
Total			50

DISTINGUISHED STUDENTS.

(Session 1917-18.)

At the end of each session students who have during the year received no term grade below B are announced as "Distinguished."

Freshman Class.

Bennett, V.
Hein, F. W.
Randall, A. L.
Neyland, A. J.
Tyson, P. M.
Varnell, E. H.

Sophomore Class.

Edwards, K. J.
McQuillen, E. E.
Ross, H.

First Year of the Two-Year Courses.

Day, A. E.
Penn, B.
Pierce, E. C.

MILITARY ORGANIZATION, SESSION 1918-19.

The Corps of Cadets is organized into a Regiment of Infantry of two Battalions of four companies each, and a Band; and an Auxiliary Battalion consisting of one Battery of Field Artillery and two companies of Signal Corps.

Commandant.

Colonel C. H. Muller, Infantry U. S. A., Professor Military Science and Tactics.

Assistant Commandant.

Lieutenant Colonel L. R. Dougherty, F. A., U. S. A., Assistant Professor Military Science and Tactics.

Tactical Officers. Assistant Professors Military Science and Tactics.

Captain W. W. Leach, F. A., U. S. A.
Captain W. G. Dunkum, F. A., U. S. A.
Captain W. E. Jenkins, F. A., U. S. A.
First Lieutenant R. W. Wilson, F. A., U. S. A.
Second Lieutenant R. E. Crittenden, Signal Corps, U. S. A.

Tactical Sergeants. Assistant Instructors.

Ordnance Sergeant John C. Hyland, U. S. A., Retired.
First Sergeant W. Forster, Inf., U. S. A.
First Sergeant C. F. Lagenbacher, F. A., U. S. A.
First Sergeant Geo. Schulick, Inf., U. S. A.
Sergeant Lee Barker, Inf., U. S. A.
Sergeant H. M. Cook, Inf., U. S. A.
Sergeant J. W. Pfieffer, F. A., U. S. A.
Sergeant, D. N. Bradt, F. A., U. S. A.

Night Sergeants.

First Sergeant John J. Howard, U. S. A., Retired.
First Sergeant F. J. Casner, U. S. A., Retired.

Police Sergeant.

First Sergeant Francis Tyler, U. S. A., Retired.

Chief Clerk.

J. R. Wright, Ex-Regimental Sergeant Major, Inf. U. S. A.

Cadet Assignments to Organizations.

Colonel and Corps Commander: Howell, D. W.
Captain, Corps Adjutant: Foley, R. F.
Sergeant Major: Frazier, B. H.
Color Sergeants: Jungman, A. H.
Smith, A. B.

Band.

Captain: Murrah, F. V.
First Lieutenant: Weyland, A. H.
First Sergeant: Glezen, H. N.
Drum Major: Bohn, H. M.

Sergeants: Thrasher, W. B.
Walker, J. A.
Eazley, R. K.
Johnson, W. T.

Regiment of Infantry.

Lieutenant Colonel, Regimental Commander: Livingston, W. E.
Captain, Regimental Adjutant: Robertson, A. L.

First Battalion.

Major: Goodman, R. B.
First Lieutenant, Battalion Adjutant: Dietert, W. E.
Battalion Sergeant Major: Ballard, A. L.

Company A.

Captain: Abicht, R. R.
First Lieutenant: Miley, S. H.
Second Lieutenant: Lebo, M. B.
First Sergeant: Hamilton, W. F.
Sergeants: Glezen, H. N.,
Attached to band
Long, L. F.
Reed, L. R.
Reynolds, E. E.
Lewis, T. B.
Coeporals: Rothe, C. H.
Roberts, J. B.
Lloyd, A. C.
Day, A. E.
McMillan, W. G.
Crippen, W.,
Attached to band

Company B.

Captain: Crawford, C. W.
First Lieutenant: Schaer, Robt.
Second Lieutenant: McQuillen, E. E.
First Sergeant: Harris, R. A.
Sergeants: Carter, C. E.
Bohn, H. M.,P
Sergeants: Carter, C. E.
Attached to band
Stovall, J. T.
Edwards, K. J.
Corporals: Rae, C. S.
Matthews, H. R.
Farrell, J. L.
Dykes, J. C.
Farrell, J. L.
Forsythe, D. M.
Forbes, A. L.

Company C.

Captain: Stewart, J. S.
First Lieutenant: Givens, B. M.
Second Lieutenant: Burnett, H. A.
First Sergeant: Kubena, J. J.
Sergeants: Burks, W. M.
Harrison, R. H.
Hall, T.
Bertschler, F. L.
Corporals: Mowery, R. C.
Kendrick, M. R.,
Attached to band
Taylor, W. A.
Runge, L. H.
Sherrill, C. W.

Company D.

Captain: Taylor, B. N.
First Lieutenant: Nichols, Clay
Second Lieutenant: Sumner, L. E.
First Sergeant: Lackey, T. P.
Sergeants: Landon, R. M.,
Attached to band
Atchison, H. C.
Graham, R. C.
Cariker, A. H.
Corporals: Cape, J. D.
Luker, C.
McElwrath, F. P.
Warndorf, C. R.
Clayton, R. L.,
Attached to band
Neynaber, A. C.,
Attached to band

Second Battalion.

Majors: Clark, C. H.
Powell, S. N.
First Lieutenant Bn. Adjt.: Wittman, F. P
Sergeant, Major: Landon, R. M.

Company E.

Captain: Kuhne, C. C.
First Lieutenant: Denison, J. A.
Second Lieutenant: Barlow, T. U.
First Sergeant: Manning, Ray
Sergeants: Heard, C. E.
Ballard, A. L.,
Attached to staff
Frazer, A. C.
von Rosenburg, H. O.
Davidson, Greene A.
Corporals: Bell, F. L.
Clinton, D. D.
Forrest, E. E.
Kubena, J. A.
Underwood, A. T.

Company G.

Captain: Humphreville, G. D.
First Lieutenant: Potthast, E. B.
Second Lieutenant: SoRelle, I. F.
First Sergeant: Boulden, C. F.
Sergeants: Van Court, C. G.
Walker, J. A.,
Attached to band.
Fowler, W. H.
Peteet, Geo.
Corporals: Varnell, E. H.
Pustejousky, V. J.,
Buescher, L. A.
Westerhoff, A. G.
Oliver, J. W.

Company H.

Captain: Williamson, C. D.
First Lieutenant: Fabian, C. M.
Second Lieutenant: Cheeves, T. A.
First Sergeant: Burns, W. T.
Sergeants: Singleton, D. A.
Oliver, H.
Price, P. B.
Frazier, B. H.,
Attached to staff
Corporals: Ramsey, R. H.
Beard, O. K.
Northcutt, W. D.
Higginbotham, R. G.
Brison, F. R.
Cox, W. W.

Company I.

Captain: Davis, G. M.
First Lieutenant: Williams, J. W.
Second Lieutenant: Crook, G. M.
First Sergeant:
Sergeants: Thrasher, W. B.,
Attached to band
Barber, I. W.
Blumenthal, C.
Corporals: Heye, Gus
Shaw, L. E.
Horn, H. B.
Knolle, G. E.
Langston, J. H.

Auxiliary Battalion.

Major: Hancock, P.
Williamson, J. A.

Company A Signal Corps.

Captain: Murrah, F. V.,
Attached to band
First Lieutenant: Landa, M. I.
Second Lieutenant: McManus, D. S.
First Sergeant: Allen, H. M.
Sergeants: Carr, V. C.
Witmer, B. F.
Leidolf, E. J.
Bernheim, A. G.
Blumberg, R. D.
Corporals: Legg, A. S.
Woods, J. E.
Davidson, G. A.
Finn, D. J.

Company B Signal Corps.

Captain: Porter, J.
First Lieutenant: Weyland, A. H.,
Attached to band
Second Lieutenant: Harkrider, W. B.
First Sergeant: Cook, L. E.
Sergeants: Horger, J. C.
Granau, E. L.
Holik, W. V.
Cox, W. H.
Corporals: Frame, W. D.,
Attached to band
Drake, C. R.
Thomas, D. V.
Robinson, E. L.
Pierce, J. A.
Scott, S. U.

Battery A Field Artillery.

Captain: Hopkins, E. D.
First Lieutenant: Evans, Coxey
Second Lieutenant: Taylor, E.
First Sergeant: Longcope, E. M.
Sergeants: Jungman, A. H.,
Attached to staff
Barnes, B. H.
Easley, R. K.,
Attached to band
Mullane, W. A.
Walker, E. M.

HOWELL TROPHY.

The Howell Trophy is a Texas Flag presented to the College in 1903 by Mr. W. S. Howell, of Bryan, Texas. A competitive drill is held each year, during Commencement, to determine the best drilled company. This Company is designated the TROPHY COMPANY and carries the flag during the following session. It is authorized to elect a Trophy Sergeant who is the Color Bearer.

The Trophy Company for the Session 1918-19, is Company B.

ORGANIZATION OF THE ALUMNI.

Charles Rogan, '79, Austin.....President
Gus Newton, '98, Thorndale.....First Vice-President
Glenn L. Sneed, '98, Dallas.....Second Vice-President
Jim Dunn, ex-'78, Benchley.....Third Vice-Presidene
W. L. Stangel, '15, College Station.....Secretary-Treasurer

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