

THE
NORTH CAROLINA COLLEGE
OF
Agriculture and Mechanic Arts

WEST RALEIGH

1909-1910



RALEIGH
EDWARDS & BROUGHTON PRINTING CO., STATE PRINTERS AND BINDERS
1910

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College Calendar.

1910.

Thursday,	July	14,	Entrance examination at each county court-house, 10 A. M.
Wednesday,	September	7,	Entrance examination at the College, 9 A. M.
Thursday,	September	8,	First Term begins; Registration Day.
Saturday,	September	10,	Examinations to remove Conditions.
Thursday,	November	24,	Thanksgiving Day.
Wednesday,	December	21,	First Term ends.

1911.

Wednesday,	January	4,	Second Term begins; Registration Day.
Saturday,	March	18,	Second Term ends.
Monday,	March	20,	Third Term begins.
Sunday,	May	28,	Baccalaureate Sermon.
Monday,	May	29,	Alumni Day. Annual Oration.
Tuesday,	May	30,	Commencement Day.

Board of Trustees.

<i>Name.</i>	<i>Post-office.</i>	<i>Term Expires.</i>
C. W. GOLD.....	Raleigh.....	May 1, 1911.
E. M. KOONCE.....	Jacksonville.....	May 1, 1911.
T. W. BLOUNT.....	Roper.....	May 1, 1911.
D. A. TOMPKINS.....	Charlotte.....	May 1, 1911.
J. T. ELLINGTON.....	Smithfield.....	May 1, 1913.
W. E. DANIEL.....	Weldon.....	May 1, 1913.
W. H. RAGAN.....	High Point.....	May 1, 1913.
W. B. COOPER.....	Wilmington.....	May 1, 1913.
M. B. STICKLEY.....	Concord.....	May 1, 1915.
T. T. BALLENGER.....	Tryon.....	May 1, 1915.
N. B. BROUGHTON.....	Raleigh.....	May 1, 1915.
O. L. CLARK.....	Clarkton.....	May 1, 1915.
EVERETT THOMPSON.....	Elizabeth City.....	May 1, 1917.
R. H. HICKS.....	Rocky Mount.....	May 1, 1917.
O. MAX GARDNER.....	Shelby.....	May 1, 1917.
M. L. REED.....	Biltmore.....	May 1, 1917.

Faculty and Officers.

- DANIEL HARVEY HILL, A.M., Lit.D., President.
- WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering and Vice-President.
- WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.
- FRANK LINCOLN STEVENS, M.S., Ph.D., Professor of Botany and Vegetable Pathology.
- ROBERT E. LEE YATES, A.M., Professor of Mathematics.
- THOMAS NELSON, Professor of Textile Industry.
- JOHN SOMERVILLE EATON YOUNG, First Lieutenant U. S. A., Professor of Military Science and Tactics.
- CLIFFORD LEWIS NEWMAN, M.S., Professor of Agriculture.
- JOHN MICHELS, B.S.A., M.S., Professor of Dairying and Animal Husbandry.
- WILLIAM HAND BROWNE, Jr., A.B., Professor of Physics and Electrical Engineering.
- HOWARD ERNEST SATTERFIELD, M.E., Professor of Mechanical Engineering.
- THOMAS PERRIN HARRISON, Ph.D., Professor of English.
- GUY ALEXANDER ROBERTS, B.S., D.V.S., Professor of Veterinary Science and Physiology.
- IRA OBED SCHAUB, B.S., Professor of Agricultural Extension.
- FRANK C. REIMER, M.S., Associate Professor of Horticulture.
- BARTHOLOMEW MOORE PARKER, B.S., Assistant Professor of Textile Industry.
- CARROLL LAMB MANN, B.S., C.E., Assistant Professor of Civil Engineering.
- GEORGE SUMMEY, JR., Ph.D., Assistant Professor of English.
- RALPH INGRAM SMITH, B.S., Assistant Professor of Zoology and Entomology.
- WELDON THOMPSON ELLIS, B.E., M. E., Assistant Professor of Machine Design and Steam Laboratory.

- LEON FRANKLIN WILLIAMS, A.B., A.M., Ph.D., Assistant Professor of Chemistry.
- HENRY K. McINTYRE, E.E., Assistant Professor of Physics and Electrical Engineering.
- CHARLES BENJAMIN PARK, Instructor in Machine Shop and Assistant in Power Plant.
- CLARENCE ANDREW SPRAGUE, B.S., Instructor in Physics.
- JOHN STRAUCHON JEFFREY, Instructor in Poultry Husbandry.
- ABRAHAM RUDY, A.M., Pd.D., Instructor in Modern Languages.
- WILEY THEODORE CLAY, B.E., Instructor in Wood-working and Pattern-making.
- MICHAEL RALPH RICHARDSON, A.M., Instructor in Mathematics.
- JOHN EDWARD HALSTEAD, B.S., Instructor in Dyeing.
- HUBERT HILL, B.S., M.S., Instructor in Chemistry.
- JOHN LAWRENCE VON GLAHN, B.E., Instructor in Mathematics and Civil Engineering.
- JOHN GALENTINE HALL, A.M., Instructor in Biology.
- PERCY LEIGH GAINNEY, B.Agr., Assistant in Bacteriology.
- HERBERT NATHANIEL STEED, Instructor in Weaving and Designing.
- ROBERT PEACHY LATANÉ, B.S., Instructor in Physics.
- WILLIAM MEADOR LUNN, M.S., Instructor in Agriculture.
- WAYNE ARINGTON HORNADAY, B.S., Laboratory Assistant in Anatomy and Physiology.
- JACOB OLIN FAULKNER, B.A., Instructor in English.
- LLOYD B. SELBY, M.E., Instructor in Drawing.
- JOHN ALLEN AREY, B.S., Instructor in Animal Husbandry.
- SAMUEL FATIO STEPHENS, B.E., Instructor in Civil Engineering.
- FRED BARNET WHEELER, Instructor in Forge.
- WILLIAM FLAUD MORRIS, B.E., Instructor in Shop and Drawing.
- BURTON JUSTICE RAY, A.B., Ph.D., Instructor in Chemistry.
- LEWIS REINHOLD DETJEN, B.S.A., Instructor in Horticulture.
- JOHN WILLIAM HARRELSON, B.E., Instructor in Mathematics.
- BASCOMBE BRITT HIGGINS, B.S., Instructor in Biology.

OFFICERS.

EDWIN BENTLEY OWEN, B.S., Registrar.
 ARTHUR FINN BOWEN, Bursar.
 BENJAMIN SMITH SKINNER, Farm Superintendent.
 JAMES OLIVER LOFTIN, Steward.
 MISS ELSIE LANIER STOCKARD, Librarian.
 MRS. ELLA HARRIS, Hospital Matron.
 MISS ISABEL BRONSON BUSBEE, Stenographer.
 HENRY McKEE TUCKER, M.D., Physician.

NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION
 DEPARTMENT, WEST RALEIGH.

DANIEL HARVEY HILL, A.M., Lit.D., President.
 CHARLES BURGESS WILLIAMS, M.S., Director and Agronomist.
 WILLIAM ALPHONSO WITHERS, A.M., Chemist.
 FRANK LINCOLN STEVENS, Ph.D., Vegetable Pathologist.
 JOHN STRAUCHON JEFFREY, Poultryman.
 FRANK CHARLES REIMER, M.S., Horticulturist.
 ROBERT SETH CURTIS, B.S., Animal Husbandman.
 JOHN MICHELS, M.S., Dairy Husbandman.
 RALPH INGRAM SMITH, B.S., Entomologist.
 GUY ALEXANDER ROBERTS, D.V.S., Veterinarian.
 JOHN GALENTINE HALL, A.M., Assistant in Plant Diseases.
 WILLIAM CARLYLE ETHERIDGE, B.Agr., Assistant Agronomist.
 BURTON JUSTICE RAY, A.B., Ph.D., Assistant Chemist.
 ALEXANDER RICHARDSON RUSSELL, Assistant in Field Experiments.
 PERCY LEIGH GAINNEY, B.Agr., Assistant in Bacteriology.
 LEWIS REINHOLD DETJEN, B.S.A., Assistant in Horticulture.
 FRANCIS WEBBER SHERWOOD, B.S., Assistant Chemist.
 ARTHUR FINN BOWEN, Bursar.
 CRAVEN PEARCE FRANKLIN, Secretary and Stenographer.

MILITARY ORGANIZATION.

Commandant of Cadets.

First Lieutenant, John S. E. Young, U. S. Army.

Cadet Major.

C. R. JORDAN.

Battalion Staff.

W. L. MANNING, First Lieutenant and Adjutant.

L. L. HOOD, First Lieutenant and Quartermaster.

Noncommissioned Staff.

J. T. PEDEN, Sergeant-Major.

J. L. MARTIN, Quartermaster Sergeant and Color Sergeant.

C. A. SPEAS, Chief Trumpeter.

Band.

C. E. WALTON, Captain.

I. N. TULL, First Lieutenant.

W. E. DAVIS, Second Lieutenant.

W. R. PHILIPS, Second Lieutenant.

E. LEE, Second Lieutenant.

O. M. SIGMON, First Sergeant.

R. T. WADE, Sergeant.

J. W. ROLLINSON, Sergeant.

L. E. STEERE, Sergeant.

E. R. McCracken, Sergeant.

D. R. HINKLE, Sergeant.

J. G. MATTHEWS, Corporal.

J. E. McGEE, Corporal.

C. M. TAYLOR, Corporal.

H. P. MURKAY, Corporal.

Company A.

T. B. SUMMERLIN, Captain.
R. E. GILL, First Lieutenant.
M. S. MAYES, Second Lieutenant.
L. D. MOODY, Second Lieutenant.
W. H. DAVIS, First Sergeant.
J. P. QUINERLY, Sergeant.
J. H. BROWN, Sergeant.
T. C. BARBER, Sergeant.
C. A. DUKES, Sergeant.
P. B. FEREBEE, Corporal.
J. R. MULLEN, Corporal.
T. B. WILLIAMS, Corporal.
J. C. SMALL, Corporal.
R. W. HOWELL, Corporal.
O. W. SMITH, Corporal.
A. H. BOND, Corporal.

Company B.

J. F. ROBINSON, Captain.
T. H. THOMPSON, First Lieutenant.
E. L. WINSLOW, Second Lieutenant.
J. I. SPRINGS, Second Lieutenant.
F. T. PEDEN, First Sergeant.
M. F. WYATT, Sergeant.
WILLIAM BAILEY, Sergeant.
E. M. EVANS, Sergeant.
K. BRYAN, Sergeant.
H. M. WALTON, Corporal.
A. L. FAULKNER, Corporal.
S. T. MITCHNER, Corporal.
E. L. SHERLOCK, Corporal.
R. C. DEAL, Corporal.
H. B. MERCER, Corporal.
B. L. CALDWELL, Corporal.
C. HORN, Corporal.

Company C.

E. A. SEIDENSPINNER, Captain.
R. L. MORGAN, First Lieutenant.
H. W. WELLES, Second Lieutenant.
R. BOWDITCH, Second Lieutenant.
G. W. GILLETTE, First Sergeant.
J. M. BEAL, Sergeant.
RUFUS BOYLAN, Sergeant.
C. E. BELL, Sergeant.
P. N. PITTENGER, Sergeant.
C. A. STEDMAN, Sergeant.
F. B. SHERWOOD, Corporal.
J. M. HARDEN, Corporal.
C. W. LEE, Corporal.
H. B. TICE, Corporal.
T. B. COOPER, Corporal.
C. M. NEWCOMB, Corporal.
P. CALDWELL, Corporal.

Company D.

W. M. NEALE, Captain.
W. H. CROW, First Lieutenant.
T. S. BOND, Second Lieutenant.
C. B. STAINBACK, Second Lieutenant.
F. G. TUCKER, First Sergeant.
W. P. SUGG, Sergeant.
E. WADSWORTH, Sergeant.
C. L. CRUSE, Sergeant.
T. D. HARRIS, Sergeant.
V. P. BYRUM, Sergeant.
J. C. COSBY, Corporal.
M. F. SUGG, Corporal.
S. B. HOWARD, Corporal.
J. G. KELLOGG, Corporal.
H. P. WHITED, Corporal.
J. E. BEAMAN, Corporal.

NOTE.—On October 20, 1931, the Battalion held a competitive drill on the Fair Grounds track, during the State Fair, and Company C, Corps of Cadets, was selected as the best drilled organization and awarded the College pennant.

General Information.

The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and of R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill, which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to \$7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was given by the late R. S. Pullen. The College was formally opened for students October 1, 1889.

Additional funds were provided afterwards by the National Congress by the "supplemental Morrill Act" of 1890 and the "Nelson Act" of 1907 and by State appropriations.

The College is beautifully located on the extension of Hillsboro street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from the city mains and from twelve deep wells on the College grounds. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns six hundred and eighty-five acres of land. Fifteen hundred young trees and nine hundred and forty vines are growing in an orchard of sixteen acres. Seven acres are devoted to truck-growing. The campus consists of about thirty acres of rolling land, which is being improved as rapidly as circumstances permit.

BUILDINGS.

The **Administration Building** is of brick, with brownstone trimmings, and is one hundred and seventy by sixty-four feet; part four stories in height and the remainder two. The lower floors contain the offices of the President, the Registrar, and the Bursar, several recitation rooms and the chemical and physical laboratories. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are well lighted, well ventilated and conveniently arranged.

The **Mechanical Engineering Building** is a plain, substantial two-story brick building, with large annex. It contains the drawing-rooms, recitation-rooms, and shops of the department.

Primrose Hall is a two-story brick building used for drawing-rooms and laboratories by the Department of Civil Engineering.

The **Textile Building** is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Its construction is similar to a cotton mill, and is an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

Pullen Hall was named in honor of the late R. Stanhope Pullen, the greatest benefactor of the College. The basement of this building is used as a dining room and seats five hundred students. The first story is used for library, reading room and lecture rooms. The second story serves as the College auditorium. This building is commodious, comfortable and well lighted.

The **Agricultural Hall** is a three-story buff press-brick building with granite trimmings and is two hundred and four by seventy-four feet. The lower or basement floor contains the class rooms and laboratories for work in the Department of Animal Husbandry and Dairying. Ample provision is made for butter-making and stock judging. The second floor contains the offices of the department, class rooms for animal husbandry and agronomy, and laboratories for soil physics and agricultural machinery. On the top floor are the rooms devoted to botany and vegetable pathology, zoology, physiology, and veterinary medicine. There are well-equipped class rooms and large, well-lighted laboratories. The building affords excellent accommodations for education in agriculture and allied subjects, and is especially adapted to its needs.

The Foundry is a one-story brick building with a brick stack. It contains a 36-inch cupola furnace, Griffin Oil Furnace for melting iron; another for brass, and a small crucible furnace for brass melting; a core oven; benches and hand tools for moulding in the course of exercises, as well as for any repair work for the College.

The Electric Laboratory is a one-story brick building. It is equipped with modern electrical apparatus for the use of the Junior and Senior classes.

Dormitories.—The College has the following dormitories:

1. Watauga Hall, a three-story brick building, trimmed with brown-stone and containing sixty rooms. In the basement there are bath rooms for the students.

2. In 1909 a large three-story brick dormitory was finished. This building is two hundred and twenty-five feet long by fifty-two deep. It is divided by fire walls into sections of twelve rooms each. It furnishes room for one hundred and thirty students. This dormitory is also supplied with a large and convenient bath room.

3. In addition to these two large buildings four other brick buildings are set apart exclusively for student homes. One of these is a three-story building; three are two-story buildings.

All of the dormitories are lighted by electricity and heated by steam.

Barns.—Two large barns are a part of the agricultural equipment. One of these is used for the herd of cows. It is a modern sanitary barn, equipped with the James Sanitary Fixtures and admirably lighted and ventilated. The other is for the work animals and for storage.

The Infirmary is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, College Physician's office and medicine closet. The rooms are large, well ventilated, well lighted, and heated by steam. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

A Central Power Plant furnishes heat, light, and power for all the buildings and is also used for instructive work. The boiler plant consists of two 75-horse-power Babcock and Wilcox Company and two 100-horse-power Atlas Water-Tube Boilers, with a working steam pressure of 150 pounds. The Engine Plant consists of a 100-horse-power Skinner Engine and Crocker-Wheeler Generator attached; a 100 K. W. De Laval Turbine Generator set with self-exciter; a 10 K. W. steam-driven Exciter Set, Steam, and Vacuum Pumps for feeding the boilers and maintaining circulation in steam-heating apparatus. The buildings are equipped with Warren Webster system of heating.

The Fire Protection of the College consists of the following equipment: An Underwriter fire pump, stand-pipe and reservoir, hose and

hose reels. Hydrants are conveniently located about the grounds, with attached hose nozzles, etc. The buildings are supplied with extinguishers.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch, of Missouri. The funds of the Experiment Station were supplemented by the act of Congress of March 16, 1900, known as the "Adams Act."

The Director's office is in the Agricultural Building and the laboratories are in the same building and in the administration building at the College. The experimental work in agriculture, horticulture, stock and poultry raising, and dairying is conducted on the College farm, and the investigations in plant diseases and chemistry are made in the College laboratories.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering questions.

Publications relating to general farming matters and embodying the results of experiments are published and sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, West Raleigh, N. C., will bring these publications and answers to letters.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in many lines of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill-workers, manufacturers, stock raisers, fruit growers, truckers, and dairymen, by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Agriculture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinists' Work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending and Installation, Electric-light Wiring, Armature Winding and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, History, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads lacking in physical development, mental capacity, or moral fiber, nor for those who are unable or unwilling to observe regularity, system, and order in their daily work.

WHAT THE COLLEGE EXPECTS OF ITS STUDENTS.

It is taken for granted that students in the College are here to get an education. They are expected, therefore, to attend classes, lectures, laboratories, shop-work, drills, inspections, etc., without being reminded of such duties each day, week or month.

Students can not properly prepare for and perform these duties if they spend time in Raleigh or absent themselves from work and study. They are expected, therefore, to observe study hours in their rooms and refrain from visiting Raleigh, except when permitted by the rules of the College.

Students are also expected to keep their rooms neat and orderly; to refrain from noise during study hours, and from disorderly conduct at all times and places; in short, to live like gentlemen.

Hazing new students, cigarette-smoking, drinking, gambling, card-playing, visiting pool-rooms and all improper places, loafing on the streets, and other like vicious, idle, unhealthy and unprofitable performances are prohibited by the College rules.

A record is kept of every student in College; his failure to perform duty and his infractions of the rules. When this record shows that a young man is not in College for the purpose of getting an education, and is not using his opportunities properly, he will be required to withdraw. For scandalous and vicious offenses students will be dismissed. The rules of the College are intended solely to promote

manliness, to form habits of order, punctuality, promptness and fidelity to duty, as well as simplicity, economy and healthfulness of living; and to prevent habits of idleness, disorder, extravagance, and vice.

Every effort is made to develop strong, intelligent, and high natured men, and proper patience, sympathy, and forbearance are exercised in trying to bring about this great result, but the College will not retain a young man who continues idle, vicious, or incompetent.

PRIZES.

The North Carolina State Fair Association offers a prize of \$5 to the student preparing the best essay on the Live-stock Exhibit at the State Fair.

Mr. William Dunn, of New Bern, North Carolina, gives annually a twenty-five-dollar gold medal to the Senior speaker who makes the best oration on Commencement Day.

HAZING.

There has been no hazing of any sort in College for two years. The present sentiment of the student body is opposed to this practice in our College, and its management feels sure that there will be no hazing during the next year.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship and conduct are sent to parents and guardians at the end of each term. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself nor to the College.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister.

Each student is expected to attend religious service in Raleigh on Sunday morning at the church of his choice. The students are always welcomed in the Sabbath schools of Raleigh, and a large number of them attend these services.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association is a voluntary organization among the students for the purpose of centralizing and directing the moral and religious life of the student body. The work is under the direction of a General Secretary, who is employed to give his entire time to the work, and the following student officers: President, vice-president, corresponding and recording secretaries, and treasurer.

Membership is open to all college students of good moral character. Only members of evangelical churches may become active members.

A hand-book, giving general information about the college, is published each spring and sent to prospective students with a personal letter of welcome from the officers of the Association.

A large number of men is trained each year in active Christian service through membership on the following committees, all of which are trained by the General Secretary in their particular work: Bible Study Committee, which has charge of the organization of voluntary Bible Study classes among the students, and in this way seeks to reach the non-Christian element of the student body; Mission Study Committee, which provides for Mission Study among the students; Membership Committee, which seeks to enlist students as members of the Young Men's Christian Association; Social Committee, which provides means of social entertainment and diversion; and Finance Committee. Each of these committees is held responsible for its part of the Association activities.

The Association is supported by gifts from the Board of Trustees, the Faculty, and citizens of the State, and by its regular membership fees. Although membership is voluntary, it is designed that all students should apply for membership and thereby align themselves with an organization which will assist them in leading an upright life while in College.

The Association maintains headquarters in a room in the Main Building, which is fitted up with reading matter, small games, etc., and serves as an office for the General Secretary. A suitable building with all modern equipments is soon to be erected by the Association.

Any further information may be obtained by addressing the General Secretary, Y. M. C. A., West Raleigh, N. C.

ATHLETICS.

The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

Outdoor sports are directly managed by the Athletic Association and are under the control of a committee of the Faculty.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty, it promotes practice in base-ball, basket-ball, foot-ball, track athletics, etc.

The Athletic Park is situated in the center of the College buildings. It is provided with a grand-stand and uncovered seats and meets amply the needs of the various athletic teams.

LIBRARY AND READING-ROOMS.

The College Library occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about six thousand five hundred volumes. There are also reference libraries in the different departments. The library is kept open from 9 a. m. to 6 p. m. The Librarian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh, containing now about ten thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific and technical research and training.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The membership is limited to ten. The Society meets monthly for the discussion of biological and agricultural questions.

Farmers' Institute—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical problems. The meetings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, ex tempore speaking on agricultural questions, and writing and reading of reports on various farm operations.

The Rural Science Club meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

The Biological Club meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture and the State Experiment Stations.

The Tompkins Textile Society meets every two weeks for the purpose of discussing subjects relating to the textile industry.

The Mechanical Society meets every two weeks for the discussion of mechanical subjects. The society is composed of Seniors and Juniors taking the Mechanical Engineering Course. Its work has proved very beneficial to its members.

Electrical Society.—A student branch of American Institute of Electrical Engineers has been organized and holds regular meetings to read and discuss the papers presented before the Institute, and to hear original papers prepared by its own members or by visiting engineers.

The Vorwaerts Verein (Forward Society) is a society for the promotion of interest in the study of German. Weekly meetings are held at which literary programs are carried out in the German language, giving its members practice in expressing themselves in that language. Memberships is open to students and members of the faculty who have acquired sufficient knowledge of the German language to understand simple conversation in it.

The Pullen and Leazar Literary Societies afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Alumni Association meets each year on Monday preceding Commencement Day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This association purposes raising funds to erect an Alumni building at the College.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age and must bring a certificate of good moral character from the school last attended.

To the Four-year Courses.—Applicants for admission to the Freshman Class of all four-year courses will be examined on the following

subjects: Arithmetic (complete), Algebra (to involution), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation, or division into paragraphs.

To the Two-year Courses.—Applicants for admission to the two-years courses in Mechanic Arts and Textile Industry will be examined on Arithmetic (through common and decimal fractions), English Grammar and Composition, and American History.

To the One-year Course in Agriculture.—Applicants for admission to the one-year course in agriculture will be required to pass the same examination as for the two-year course.

To the Winter Courses.—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each courthouse in the State at 10 o'clock a. m. the second Thursday in July of each year. The date for 1909 is July 14th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail or there should not be room enough for him in the College. Entrance examinations will be held also at the College at 9 o'clock a. m. on Wednesday preceding the opening day. The examinations begin with English at 9 a. m., in Room 21, Main Building, followed by Mathematics at 11, and History at 2, in the same room. The date for 1910 is September 7th.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, over eighteen years of age.
2. School teachers holding teachers' certificates, if the holders are sufficiently familiar with Algebra.
3. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Tuesday in May, with a vacation of about two weeks at Christmas.

EXPENSE.

The total average college expense of a Freshman student is \$225.00.

The total average college expense of a Freshman student having a scholarship is \$180.00.

These amounts include cost of board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, drawing instruments, and laundry. They do not include allowance for clothing, other than for uniform and cap, nor for spending money and contingencies.

Allowance for clothing, spending money, and contingencies should be kept within reasonable bounds. From \$50.00 to \$100.00 per year are suggested as the minimum and maximum amounts.

This will make the total expense for all purposes of a Freshman student, without a scholarship, amount to from \$275.00 to \$325.00 for the entire session; or \$230.00 to \$280.00, if he has a scholarship.

Detailed Information.

The largest payment is made in September. On entrance a student will need \$80.00 to meet all of his various payments for the first month. But of this amount, the payment of \$22.50 for tuition may be deferred, if desired, to the first of November. This will reduce the first, or entrance, payment to \$57.50. This amount includes payment to the College, \$45.00; deposit with the dealer for uniform and cap, \$5.00, and for the purchase of books and incidentals, \$7.50. In the case of day students, or students rooming and boarding out of College, tuition will be paid on entrance.

Board is \$10.00 per month, payable in advance on the first day of each calendar month from September through May. Board for less time than one month is charged for at the rate of fifty cents a day, or \$3.00 per week. Refunds for board will be made on the basis of these charges.

Students withdrawing from College within two weeks from date of entrance will be refunded all money paid by them to the College Bursar except charges for board and lodging during the time they are in College. In special cases the right is reserved to modify or to entirely revoke this rule.

Refunds to students withdrawing later than two weeks from date of entrance will be made in proportion to the length of time they are in College. The right in special cases to modify or to revoke this rule is reserved.

NOTE.—The College Bursar is forbidden by the Trustees to give credit.

EXPENSE BY MONTHS.

The following is a statement of the College expenses of a Freshman student by months:

September: Room rent, fuel and lights, \$15.00; incidental fee, \$5.00; medical and hospital fee, \$3.00; lecture fee, \$1.00; library fee, \$1.00; furniture fee, \$1.00; physical culture fee, \$1.00; military equipment deposit \$5.00; mechanical and physical laboratory fees \$3.00; board for September, \$10.00; a total of \$45.00. Tuition for one half session, \$22.50, may be paid at this time, which will make a total of \$67.50. In addition, there is required by the merchant a deposit of \$5.00 for uniform and cap when the measure of the student is taken; and from \$5.00 to \$10.00 is required to buy books, drawing instruments, and for incidentals. An Agricultural Freshman pays \$1.00 less than the above. A Textile Freshman pays \$2.00 more than the above.

October: Board, \$10.00, and balance to merchant for uniform and cap, \$15.00.

November: Board, \$10.00; tuition, if it was not paid in September, \$22.50.

December: Board, \$10.00.

January: Tuition, \$22.50; lodging and fuel and lights, \$15.00; medical and hospital fee, \$3.00; furniture fee, \$1.00; physical culture fee, \$1.00; board, \$10.00. A total of \$52.50.

February: Board, \$10.00.

March: Board, \$10.00.

April: Board, \$10.00.

May: Board, \$10.00.

If the student has a scholarship, he does not pay tuition.

The amount of the September, or entrance payment, for students in other than Freshman Classes, varies slightly with the class and the course; caused by the additional collection of fees and deposits for laboratory work and for supplies. The amount of these fees and deposits is given in the table, on the following page, for all classes and courses:

	Sen.	Jun.	Soph.	Fresh.	2d Year S. C.	1st Year S. C.
Agr. students ...	\$ 10.00	\$ 5.00	\$ 4.00	Given on page 23	\$.....	\$ 1.00
C. E. " ..	1.00	1.00	4.00		-----	-----
M. E. " ..	2.00	3.00	6.00		2.00	2.00
E. E. " ..	3.00	3.00	6.00		-----	-----
Chem. " ..	10.00	6.00	4.00		-----	-----
Tex. " ..	9.00	8.00	8.00		6.00	7.00

Work-course students in Agriculture pay \$1.00 for shop and 50 cents for Biological laboratory.

A fee of \$1.50 will be collected from short-course students in dairying, agriculture, etc. for hospital and medical attention.

All unused deposits are refunded to the student at the end of the session or upon his withdrawal from College. If he has overdrawn his deposit, he is required to pay the amount of the overdraft.

ROOM FURNITURE.

The College rooms are supplied with necessary furniture. Each student, however, should bring with him two pairs of blankets, two pairs of sheets, one pillow and cases, and two bedspreads for a single bed.

Overcoats may be brought from home, or purchased in the city.

FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him.

SELF-HELP.

Some students who are alert and energetic frequently earn part of their expenses in College. Some of the agricultural students find work at odd hours on the farm, in the orchard, in the barn, in the dairy. Some students act as agents for laundries, for furnishing-houses, for pressing clubs. The College employs a few students for the dining-room

and for other purposes. A student's ability to keep himself will depend largely on his own power to find work and to hold it after he finds it. It must, however, be remembered that the duties of the class room take most of a student's time, and his hours for remunerative work are therefore limited.

STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent, and good security is required. Sufficient time for repayment is given to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, alumni, and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to \$2,900.97.

BOARD AND LODGING.

All students are expected to board in the College mess-hall and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is \$10 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillow-cases, pillows, bedspreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

DRILL.

In return for the Morrill Fund of the United States government, the College is under contract to require its students to drill at least three times each week and an army officer is detailed to conduct the drills. No student will be excused from drill unless the College Physician, after examination, deems him unfit for military duty.

UNIFORM.

The College uniform must be worn by all students when they are on military duty. It must be bought at the College from the regular contractor. The uniform is of strong gray cloth and with proper care should last one or two years.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections are made monthly by the College physician.

Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College physician visits the Infirmary daily at 3 o'clock p. m., and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

VACCINATION.

By direction of the Trustees no young man will be registered unless he has been vaccinated. The College greatly prefers that all applicants for admission should be vaccinated at home, and that a certificate of successful vaccination be brought from the family physician. In case this cannot be done, the College physician will vaccinate applicants before they are registered at College. A blank form to be filled by the home physician will be mailed on application.

Courses of Instruction.

The College offers the following courses of instruction:

I. Four-year Courses.

- 1st. **Agriculture** (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).
- 2d. **Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, and Chemistry).
- 3d. **Textile Industry** or Cotton Manufacturing (including Carding, Spinning, Weaving, Designing and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Science is conferred upon a graduate of the four-year course in Agriculture, in Chemistry, or in Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other four-year courses.

II. Short Courses of one year, and two years (work course), in Agriculture, and of two years in Textile Industry, in the **Mechanic Arts**, (including Carpentry, Woodturning, Blacksmithing, Machine-shop Work, Drawing, and Dynamo and Engine Tending).

The short courses include nearly all the practical work of the four-year courses, with less theoretical instruction. They are intended for students who desire chiefly manual training, and do not lead to a degree.

III. Winter Courses in Agriculture and Dairying and in Textile Industry, beginning at the opening of College in January and lasting seven weeks. A one-week's course in Agriculture, beginning with the opening of the Winter Term.

IV. Normal Courses for the training of teachers along industrial lines.

V. Graduate Courses, extending over two years and leading to advanced degrees, are intended for students who have completed the Four-year Courses and who desire further instruction and training along special lines.

School of Agriculture.

- a. The Four-year Course in Agriculture.
- b. The One-year Course in Agriculture.
- c. The Seven-weeks Course in Agriculture and Dairying.
- d. The One-week Course.
- e. The May School for Teachers.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their vocation. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers five distinct courses:

a. **The Four-year Course** aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give, and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domain of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of such studies as Mathematics, English Literature, Physics, etc., and they are not neglected in this course. Full description of the Four-year Course begins on page 30.

b. **The One-year Course** is designed to meet the needs of young men who are ambitious to excel in the vocation of farming, and who feel the need of better preparation for their life-work. The time which can be devoted to study is often limited, hence the topics in this course have been arranged in such a manner that the student is enabled to get the greatest amount of practical information in the time at his disposal.

Education and training pay on the farm as elsewhere. The young man who prepares himself for his life's work will make more rapid strides and will gain success much quicker than the one who does not.

The College has numerous calls for young men to manage farms and estates. It is able to fill only a limited number of them. Young

men who have any talent along this line can fit themselves for this work by taking this course. The One-year Course is described on page 99.

c. The Seven-weeks Winter Course is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention. The Seven-weeks Course is described on page 102.

d. The One-week Course precedes the seven-weeks course and is devoted entirely to the study of corn, from the preparation of the soil to the marketing of the crop. Emphasis is given soil preparation, rotation, fertilization, cultivation, seed selection, insect pests, diseases, etc. The One-week Course is described on page 101.

f. The May School is intended to meet the need of teachers who wish to make themselves more proficient in Agriculture and nature study. The May School Course is described on page 122.

Methods of Instruction.—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Dairy Department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices on yield and on fertility, in varieties of fruit, of vegetables and of forage crops. The methods employed and the results obtained are freely used for instruction.

1. Four-year Course in Agriculture.

This Course leads to the Degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK. *		
	1st Term.	2d Term.	3d Term.
Agriculture, 1†.....	1	--	2
Dairying, 28.....	5	--	--
Animal Physiology, 40.....	3	3	3
Poultry Husbandry, 31.....	--	3	3
Botany, 50.....	3	3	3
Wood-work, 90.....	--	2	2
Algebra, 100.....	5	3	--
Geometry, 101.....	--	2	5
English, 110.....	3	3	3
Military Drill, 140.....	3	3	2

Sophomore Year.

Farm equipment, 2.....	4	--	--
Live Stock, 20.....	--	2	3
Vegetable Gardening, 10.....	--	5	1
Plant Diseases, 52.....	3	--	--
Systematic Botany, 51.....	--	--	3
Zoology, 60.....	2	2	--
Economic Entomology, 61.....	--	--	3
Inorganic Chemistry, 70.....	3	3	3
Inorganic Chemistry (laboratory), 71.....	2	2	2
Elementary Physics, 80.....	2	2	2
American Literature, 111.....	3	3	3
Military Tactics, 150.....	1	1	1
Military Drill, 140.....	3	3	2

* The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

† The figures immediately following the name of the study are given to aid one in finding readily a description of the study. Under each department a number precedes the description of the study.

Junior Year.

(At least 19 periods a week required, in addition to military drill.)

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Crops, 3.....	--	4	5
Geology, 65.....	4	--	--
Soils, 66.....	--	2	2
Agricultural Chemistry, 72.....	2	2	2
Bacteriology, 54.....	2	2	2
Economic Entomology, 61.....	2	--	--
Advanced Rhetoric, 112.....	2	2	--
Public Speaking, 113.....	--	--	2
Economics, 130.....	1	1	1
Military Drill, 140.....	3	3	2
Elect six additional periods.....	6	6	6

Junior Elective Subjects.

Advanced Stock Judging, 23.....	2	--	--
Animal Breeding, 21.....	--	3	--
Stock Feeding, 22.....	--	--	4
Veterinary Medicine, 41, a b c.....	4	3	3
Fruit Culture, 11.....	4	4	--
Landscape Gardening, 12.....	--	--	3
German, French and Spanish.....	3	3	3

Prerequisites to Senior Courses.

AGRONOMY DIVISION.

Fruit Culture, 11.
Landscape Gardening, 12.

ANIMAL HUSBANDRY DIVISION.

Stock Judging, 23.
Animal Breeding, 21.
Stock Feeding, 22.
Veterinary Medicine.

HORTICULTURAL DIVISION.

Fruit Culture, 11.
Landscape Gardening, 12.

NORMAL DIVISION

Fruit Culture, 11.
Landscape Gardening, 12.

Senior Year.

(At least 23 periods a week of work to be carried.)

Agronomy Division.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Management, 5.....	--	2	2
Special Crops, 4.....	5	6	3
Plant Breeding, 13.....	3	--	--
Poultry Husbandry, 32.....	--	--	3
Live Stock Management, 24.....	3	3	3
Plant Diseases, 53.....	2	2	2
English, 114.....	3	3	3

Horticultural Division.

Farm Management, 5.....	--	2	2
Special Crops, 4.....	5	3	3
Plant Breeding, 13.....	3	--	--
Horticulture, 14, 15, 16.....	2	5	5
Plant Diseases, 33.....	2	2	2
Entomology, 62.....	2	2	2
English, 114.....	3	3	3

Animal Husbandry Division.

Farm Management, 5.....	--	2	2
Special Crops, 4.....	5	3	--
Live Stock Management, 24.....	3	3	3
Advanced Dairying, 27.....	3	--	3
Dairy Bacteriology, 56.....	--	3	--
Poultry Husbandry, 32.....	--	--	3
Veterinary Medicine, 42.....	3	3	3
English, 114.....	3	3	3

Normal Division.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Management, 5.....	..	2	2
Special Crops, 4.....	5	3	..
Live Stock Management, 24.....	3	3	3
Poultry Husbandry, 32.....	..	..	3
Plant Diseases, 53.....	2	2	2
English, 114.....	3	3	3

Elective.

Chemistry.....	3	3	3
Histology, 43.....	4	4	4
Entomology, 62.....	2	2	2
Bacteriology, 55.....	3	3	3
German, 120, Spanish and French.....	3	3	3
Cheese Making, 28.....	..	5	..
Military Drill, 140.....	3	3	2

Four-year Course in Agriculture.

EQUIPMENT.

In addition to Agricultural Hall, with its class rooms, laboratories, dairy, stock judging room and offices, the College possesses the following equipment for instruction in Agriculture:

The farm includes six hundred and eighty-five acres with two hundred and sixty acres under cultivation; a two-story sixteen-stall horse and storage barn; a fifty-stall dairy barn; silos with capacity for four hundred tons of silage; a No. 18 Ohio feed and ensilage cutter operated by an electric motor, and implements and machinery necessary for up-to-date farming.

The live-stock consists of the necessary horses and mules, a herd of dairy cattle and purebred swine. Breeding-stock is sold as a part of the farm products.

The poultry plant has thirty breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina; an incubator cellar with several makes of incubators; a brooder house heated by hot water and several makes of indoor and outdoor brooders. The feed room is equipped with steam engine, grist and bone mills. Ten or fifteen varieties of poultry are kept and eggs and breeding fowls sold to the public.

The horticultural equipment consists of about thirty acres in tree fruit, nuts, vineyard, berries and vegetables in appropriate assortment of classes and varieties for demonstration and instruction. These afford means for work in seed selection, bud studies, propagation, budding, grafting, transplanting, pruning, spraying, and variety study. The greenhouse affords means for starting vegetables and growing ornamental and exotic plants as well as to illustrate interesting and instructive plant life phenomena.

The dairy equipment is complete and thoroughly modern. The laboratory occupies about four thousand feet of floor space in Agricultural Hall and is equipped for instruction in farm dairying, retailing milk, creamery practice, cheese and butter-making, milk-testing, and pasteurizing. The dairy equipment is one of the most modern and complete to be found in the South.

The North Carolina Experiment Station is a department of the College and its close association with the School of Agriculture gives exceptional opportunities to the Agricultural students for instruction and observation covering experiments and research in agronomy, chemistry, horticulture, vegetable pathology, plant diseases, bacteriology, dairy and animal husbandry, poultry husbandry, veterinary science, and entomology.

AGRONOMY.**Subjects of Instruction.**

1. **Agriculture.**—Elementary and popular lectures introductory to the subject of Agriculture in its broad sense. The simpler properties of soils, tillage, fertilizers, conservation of fertility, seed selection, rotation, etc., will be briefly considered by lecture and practical demonstration in the laboratory and in the field. One period first term and two periods third term. Required of Freshmen. Professor Newman.

2. **Farm Equipment.**—Lectures and recitations upon selecting, planning and equipping farms; locating, planning and erecting farm buildings; farm machinery, tools, vehicles and miscellaneous appliances; farm power; water and drainage; fences, gates and bridges; roads; dry land and wet land drainage. Four periods, first term. Required of Sophomores. Professor Newman.

3. **Farm Crops.**—Recitations and lectures upon the history, production, uses and marketing of farm crops. Exercises in the field and laboratory covering tillage, fertilization, seed selection, storage, and rotation. Weeds and their eradication. A portion of the College farm is devoted to the growing of a variety of crops for instructional purposes and each student is required to keep records of each crop covering the preparation of the soil, time of planting, quantities of seed per acre, mixing, quantities and composition of fertilizers used and the methods and times of application. Four periods, second term, and five periods, third term. Required of Juniors. Professor Newman.

4. **Special Crops.**—This course embraces advanced work in farm crops and is a continuation of the third term Junior work, but is more specialized and technical. Cotton, corn, small grain, and the principal legumes are studied in detail as well as such other crops as time will permit. Rotations and the conservation and development of fertility in connection with the use on the farm or the sale of the various crops. The principles of breeding as applied to cotton, corn and cow-peas are demonstrated on the farm that the student may become familiar with the practical details of such work. Each student is required to present a monograph on some crop or some subject of close relationship to important crops of the State. In agronomy division, five periods, first term; six periods, second term, and three periods, third term. In Horticultural division, five periods, first term, and three periods each in second and third terms. In Animal Husbandry and Normal divisions, five periods, first, and three periods, second term. Required of Seniors. Professor Newman.

5. **Farm Management.**—Comparisons of types of farming and their relation to climate and soil; labor, transportation and population;

capital and land value; operating expenses; systems of land tenure; farm organization; size of farms; location and arrangement of buildings, roadways, fences, water supply; orchard, garden, etc. Factors governing nature and amount of equipment; financial accounts; farm records; diversification, rotation from business point of view; cropping systems; interrelationship of animal and plant production; maintenance of fertility; standard of living; schools; churches. Two periods, second and third terms. Required of Seniors. Professor Newman.

HORTICULTURE.

Equipment.

The Horticultural Department occupies rooms in the Agricultural Building, including class rooms, laboratory, vegetable and fruit cold storage rooms. It also has a large laboratory connected with the greenhouses. The laboratories are used for such work as seed selection, bud studies, propagation work, budding, grafting, transplanting, study of varieties of fruits, nuts, and vegetable seeds.

The greenhouses consist of three glass structures heated by hot water. They are used for the growing of ornamentals, vegetables, and many exotic plants; a large amount of laboratory work is also carried on in these houses. The student learns the use, importance, and culture of these plants. Many of them are also used to illustrate interesting and instructive characteristics of plant life.

The department is well supplied with apparatus for laboratory work, such as apparatus for seed-testing, budding knives, grafting tools, pruning shears and saws, spray pumps, seed drills, and wheel hoes.

The following horticultural grounds are available to students for such work as planning a fruit plantation, distances of planting, cultivating, pruning, spraying, fruit bud studies, species and varieties of fruits:

An extensive orchard bearing the most important varieties of North Carolina fruits. This includes the apple, pear, plum, peach, cherry, persimmon, apricot, fig, pecan, quince, and raspberry.

Two complete vineyards containing the leading standard varieties of the *Labrusca*, *Rotundifolia*, and *Æstivalis* species, together with a large number of promising new hybrids.

A nursery which is devoted to the growing of seedling trees and the practices of plant propagation such as budding, and grafting.

The department has charge of ten acres of land, which is devoted entirely to the raising of vegetables. These grounds are used for demonstration purposes in vegetable gardening, illustrating the principles

and methods used in modern trucking and market gardening industries of the State.

The College campus is used in teaching ornamental gardening and a study of economic trees and shrubs. The experimental orchards are freely used for illustrative purposes.

Laboratory work accompanies every subject, always supplementing the class work given at the same time.

Subjects of Instruction.

10. **Vegetable Gardening and Plant Propagation.**—This course deals with the selection and preparation of soils for vegetables; fertilizers and manures; handling of seeds, planting and transplanting; constructing of hot beds and cold frames; culture, harvesting and storing of all important vegetables. Special stress is laid on the home garden and the trucking industry in this State. The work in plant propagation includes such work as layering, cuttings, grafting, and budding. Five periods, second term, and one period, third term. Required of Sophomores. Mr. Detjen.

11. **Fruit Culture.**—A course treating of the location of orchards, soils for fruits, varieties, planting, cultivation, fertilizing, pruning, harvesting, and marketing of North Carolina fruits. The laboratory work will include a study of species and varieties of fruits and nuts, fruit buds, and exercises in pruning trees, shrubs, and vines. Four periods, first and second term. Required of Juniors in the Agricultural, Horticultural and Normal Divisions. Associate Professor Reimer.

12. **Landscape Gardening.**—This course deals with the planning, arrangement and care of home grounds, parks, and cemeteries. Special stress is laid on home grounds. It treats especially of lawns, trees, and shrubs, flowers and flower beds, and the arrangement and grouping of these. The campus, city parks, and many beautiful home grounds give exceptional opportunities for this. Three periods, third term. Required of Juniors in the Agricultural, Horticultural or Normal divisions. Associate Professor Reimer.

13. **Plant Breeding.**—A course dealing with the fundamental laws and principles of plant breeding, such as variation, mutations, heredity, Mendel's law; crossing, selection, origination and improvement of varieties. Three periods, first term. Required of all Seniors in the Horticultural and Agronomy Divisions. Associate Professor Reimer.

14. **Marketing.**—An advanced course dealing with the harvesting, grading, packing, storing, transporting, and selling of fruits and vege-

tables. Two periods, first term. Required of Seniors in the Horticultural Division. Mr. Detjen.

15. **Pomology.**—An advanced course dealing with the origin and development, adaptation, and improvement and breeding of fruits. Five periods, second term. Required of Seniors in the Horticultural Division. Associate Professor Reimer.

16. **Horticulture.**—During the last term each student will take up some special phase of horticultural work that he expects to give special attention to after leaving college. Each student will be dealt with individually. He will be required to make a thorough study of the latest experiment station work on his particular subject. Five periods, third term. Required of Seniors in the Horticultural Division. Associate Professor Reimer.

ANIMAL HUSBANDRY.

20. **Live Stock.**—The origin, history and characteristics of the several breeds of live stock are studied by the students. Where possible actual specimens are used to show the breed characteristics, and where representative animals can be found within a reasonable distance, the student is permitted to visit such places. This enables the student to determine the breeds best adapted to the different conditions and environments. Practical exercises are given in live-stock judging. The student is required, after familiarizing himself with the points of the score-card, to study the various classes of farm animals in relation to the purposes for which they are designed. The animals are compared and placed according to their relative merits, after which the reasons for so doing are written on blank forms furnished the student. Two periods, second term, and three periods, third term. Required of Sophomores. Professor Michels.

21. **Animal Breeding.**—Upon the proper methods of breeding and management depends the success or failure in raising improved types of farm animals. To this end the student is taught the underlying principles of laws which govern the successful breeding and improvement of the various classes of live-stock. The experience and observation of our more successful husbandmen will constitute the foundation of this work. Lectures and recitations. Three periods, second term. Required of Juniors in Animal Husbandry Course; elective in other courses. Professor Michels.

22. **Stock Feeding.**—The course in stock feeding includes a study of the physiology of the digestive system, also the best methods involved in raising and maturing farm animals for their respective uses. The feeding of the various classes of animals will be studied,

and most profitable methods of feeding and management during the different periods of growth. The chief object of the course is to acquaint the student with the fundamental principles of stock feeding, after which the practical side of the question will be considered, enabling him to compound rations and calculate the nutritive ratios of same. Lectures and recitations. Four periods, third term. Required of Juniors. Professor Michels.

24. **Live-stock Management.**—In this course the student will be taught the proper care and management of beef and dairy cattle. Lectures on the results obtained from the most prominent breeders and fitters of beef and dairy cattle will be given. It also includes lectures and recitations on the feed, care, and management of horses, sheep, and swine in relation to the respective uses for which they are grown. Three periods. For Seniors. Professor Michels.

DAIRYING.

Dairy Equipment.—The dairy laboratory occupies about four thousand square feet of floor space on the floor of the new Agricultural Building, besides the locker-rooms and the toilet and bath-rooms on the same floor and the dairy lecture-room on the second floor used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for the farm dairying consists, in the main, of De Laval, Sharples, Empire, National, United States, and Simplex hand separators, swing and barrel hand churns of different sizes; cream vats; hand and power butter-workers; aerators and coolers; milk-testers; and other articles useful in doing farm dairy work.

Milk testing, which plays such an important part in all phases of dairy work, receives a great deal of attention. Several sizes of hand machines and a twenty-four bottle power tester are used in this work, together with all equipment necessary for testing milk, cream, butter, cheese, skim-milk, whey, and also the lactometer.

The equipment for giving instruction in commercial dairying consists of milk pump, receiving vat, tempering vat, turbine separator, continuous pasteurizer, combined churn and butter-worker, bottling outfit, and bottle washing and sterilizing outfit.

Subjects of Instruction.

25. **Dairying.**—Text-book and lecture course, covering the fundamental principles of modern dairying. Two periods, third term. For

Freshmen. Laboratory course consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction and operation of the leading makes of separators. Proficiency is required of the students in milk testing, standardizing milk and cream, cream ripening, churning, working, packing and scoring butter. Five periods, first term. For Freshmen. Professor Michels.

27. **Advanced Dairying.**—In this course practical application will be made of the science of dairy bacteriology in its relations to cheese-making, butter-making, and the handling of milk and cream for market. Three periods, first and third terms. For Seniors. Professor Michels.

28. **Cheese-making.**—This is a lecture and laboratory course in the manufacture and marketing of the leading varieties of cheese. Elective for Seniors. Five periods, second term. Professor Michels.

POULTRY HUSBANDRY.

The poultry plant has thirty breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina, an incubator cellar with several different makes of incubators, and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, grist and bone mills.

The following varieties of poultry are kept: Barred, Buff and White Plymouth Rock; White and Buff Wyandotte; Rhode Island Red; White and Brown Leghorn; Buff Orpington, and Black Minorca.

31. **Poultry Husbandry.**—Classification and study of the breeds of domestic poultry; breeding, feeding and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, second and third terms. For Freshmen. Mr. Jeffrey.

30. **Poultry Husbandry.**—Theory and practice of judging fowls by score-card and comparison; comparisons of different systems of poultry keeping; artificial incubation and brooding.

Three periods, third term. For Seniors.

VETERINARY SCIENCE.

(Anatomy, Physiology, and Veterinary Medicine.)

Equipment.

For instruction in the above subjects, the department is provided with office, lecture-rooms, laboratories, pharmacy room (for drugs and surgical instruments), and dissecting room.

The office contains the usual office fixtures, besides a library of most of the standard works on veterinary medicine in English.

For use in class-room and laboratory, the department is supplied with mounted skeletons of man, of horse, and of cow; also numerous specimens of tumors, tuberculous organs, bony lesions of spavins, splints, ring bones and side bones.

Besides various other diseased tissues, is a large collection of parasites infesting domestic animals.

The laboratories are provided with wall cases, work tables and desks, washing sinks, hot and cold water, gas burners and electric lights.

The laboratory for special work has microtome (for cutting sections of tissues for study with microscope), glass slides, stains, and the various materials required for making permanent mounts.

The larger laboratory is supplied with the necessary equipment for conducting exercises in physiology.

In the pharmacy room are samples of a large number of drugs used in comparative medicine, and a more or less complete set of surgical instruments, including an operating table for small animals, casting harness and slings for larger animals.

DESCRIPTION OF COURSES.

40. **Animal Physiology.**—The first term's work will deal largely with a study of the structure of the body, the second and third terms' work with a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory exercises illustrating principles of physiology. Three periods. Required of Freshmen. Professor Roberts and Mr. Hornaday.

41. Veterinary Medicine—**(a). Veterinary Anatomy.**

Text-book supplemented by lectures, illustrated by charts, models, skeletons, sketches and by dissections.

Anatomy being a fundamental subject in any system of medicine, and essential to a thorough knowledge of live-stock, the first term will

be largely devoted to this study. Special attention being given to the organs of digestion and locomotion, and such other parts as are of interest to the stock farmer. One period each week will be devoted to a clinic. Four periods, first term. Elective for Juniors. Professor Roberts.

(b) **Veterinary Medicine.**—Lectures on the actions, uses and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Three periods, second term. Elective for Juniors. Professor Roberts.

(c). **Veterinary Practice.**—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and perform minor surgical operations under the direction of the instructor. Three periods, third term. Elective for Juniors. Professor Roberts.

42. **Veterinary Medicine.**—Advanced course in veterinary medicine and surgery. A continuation of the subject as outlined for Juniors, special attention being given to infectious diseases communicable to man, and their significance in meat and milk inspection, and also diseases attendant upon breeding animals. Three periods. Elective for Seniors. Professor Roberts.

43. **Histology.**—A microscopical study of the tissues of the body. Treats of the cell as the unit of structure and of its functions; of tissues, their classification and relation to the structure of organs. From dissections, clinics and proximity to slaughter houses abundance of histological material of various animals is received. Four periods. Elective for Seniors. Professor Roberts and Mr. Hornaday.

BOTANY AND VEGETABLE PATHOLOGY.

Equipment.

Three commodious laboratories and a large recitation and lecture room are devoted to Botany, Bacteriology, and Vegetable Pathology. A research-room is provided for the use of advanced students. There are also offices for the professor and instructors; a store-room, a dark-room, and an incubator-room. All rooms are supplied with electricity, gas, hot and cold water, and the bacteriological laboratory is, in addition, provided with steam under 80 pounds pressure for purposes of sterilizing. The laboratories are supplied with wall-cases, shelves, herbarium cases, specimen boxes, sterilizers, incubators, microscopes, microtomes, a liberal supply of glassware, and such small utensils as

are needed in the prosecution of the work. The incubator-room is fire-proof and is provided with a Weisnegg regulator capable of keeping the temperature of the room practically invariable. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds, both of weeds and cultivated plants, and the most important plant diseases are represented by herbarium and alcoholic specimens. The greenhouse is of great utility as a source of material for seed-testing and for conducting experiments in plant physiology and pathology.

50. **Elementary Botany.**—Weekly lectures, accompanied by laboratory work and reference reading regarding the algae, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of Freshman. Professor Stevens.

51. **Systematic Botany.**—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Sophomores. Professor Stevens.

52. **Plant Diseases.**—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi, or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores. Professor Stevens.

53. **Plant Diseases (Advanced).**—Methods of culture and investigation of plant diseases. This course is intended to prepare the student for original investigation in plant diseases. Two periods. Elective for Seniors. Professor Stevens.

54. **Bacteriology.**—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors. Professor Stevens and Mr. Gainey.

55. **Bacteriology (Advanced).**—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Three periods. For Seniors. Professor Stevens and Mr. Gainey.

56. **Dairy Bacteriology.**—Lecture and text-book course covering the more important facts in the relation of bacteria to dairying. Laboratory course consists in demonstrating and supplementing the lecture course. Practice is given in pasteurizing milk and cream for market; making and using starters in butter and cheese-making. Three periods, second term. For Seniors. Mr. Gainey.

ZOOLOGY.

60. **Zoology.**—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and text-book. One term is devoted to vertebrates and invertebrates, with only a very brief study of insects, but including some of the common parasites infecting man and the domestic animals. This course is intended to present a general view of the animal kingdom, and to lay a foundation for the more special subjects that are to follow. Two periods, first and second terms. Required of Sophomores. Mr. Smith.

ENTOMOLOGY.

61. **Economic Entomology.**—Elements of insect structure and classification. Injurious insects and remedies: a, of orchards; b, of small fruits; c, of truck and garden crops; d, of cotton, corn, tobacco, grains, and grasses; e, of forest, shade and ornamental plants; f, of barn, mill, and household. Lectures and demonstrations. Three periods, third term. Required of Sophomores, and two periods, first term, required of Juniors. Mr. Smith.

62. **Systematic Entomology.**—Systematic study of orders and families of insects, with special reference to structure, classification, life-history, and habits. Lecture and laboratory practice. Two periods, three terms. For Seniors. Required in Horticultural Division, elective in other divisions. Mr. Smith.

GEOLOGY AND SOILS.

65. **Geology.**—Scott's *Introduction to Geology*. In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of those forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Four periods, first term. Required of Juniors. Mr. Hill.

66. **Soils.**—Lectures and recitations upon the origin of soils through the disintegration of rocks, their physical properties, texture, structure, color, weight, and the improvement of these properties. Two periods. Second and third terms. Required of Juniors. Mr. Hill.

CHEMISTRY.

70. **Inorganic Chemistry.**—McPherson and Henderson's *Elementary Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor Withers and Doctor Williams.

71. **Inorganic Chemistry.**—Laboratory work. McPherson and Henderson's *Exercises in Chemistry*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class room. The latter part of the year is given to an introductory course in qualitative analysis. Two periods. Required of Sophomores. Mr. Hill.

72. **Agricultural Chemistry.**—A study of plant and animal bodies and their products with reference to their composition and the changes in them. Two periods. Required of Juniors. Professor Withers.

73. **Chemistry-Elective.**—During the Senior year, the student may elect some work in the Chemistry Department from the following subjects: Organic Chemistry, Physiological Chemistry, Qualitative Analysis, Quantitative Analysis. These subjects are described more in detail under the courses in Chemistry beginning with No. 300.

PHYSICS.*

80. **Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat, sound; introduction to the study of light. Two periods. Required of Sophomores. Mr. Latané.

SHOP-WORK.†

90. **Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning. Two periods, second and third terms. Required of Freshmen. Mr. Clay.

MATHEMATICS.

100. **Algebra.**—Wells's *New Higher Algebra*. Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, compound interest and annuities, permutations, combinations and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite for first term, entrance requirements; for second term, the work of the first term. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

101. **Plane Geometry.**—Wentworth's *Plane and Solid Geometry*. A complete course in plane geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite entrance requirements. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

ENGLISH.

110. **Composition and Rhetoric.**—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor Harrison, Doctor Summey, Mr. Faulkner.

*For full information in regard to the Department of Physics, see course in Electrical Engineering.

†For full information in regard to shop-work, and other Mechanical Engineering subjects, see course in Mechanical Engineering.

111. **American Literature.**—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor Harrison, Doctor Summey, Mr. Faulkner.

112. **Advanced Rhetoric.**—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor Harrison.

113. **Public Speaking.**—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor Harrison.

114. **English Literature.**—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor Harrison.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences, without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humorous anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions, without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language, and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may take any one or all of the modern languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

120. **German.**—Worman's *Modern Language*, first and second German books; *Studien und Plauderein*, first and second books; Fischer's *Practical Lessons in German*; *Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Three periods. Elective for Juniors and Seniors. Doctor Rudy.

ECONOMICS.

130. **Economics.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. Doctor Summey.

MILITARY SCIENCE.

140. **Drill.**—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics, United States Infantry Drill Regulations. Three periods, first and second terms; two periods, third term. Required of all classes except Seniors. Seniors are to either take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

150. **Tactics.**—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Sophomores. Lieutenant Young.

For short courses in Agriculture see page 99.

AGRICULTURAL EXTENSION.

The Department of Agricultural Extension was organized July 1, 1909. The object of this department is to link the scientific agricultural work of the College and Station to the practical work on the farms of the State. Each year the trained scientific workers of America add to the fund of information needed by progressive farmers. The object of this department is to carry this information to the busy men on the farm, and to help in the teaching of farm science in our schools. This is done by addresses to farmers, by farm schools held in different sections, holding seed corn days, organizing boys' corn clubs and in such other ways as time and occasion may permit. Professor I. O. Schaub.

Engineering Courses.

Four-year Courses in

- II. Civil Engineering.
- III. Mechanical Engineering.
- IV. Electrical Engineering.
- V. Chemistry.

COURSE IN CIVIL ENGINEERING.

The aim of the course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and draughting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in draughting. At the same time it is recognized that a successful engineer requires a well-trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this pre-eminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II. The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 230†.....	2	2	2
Wood-work, 235.....	2	2	2
Forge-work, 236.....	2	2	..
Foundry, 237.....	..	..	2
Algebra, 340.....	5	3	..
Geometry, 341.....	..	2	5
Physics, 280.....	4	4	4
Physical Laboratory, 282.....	1	1	1
Composition and Rhetoric, 300.....	3	3	3
Military Drill, 300.....	2	3	2

Sophomore Year.

Architecture, 220.....	2	..	..
Architectural Drawing, 221.....	2	2	2
Geometry, 342.....	5	..	..
Advanced Algebra, 343.....	..	3	..
Trigonometry, 344.....	..	2	5
Descriptive Geometry, 231.....	..	2	2
Electricity and Magnetism, 281.....	2	2	2
Inorganic Chemistry, 300.....	3	3	3
Inorganic Chemistry (laboratory), 301.....	2	2	2
American Literature, 381.....	3	3	3
Military Drill, 300.....	3	3	2
Military Tactics, 301.....	1	1	1

*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying, 202 and 205.....	2	2	2
Surveying (field work), 206.....	2	2	2
Construction, 204.....	2	--	--
Descriptive Geometry, 200.....	2	2	2
Graphic Statics, 201.....	--	2	2
Mechanics, 203.....	3	3	3
Analytical Geometry, 345.....	5	3	--
Calculus, 246.....	--	2	5
Advanced Rhetoric, 362.....	2	2	--
Public Speaking, 363.....	--	--	2
Economics, 380.....	1	1	1
Military Drill, 390.....	3	3	2
Spanish (elective), 372.....	3	3	3

Senior Year.

Mechanics of Materials, 214.....	3	--	--
Construction, 204.....	--	2	2
Road-building, 211.....	2	--	--
Roofs and Bridges, 208.....	3	--	--
Bridge Design, 209.....	--	4	4
Municipal Engineering, 210.....	--	2	2
Surveying (field work), 207.....	2	1	1
Hydraulics, 215.....	--	2	2
Calculus, 346.....	2	--	--
Railroad Engineering, 205.....	2	2	2
Reinforced Concrete, 213.....	--	2	2
Astronomy, 212.....	--	2	2
Mechanics, 202.....	3	--	--
English Literature, 364.....	3	3	3
Elect one of the following:			
Military Drill, 390.....	3	3	3
Spanish, 372.....	3	3	3

CIVIL ENGINEERING.

Equipment.

There is a complete equipment of all instruments necessary to civil engineering field work.

SUBJECTS OF INSTRUCTION.

200. **Descriptive Geometry, Stereotomy, Topographical Drawing.**—Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Three periods. Required of Juniors in Civil Engineering. Mr. Mann.

201. **Graphic Statics.**—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil Engineering. Professor Riddick and Mr. Mann.

202. **Surveying.**—Land surveying, leveling, elements of triangulation, topographical surveying, roadmaking. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil Engineering. Mr. Von Glahn.

203. **Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Civil Engineering. Three periods, first term. Required of Seniors. Mr. Mann.

204. **Construction.**—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction*. Lectures. Two periods, first term. Required of Juniors in Civil Engineering. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

205. **Railroad Engineering.**—Reconnaissance, preliminary and location surveys, cross-sections, compound curves, spirals, etc. Searles' *Field Engineering*. Two periods, second and third terms. Required of Juniors in Civil Engineering. Three periods. Required of Seniors in Civil Engineering. Mr. Mann.

206. **Surveying.**—Field work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes, and platting. Two periods. Required of Juniors in Civil Engineering. Mr. Von Glahn and Mr. Stephens.

207. **Surveying.** Field work. Triangulation and topography, surveys for sewers, waterworks, etc. Two periods, first term; one period,

second and third terms. Required of Seniors in Civil Engineering. Mr. Mann, Mr. Stephens, and Mr. Von Glahn.

208. **Roofs and Bridges.**—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges*. Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Professor Riddick.

209. **Bridge Design.**—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel highway bridge. Four periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

210. **Municipal Engineering.**—Text-books, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

211. **Road Building.**—Text-book on construction of roads, streets and pavements. Lectures on practical roadmaking in North Carolina. Two periods, first term. Required of Seniors in Civil Engineering. Professor Riddick.

212. **Astronomy.**—Determination of Azimuth, Latitude and Longitude, Time. Constock's *Astronomy for Civil Engineers*. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

213. **Reinforced Concrete.**—Turneaure & Maurer's *General Theory of Concrete and Steel Construction*. Problems in beams, columns, retaining walls, etc. Two periods, second and third terms. Required of Seniors in Civil Engineering. Mr. Mann.

214. **Mechanics of Materials.**—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials*. Three periods, first term. Required of Seniors in Civil and in Mechanical Engineering. Professor Riddick.

215. **Hydraulics.**—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics*. Two periods, second and third terms. Required of Seniors in Engineering. Professor Riddick.

ARCHITECTURE.

220. **Architecture.**—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor Riddick.

221. **Architectural Drawing.**—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Mr. Mann and Mr. Von Glahn.

COURSE IN MECHANICAL ENGINEERING.

The regular four year course in Mechanical Engineering is intended to train men in the fundamental principles which underlie all mechanical engineering, and to give such practice in engineering work as it may be possible to give in a technical school.

Upon the completion of the course the man is fitted to enter upon any particular branch of the varied activities which are the especial province of the Mechanical Engineer.

In general these activities embrace the design, construction, manufacture, operation, management and general efficiency of power plants; all problems of power generation and power transmission, wherein a knowledge of boilers, of engines, of steam and water turbines, and of all accompanying auxiliaries, is necessary; all questions involving heating and ventilation; all questions having to do with ice making and refrigeration; all questions concerned with hydraulic motors, and with machinery for the water supply of cities; all mechanical operations and processes involved in mining, either coal or ore, and in ore reduction; all mechanical processes and operations involved in the manufacture of all mill products: steel, wood, cotton, wool, leather, etc.; all commercial work having to do with shops, foundries and factories. The motive power and the mechanical equipment of railroads, together with the design and construction of rolling stock, and the problems of marine engineering, including the design and construction of mechanical equipment of steamships, offers a special field to those trained in Mechanical Engineering.

By no means least of the functions of a Mechanical Engineer is the part he plays in the industrial world as an organizer, a systematizer and a cost reducer.

To success in any one of these particular branches or phases of this profession a thorough technical training is absolutely indispensable—for it supplies the broad, general foundation, which must in its turn be supplemented by practical experience and by contact with the special line of work chosen.

III. The Four-year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
✓ Mechanical Drawing, 230.....	2	2	2
✓ Wood-work, 235.....	2	2	2
✓ Forge-work, 236.....	2	2	..
✓ Foundry, 237.....	..	..	2
✓ Algebra, 340.....	5	3	..
✓ Geometry, 341.....	..	2	5
✓ Physics, 280.....	4	4	4
✓ Physical Laboratory, 282.....	1	1	1
✓ Composition and Rhetoric, 360.....	3	3	3
Military Drill, 390.....	3	3	2

Sophomore Year.

Descriptive Geometry, 231.....	2	..	..
✓ Mechanical Drawing, 232.....	..	2	2
✓ Foundry, 237.....	2	..	..
✓ Pattern Making, 238.....	..	2	2
✓ Geometry, 342.....	5	..	..
✓ Advanced Algebra, 343.....	..	3	..
✓ Trigonometry, 344.....	..	2	5
✓ Electricity and Magnetism, 281.....	2	2	2
✓ Physical Laboratory, 283.....	1	1	1
✓ Inorganic Chemistry, 300.....	3	3	3
✓ Inorganic Chemistry (laboratory), 301.....	2	2	2
✓ American Literature, 361.....	3	3	3
Military Drill, 390.....	3	3	2
Military Tactics, 391.....	1	1	1

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Steam Engines and Boilers, 241.....	2	2	2
Mechanics, 250.....	2	2	2
Machine Design, 233.....	3	3	3
Machine-shop Work, 239.....	2	2	2
Electrical Engineering, 284.....	2	2	2
Electrical Laboratory.....	1	1	1
Analytical Geometry, 345.....	5	3	..
Calculus, 346.....	..	2	5
Advanced Rhetoric, 362.....	2	2	..
Public Speaking, 363.....	..	..	2
Political Economy, 297.....	1	1	1
Military Drill, 390.....	3	3	2
German (elective), 370.....	3	3	3

Senior Year.

Applied Mechanics, 251.....	3	3	2
Machine Design, 234.....	3	3	3
Machine-shop work, 240.....	2	2	2
Power Plants, 243.....	3	..	..
Gas Engines, 244.....	3	..	..
Power Transmission, 242.....	..	..	2
Refrigeration, 245.....	..	..	3
Pumping Machinery, 246.....	..	1	..
Heating and Ventilation, 247.....	..	3	..
Structural Engineering, 248.....	..	2	2
Steam Engineering Laboratory, 249.....	2	2	2
Calculus, 346.....	2	..	..
Hydraulics, 215.....	..	2	2
English, 364.....	2	2	2
Elect one of the following:			
Military Drill, 390.....	3	3	2
Modern Language, 370, 371, 372.....	3	3	3

MECHANICAL ENGINEERING EQUIPMENT.

The drawing and recitation rooms and shops of the Department of Mechanical Engineering are in the Mechanical Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are the steam laboratory, machine shop, forge shop, wood-turning and carpenter shop. On the second floor are the recitation room and two drawing rooms, the office and the library. In the office are kept on file various scientific and technical journals, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books available for the use of students.

The department is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character. The equipment consists of a two horse-power engine, a ten horse-power engine, a one horse-power engine (all of which are built by students), a two horse-power International gasoline engine, a two horse-power McVicker automatic gasoline engine, a twenty-five horse-power Stearns engine, a forty horse-power Skinner automatic engine, an injector testing apparatus, apparatus for testing indicator springs and steam gauges, flash point oil tester, Viscosimeter for oil, a Wheeler surface condenser, connected with a 4 1-2 x 6 x 6 Blake air pump, an Ericsson hot-air pump, an engine, apparatus for making analysis of flue gases, a fuel-calorimeter, a water motor, a Worthington water meter, a complete Westinghouse air brake equipment, a New York air brake equipment, (in section), friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, two hydraulic rams, a 50,000-pound Riehlé automatic autographic testing machine arranged for tensional, compression and transverse testing; a 15,000-pound Olsen testing machine, and other apparatus for making tests.

The shops are equipped as follows:

The wood-working equipment consists of fifteen double carpenters' benches which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6 1-2-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 34-inch band saw; a jig-saw; a shaper or edge-moulding machine, with a very complete set of moulding cutters; a chain mortiser; a dovetailing machine;

a 38-inch grindstone; a wood trimmer; an adjustable miter box; a steam glue-heater, and a large assortment of screw and bar clamps, both iron and wooden.

The forge shop is a well lighted and ventilated, neatly paved, room, thirty by forty feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; a Buffalo Forge Company's hand drill; an overhead exhaust system, operated by a 60-inch Sturtevant exhaust fan, for removing smoke from fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis & Egan lathe with 10-foot bed, 14-inch Windsor lathe with 5-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with a 4-foot bed, a 14-inch Champion lathe with 6-foot bed, a 14-inch Flather lathe with a 6-foot bed, three 14-inch lathes with 6-foot beds, (built in College shops by students), a 26-inch by 44-inch by 12-foot bed McCabe double-spindle lathe, an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, 32-inch American drill press, a Brown & Sharpe universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, one large and one small emery tool-grinding machine, a Greenwich arbor press and an electric center grinder, a Whiton centering machine, and a twist drill grinder. The machines have full equipment of chucks, rests and tools. The benches are well provided with vises.

The foundry occupies a separate building, 30 x 60 feet, and is of capacity to accommodate about 20 students. It contains a 36-inch cupola, two Griffin oil-burning furnaces, one for cast iron, one for brass, a No. 0 Sturtevant high-pressure blower for furnishing air, and a small triplex pump for furnishing oil under pressure. There is also a crucible brass furnace, a core oven and all necessary tools for bench and floor work.

The power for all the shops is furnished by electric motors.

SUBJECTS OF INSTRUCTION.

230. **Mechanical Drawing.**—Instruction in care and use of instruments; lettering, geometrical drawing; projection drawing; isometric and cabinet projections; drawings from working sketches of machine details; tracing; blueprinting; elements of descriptive geometry; cylinders; cones; prisms; intersections and developments; miscellaneous problems. Two periods. Required of Freshmen and first year Short Course. Mr. Selby.

Note.—Each student will be required to furnish at his own expense, the following outfit. To insure uniformity in grade of instruments and other supplies the department keeps for sale at practically cost the articles named below. These may be purchased elsewhere, but must be approved by the department. Estimated cost of outfit \$10.00:

- Drawing board, 22 by 32 inches.
- T-square, 30 inches.
- 60° triangle, 9 inches, transparent.
- 45° triangle, 7 inches, transparent.
- 12° triangle, architect's scale.
- 4 H pencil, H or F pencil.
- Erasers for ink and pencil.
- Penholder with fine points.
- Pencil sharpener.

Instrument set consisting of:

- 6-inch compass with pen, pencil and leng.
- 5 1-2-inch dividers with hair-spring adjustment.
- 3-inch bow dividers, 3-inch bow pencil, 3-inch bow pen.
- 5 1-2-inch ruling pen, 4 1-2-inch ruling pen.

231. **Descriptive Geometry.**—General definitions; third angle; representation of points, lines and planes; profile plane; projected views; line and plane essentials; relations of points, lines and planes in space; intersection of lines and planes; curved surfaces; development of surfaces; plane sections of solids. During the term many practical problems are given for solution and construction. Two periods. Required of Sophomores in Mechanical and Electrical Engineering. Prerequisite, Mechanical Drawing 230. Professor Satterfield and Mr. Morris.

232. **Mechanical Drawing.**—Working sketches and drawings of machine parts from the model. Tracing and blueprinting. Elementary machine design. Cam design. Two periods. Second and third terms. Required of Sophomores in Mechanical and Electrical Engineering. Prerequisite, Mechanical Drawing 230. Mr. Morris.

233. **Machine Design.**—A study of the materials used in machine construction; analysis of the stresses in machine parts; design of machine parts considering them as compression, tension, or torsion members; modification of the above parts to suit practice and for the sake of general appearance. Design of gears, shafting, bearings and supports. Design of simple machines such as shears, punches, air hoists, riveters, etc. One lecture and two drawing periods per week. Required of Juniors in Mechanical and Electrical Engineering. Prerequisite, De-

scriptive Geometry and Mechanical Drawing 231 and 232. Assistant Professor Ellis.

234. **Machine Design.**—Estimating, checking of working drawings, original design. Calculations and workings drawings of types of steam engines, gas engines, gas producers, condensers, etc. Three periods. Required of Seniors in Mechanical Engineering. Assistant Professor Ellis.

235. **Wood-work.**—The use and care of the ordinary wood-working bench tools. Exercises in laying out and working from drawings, sawing, planing and making of joints. The use and care of woodworking machines such as saws, planers, shapers, dovetailers, tenoner, etc. Exercises in wood turning. Work on repairs about the College. Two periods. Required of Freshmen and first year Short Course. Mr. Clay.

236. **Forge-work.**—Treatment of iron and steel, the uses of the fuller, swage, punch and set hammer; drawing and upsetting; butt, scarf and jump welding; making of forge and machine shop tools, with tempering of tool steel; exercises on power hammer. Special work on equipment and repairs about the College. Required of Freshmen and first year Short Course. Two periods, recitations and exercises, first and second terms. Mr. Wheeler.

237. **Foundry.**—Recitations and exercises in foundry work, including working condition of the sand, use and care of tools, moulding, core-making, management of cupola and crucible furnaces in iron and brass melting. Required of Freshmen. Two periods, third term. Sophomores in Mechanical and Electrical Engineering and second year Short Course. Two periods, first term. Mr. Park and Mr. Wheeler.

238. **Pattern Making.**—A study of pattern making in its relation to moulding; the practical construction of patterns to prevent warping and twisting, making of special patterns, cores and core-boxes, introducing draft, shrinkage, finish and the appliances and usages of modern pattern work. Required of Sophomores in Mechanical, Electrical and Mining Engineering. Two periods, second and third terms. Pre-requisite, Work-work 146. Mr. Clay and Mr. Morris.

239. **Machine-shop Work.**—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling and shaper work. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. Park.

240. **Machine-shop Work.**—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Working from drawings, duplicate and interchangeable parts. Working to standard gauges. Two periods. Required of Seniors in Mechanical Engineering. Mr. Park.

241. **Steam Engines and Boilers.**—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and a study of inertia and tangential pressures; also a study of the steam engine indicator, of indicator rigging, and of steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction noted. The number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and methods of preventing foaming, incrustation and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed water-heaters; mechanical stokers; smoke consumers and chimneys are studied in detail. Two periods. Required of Juniors in Mechanical, Textile and Electrical Engineering. Professor Satterfield.

242. **Transmission of Power.**—This work includes a study of the methods employed for the transmission and measurement of power in machine shops and factories, and review of experiments which have been made to determine the efficiency of the various systems of power-transmission machinery. Two periods, third term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

243. **Power Plants.**—Mechanical Engineering of power plants. Selection and arrangement of machinery, appliances, piping. Three periods, first term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

244. **Gas Engines.**—Theory of the gas engine. Various types of gas, gasoline and oil engines. Brake and indicated horse power; efficiency. Gas producers. Three periods, first term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

245. **Refrigerating.**—Various types of ice-making machinery. Compression and absorption system. Carbon dioxide and compressed-air machines. Three periods, third term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

246. **Pumping machinery.**—Direct acting, fly-wheel and duplex, and centrifugal pumps. Pumping engines. Waterworks machinery. Duty and efficiency. Hydraulic engines. One period, second term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

247. **Heating and Ventilation.**—Steam, hot-water, furnace and blower systems of heating. Ventilation. Design of heating and ventilation systems. Three periods, second term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

248. **Structural Engineering.**—Graphic statics; stresses in framed structures, roof trusses, simple beams, line loads on beams. Methods of loading bridge trusses, stresses in bridge trusses. Design of trusses of various kinds. Two periods, second and third terms. Required of Seniors in Mechanical Engineering. Assistant Professor Ellis.

249. **Steam Engineering Laboratory.**—Practice in engine running, valve-setting; calibration of instruments; testing gauges and lubricants. Use of indicators and calorimeters. Boiler tests; engine tests. Testing of materials. A brief course in Surveying is given, so as to enable a student to locate buildings, foundations, line up shafting, engines and machinery by use of the transit and level. Two periods. Required of Seniors in Mechanical Engineering. One period. Required of Seniors in Electrical Engineering. Professor Satterfield and Assistant Professor Ellis, Mr. Morris and Mr. Clay.

250. **Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a right body, momentum and impact, work, power, friction, application of principles to various engineering problems. Preparatory to Applied Mechanics in Senior. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. Selby.

251. **Applied Mechanics.**—A study of the laws of equilibrium and motion as applied to a particle and to rigid bodies; analytic treatment of stresses in framed structures, center of gravity, moment of inertia, work and energy, and friction; mechanics of materials, including stresses and deformations in tension, compression, shearing, torsion, and flexure, stresses and deformation in long columns, continuous girders, arch ribs, and reinforced concrete, and the elements of the theory of elasticity. Three periods, first and second terms; two periods third term. Prerequisite, Mechanics 250. Required of Seniors in Mechanical and Electrical Engineering. Assistant Professor Ellis.

252. **Mechanical Technology.**—Classification and uses of wood working and forging tools and machines. Methods of wood-working and forging. Arrangement, sizes, and care of belting and shafting. Elementary power problems, steel making, etc. One period. Required of first year Short Course. Professor Satterfield.

253. **Machine Drawing.**—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two

periods. Required of second year Short Course students. Assistant Professor Ellis.

254. **Machine-shop Work.**—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Required of second year short course students. Two periods. Mr. Park.

255. **Power Machinery.**—Descriptive study of the machinery of steam power plant engines, boilers, condensers, pumps, steam turbines, piping, care and management. Study of gas and oil engines. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Required of second year Short Course. Three periods. Professor Satterfield.

COURSE IN ELECTRICAL ENGINEERING.

The four year course in Electrical Engineering is designed for those who wish a thorough and practical training in this profession. Only a most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as will be seen from the description of the equipment, is well supplied with dynamos, motors, and other electrical apparatus, and testing instruments of all kinds.

PHYSICS.

A thorough training in the elements of physics is provided in a two-year course planned especially to meet the needs of engineering students. Instruction in the class room is accompanied by laboratory courses laid out so as to illustrate not only the principles taught in the former, but also to train the student to observe accurately, and to give him considerable facility in the use of scientific instruments. During the first year the subjects of mechanics, hydraulics, pneumatics, heat, and light are taken up. The second year is given to the study of electricity and magnetism and includes outlines of the more important applications.

Brief courses in physics are given for students in Agriculture, Textile Industry and Mechanic Arts.

EQUIPMENT.

The laboratories for these courses in physics are in the basement of the Administration Building, where is also a large lecture room fitted with a lantern and facilities for giving experimental lectures. There are two laboratories, one for the first-year course in physics, and the other for electrical and magnetic measurements. These rooms are spacious and well lighted and well equipped with apparatus.

IV. The four-year course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elementary Physics, 280.....	4	4	4
Physical Laboratory, 282.....	1	1	1
Mechanical Drawing, 230.....	2	2	2
Wood-work, 235.....	2	2	2
Forge-work, 236.....	2	2	..
Foundry, 237.....	..	..	2
Algebra, 340.....	5	3	..
Geometry, 341.....	..	2	5
Composition and Rhetoric, 360.....	3	3	3
Military Drill, 390.....	3	3	2

Sophomore Year.

Electricity and Magnetism, 281.....	2	2	2
Physical Laboratory, 283.....	1	1	1
Descriptive Geometry, 231.....	2	..	..
Mechanical Drawing, 232.....	..	2	2
Geometry, 342.....	5	..	..
Advanced Algebra, 343.....	..	3	..
Trigonometry, 344.....	..	2	5
Inorganic Chemistry, 300.....	3	3	3
Inorganic Chemistry (laboratory) 301.....	2	2	2
Foundry, 237.....	2	..	..
Pattern Making, 238.....	..	2	2
American Literature, 361.....	3	3	3
Military Drill, 390.....	3	3	2
Military Tactics, 391.....	1	1	1

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electrical Engineering, 284.....	2	2	2
Electrical Engineering Laboratory, 287.....	2	2	2
Steam Engines and Boilers, 241.....	2	2	2
Machine-shop work, 239.....	2	2	2
Machine Design, 233.....	3	3	3
Mechanics, 250.....	2	2	2
Analytical Geometry, 345.....	5	5	--
Calculus, 346.....	--	--	5
Advanced Rhetoric, 362.....	2	2	--
Public Speaking, 363.....	--	--	2
Economics, 390.....	1	1	1
Military Drill, 390.....	3	3	2

Senior Year.

Alternating Currents, 235.....	3	3	3
Electrical Applications, 286.....	3	3	3
Electrical Engineering Laboratory, 288.....	2	2	2
Electrical Design, 289.....	2	2	2
Steam Engines and Boilers (1911 only), 241.....	2	2	2
Applied Mechanics, 231.....	3	3	2
Steam Engineering (laboratory), 249.....	1	1	1
Calculus, 346.....	2	--	--
Hydraulics, 215.....	--	2	2
English Literature, 364.....	2	2	2
Elect one subject from the following:			
Military Drill, 390.....	3	3	2
Modern Languages, 370, 371, 372.....	3		3

SUBJECTS OF INSTRUCTION.

280. **Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound, and light. Text-book used: Milliken & Gale's *First Course in Physics*. Four periods. Required of Freshmen in Engineering courses. Mr. Sprague and Mr. Latané.

281. **Elementary Electricity and Magnetism.**—Magnetism, current electricity, electric circuits; electro-magnetism and magnetic induction; electrostatics. Text-book used: Thompson's *Elementary Lessons in Electricity and Magnetism*. Two periods. Required of Sophomores in Engineering courses. Prerequisites, Subjects 280, 340, and 341. Assistant Professor McIntyre and Mr. Sprague.

282. **Physical Laboratory.**—Practice in handling units in British and metric systems; experiments in mechanics illustrating composition and resolution of forces; the lever; the inclined plane; the pendulum; density and specific gravity. Experiments in heat, light and sound, illustrating the following subjects: Thermometer calibration, calorimetry, hydrometry, expansion, wave lengths of sounds, laws of strings, laws of lenses and mirrors, refraction, photometry, and spectroscopy. Text-book used: Milliken & Gale's *A Laboratory Course in Physics*. One period. Required of Freshmen in Engineering Courses. Mr. Sprague and Mr. Latané.

283.—**Physical Laboratory.**—Continuation of Study 282. Elementary experiments in magnetism; the electric circuit; primary batteries; measurements of electromotive force, current, and resistance. One period. Prerequisite, Subject 282. Required of Sophomores in Electrical and Mechanical Engineering and in Chemistry. Mr. Sprague.

ELECTRICAL ENGINEERING.

Equipment.

The courses in Electrical Engineering are accompanied by work in the laboratory or the designing room. For the former, two laboratories are available: the electrical-measurements laboratory, and the dynamo laboratory. The former is equipped with electrical instruments of all kinds, including ammeters, voltmeters, and wattmeters of all ranges, testing sets of various kinds, and a standardizing set consisting of an excellent, modern potentiometer with all auxiliaries. This laboratory is supplied from the dynamo laboratory with electrical currents of any type desired.

The dynamo laboratory is in a one-story brick building, thirty feet by fifty feet. This is supplied with alternating and direct currents from the College power house. The equipment consists of direct and alternating current dynamos of standard types, motors for direct and alternating current circuits, railway motors, variable speed motors, repulsion and induction motors, transformers for constant potential and constant current, arc and incandescent and mercury vapor lamps, ammeters, voltmeters, wattmeters, tachometers, frequency meters, lamp banks and rheostats. A convenient and well-equipped switchboard distributes current to all points of the laboratory.

POWER HOUSE.

The power house, which is also available for student instruction, is a fine brick building, containing an excellent equipment of the most modern type. This consists of a 75-kw. 600-volt three-phase Crocker-Wheeler alternator, directly connected to a Skinner engine; two 50-kw. 300-volt three-phase Crocker-Wheeler alternators driven by a De Laval steam turbine, with direct-driven exciter; two additional exciting units, one engine-driven and one motor-driven, and a switchboard provided with meters, synchroscope, oil circuit breakers, etc.

LIBRARY.

The department has a small but growing library, and takes a number of the leading electrical journals, all of which are at all times available for the students' use.

SUBJECTS OF INSTRUCTION.

284. **Direct Current Machinery and Apparatus.**—A thorough study is made of the production and utilization of direct currents, beginning with the theory of the magnetic circuit, electromagnetic induction, electrical measurements, storage batteries, dynamos and motors, operation and care of direct current machinery. Text-book used: Franklin & Esty's *Elements of Electrical Engineering*. Two periods. Required of Juniors in Electrical and Mechanical Engineering. Prerequisites, Subjects 281, 342, 343 and 344. Professor Browne.

285. **Alternating Currents and Machinery.**—A study of the flow of periodic currents in circuits containing resistance, inductance and capacity. The theory of transformers. The construction, operation and performance of alternating current machinery. Text-book used: Franklin & Esty's *Alternating Currents*. Three periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284, 345, 346.

286. **Industrial Applications of Electricity.**—A detailed study is made of the many industrial applications of electricity, including the various methods of distributing electrical energy, illumination, electric traction, the electric drive in mill and factory, electric power stations, long distance power transmission, industrial electro-chemistry and electro-metallurgy, telegraphy and telephony. Three periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284 and 287. Professor Browne.

287. **Direct Current Laboratory.**—This study accompanies that of direct current machinery. The use of standardizing apparatus, calibration of instruments, permeability and hysteresis tests, and the operation and testing of direct current dynamos and motors. Text-book used: Sever & Townsend's *Laboratory and Factory Tests*. Two periods. Required of Juniors in Electrical Engineering; one period required of Juniors in Mechanical Engineering. Prerequisites, Subjects 281 and 283. Assistant Professor McIntyre.

288. **Advanced Dynamo Laboratory.**—This study is taken up simultaneously with the study of alternating currents. It includes practice with alternating currents, measurement of inductance and capacity, experimental study of transformers, alternating current generators and motors, advanced methods of testing electrical apparatus, and shop testing. Text-book used: Sever & Townsend's *Laboratory and Factory Tests*. Two periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284 and 287. Assistant Professor McIntyre.

289. **Electrical Design.**—An introductory course in the designing of electrical apparatus, taking up the design of rheostats and heating devices, controllers, and electromagnets, the design of transformers, direct and alternating current dynamos and motors. Two periods. Required of Seniors in Electrical Engineering. Prerequisite, Subject 284. Professor Browne.

COURSE IN CHEMISTRY.

In harmony with the general purposes for which the College was founded, the course in Chemistry is arranged to prepare young men for careers in that department. To this end the training given in general, organic, and analytic chemistry is supplemented by instruction in technical chemical analysis and in applied chemical subjects. The kindred scientific subjects of Biology and Physics are taught, together with the cultural studies included in the other courses.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station afford the student an opportunity to keep in touch with the methods of research in this department of agricultural science.

The State Museum is open to the public each day, and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of the department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and ice; for the extraction of cotton-seed oil; and for the dyeing of cotton goods.

CHEMICAL EQUIPMENT.

The laboratories of general and analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart-pine with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor, and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate one hundred and eighteen students.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

VI. The Four-year Course in Chemistry, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Botany, elementary, 310.....	3	3	--
Botany, systematic, 311.....	--	--	3
Physiology, 325.....	3	3	3
Physics, 281.....	4	4	4
Physical Laboratory, 282.....	1	1	1
Algebra, 340.....	5	3	--
Geometry, 341.....	--	2	5
Composition and Rhetoric, 360.....	3	3	3
Military Drill, 390.....	3	3	2

Sophomore Year.

Inorganic Chemistry, 300.....	3	3	3
Inorganic Chemistry (laboratory), 301.....	2	2	2
Electricity and Magnetism, 281.....	2	2	2
Physical Laboratory, 283.....	1	1	1
Zoology, 330; and Entomology, 331; or Drawing, 330.....	2	2	3
Geometry, 342.....	5	--	--
Advanced Algebra, 343.....	--	3	--
Trigonometry, 344.....	--	2	5
American Literature, 361.....	3	3	3
Military Tactics, 391.....	1	1	1
Military Drill, 390.....	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Organic Chemistry, 302.....	2	2	2
Analytical Chemistry, 304.....	5	7	7
Bacteriology, 312.....	2	2	2
Geology and Soils, 320.....	4	2	2
German, 277, 330.....	3	3	3
Advanced Rhetoric, 362.....	2	2	..
Public Speaking, 363.....	..	..	2
Economics, 380.....	1	1	1
Military Drill, 390.....	3	3	2

Senior Year.

Organic Chemistry 303.....	2	2	2
Organic Chemistry, (Laboratory), 306.....	3	3	3
Analytical Chemistry, 306.....	6	6	6
German, 370.....	3	3	3
Elect eight periods from the following:			
English Literature, 364.....	3	3	3
Military Drill, 390.....	3	3	3
Advanced Bacteriology, 313.....	3	3	3
Advanced Inorganic Chemistry, 308.....	2	2	2
Other subjects subject to the approval of the Professor of Chemistry.			

CHEMISTRY.

300. Inorganic Chemistry.—McPherson & Henderson's *Elementary Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor Withers and Doctor Williams.

301. **Inorganic Chemistry.**—Laboratory work. McPherson & Henderson's *Exercises in Chemistry*. Chemical Experiments. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class room. The latter part of the course includes introductory qualitative analysis. Two periods. Required of Sophomores. Mr. Hill.

302. **Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. The fundamental principles of organic chemistry and the more important aliphatic compounds are studied. Two periods. Required of Juniors in Chemistry. Professor Withers and Doctor Williams.

303. **Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. A continuation of 302, including the aromatic compounds. Two periods. Required of Seniors in Chemistry. Professor Withers.

304. **Analytical Chemistry.**—Treadwell's *Qualitative Analysis*. A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common elements in unknown substances. Five periods, first term; seven periods, second and third terms. Required of Juniors in Chemistry. Doctor Williams.

305. **Analytical Chemistry.**—Treadwell's *Quantitative Analysis*. Gravimetric and volumetric analysis, special attention being given to the analysis of substances of agricultural and technical importance. Seven periods, second and third terms. Required of Juniors in Chemistry. Six periods. Required of Seniors in Chemistry. Doctor Williams.

306. **Organic Chemistry.**—Laboratory work. Orndorff's *Laboratory Manual* and Gatterman's *Practical Methods of Organic Chemistry*, translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. Three periods. Required of Seniors in Chemistry. Doctor Ray.

307. **Bio-Chemistry.**—Lectures and recitations. Reference—Simon's *Physiological Chemistry*. A discussion of the albumins, carbohydrates and fats; ferments, the digestive fluids and the processes of digestion, etc. Two periods. Senior elective. Dr. Ray.

308. **Advanced Inorganic Chemistry.**—Lectures and recitations. Two periods. Elective for Seniors. Mr. Hill.

BOTANY AND BACTERIOLOGY.

310. **Elementary Botany.**—Weekly lectures, accompanied by laboratory work and reference reading regarding the algae, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi. The student's knowledge is made his own through field work and simple independent investigations. Three periods, first and second terms. Required of Freshmen in Chemistry. Professor Stevens.

311. **Systematic Botany.**—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Freshmen in Chemistry. Professor Stevens.

312. **Bacteriology.**—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors in Chemistry. Professor Stevens and Mr. Gainey.

313. **Bacteriology (Advanced).**—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Three periods. For Seniors in Chemistry. Professor Stevens and Mr. Gainey.

ZOOLOGY AND ENTOMOLOGY.

320. **Zoology.**—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and text-books. One term is devoted to vertebrates and invertebrates, with only a very brief study of insects, but including some of the common parasites infecting man and the domestic animals. This course is intended to present a general view of the animal kingdom, and to lay a foundation for the more special subjects that are to follow. Two periods, first and second terms. Elective for Sophomores in Chemistry. Mr. Smith.

321. **Economic Entomology.**—Elements of insect structure and classification. Injurious insects and remedies: a, of orchards; b, of small fruits; c, of truck and garden crops; d, of cotton, corn, tobacco, grains, and grasses; e, of forest, shade and ornamental plants; f, of barn, mill, and household. Lectures and demonstrations. Three periods, third term. Elective for Sophomores in Chemistry. Mr. Smith.

PHYSIOLOGY.

325. **Animal Physiology.**—The first term's work will deal largely with a study of the structure of the body, the second and third terms' work with a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory exercises illustrating the principles of physiology. Three periods. Required of Freshmen in Chemistry. Professor Roberts and Mr. Hornaday.

GEOLOGY AND SOILS.

330. **Geology.**—Scott's *Introduction to Geology*. In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of these forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Four periods, first term. Required of Juniors in Chemistry. Mr. Hill.

331. **Soils.**—Lectures and recitations upon the origin of soils through the disintegration of rocks, their physical properties, texture, structure, color, weight and the improvement of these properties. Two periods, second and third terms. Required of Juniors in Chemistry. Mr. Hill.

MATHEMATICS.

While the subject of mathematics is presented in such a manner that the student obtains a thorough working knowledge of those principles which he needs in his Engineering Courses, yet it is not the purpose to subordinate the general theory of Mathematics to the practical side. The work consists of recitations, written exercises and lectures, with written tests each month.

340. **Algebra.**—Wells's *New Higher Algebra*. Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite: For first term, entrance requirements; for second term, the work of the first term. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

341. **Plane Geometry.**—Wentworth's *Plane and Solid Geometry*. A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Mr. Richardson, Mr. Harrelson and Mr. Stevens.

342. **Solid Geometry.**—A thorough course in Solid Geometry, with more than two hundred original exercises. Also, the application of Plane Geometry to conic sections. Required of Sophomores. Five periods, first term. Prerequisite, first term Freshman mathematics and 341. Professor Yates, Mr. Richardson, and Mr. Harrelson.

343. **Advanced Algebra.**—Wells's *New Higher Algebra*. The general theory of equations, the solution of higher equations, determinants, etc. Required of Sophomores. Three periods, second term. Prerequisite, 340 and 341. Professor Yates and Mr. Richardson.

344. **Trigonometry.**—Wells's *Plane and Spherical Trigonometry*. Plane Trigonometry. Definitions of the trigonometric functions; derivation of formulae, with their application. Solution of plane triangles, etc. Spherical Trigonometry. Solution of spherical triangles. This course includes the solution of many practical problems. Required of Sophomores. Two periods, second term; five periods, third term. Prerequisite, 340 and 341. Professor Yates and Mr. Richardson.

345. **Analytical Geometry.**—Nichols's *Analytical Geometry*. Loci of equations, straight line, circle, parabola, ellipse, hyperbola, a discussion of the general equation of the second degree, higher plane curves and geometry of three dimensions. Five periods, first term; three periods, second term. Required of Juniors in Engineering. Prerequisite, 342, 343 and 344. Professor Yates.

346. **Differential and Integral Calculus.**—Osborne's *Elements of Calculus*. A thorough treatment of the fundamental principles and derivation of formulae; applications to various problems, such as

expansion into series, evaluation of indeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc. Two periods, second term; five periods, third term. Required of Juniors. Two periods, first term. Required of Seniors. Prerequisite: For differential calculus, 342, 343 and 344, for integral calculus, differential calculus and 345. Professor Yates.

ENGLISH.

360. **Composition and Rhetoric.**—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor Harrison, Doctor Summey, Mr. Faulkner.

361. **American Literature.**—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor Harrison, Doctor Summey, Mr. Faulkner.

362. **Advanced Rhetoric.**—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor Harrison.

363. **Public Speaking.**—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor Harrison.

364. **English Literature.**—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor Harrison.

MODERN LANGUAGES.

The aim of the department is to enable one (a) to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and (b) to read scientific works and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humorous anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German for students of Chemistry and Mechanical Engineering, and Spanish for Civil and Electrical Engineering students.

370. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German*; *Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Elective for Juniors or Seniors. **Doctor Rudy.**

371. **French.**—Worman's *Modern Language*, first and second French books; Worman's *Grammaire Francaise*; selected short stories of French literature, and scientific readers. This subject may be taken by special petition to the Faculty. Doctor Rudy.

372. **Spanish.**—Worman's *Modern Languages*, first and second Spanish books; *Introduccion a la Lengua Castellana*. Marion y Des Garrenes; a Spanish Grammar to be selected; Fontaine's *Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas*. Elective for Juniors and Seniors in Civil and Electrical Engineering. Doctor Rudy.

ECONOMICS.

380. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Juniors. One period. Doctor Summey.

MILITARY SCIENCE.

390. **Drill.**—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two hours, third term. Required of all classes except Seniors. Seniors are either to take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

391. **Tactics.**—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, and Guard Duty. One period. Required of Sophomores. Lieutenant Young.

Textile Courses.

VIII. The Four-year Course in Textile Industry.

THE TEXTILE DEPARTMENT.

The Textile Department, which is a typical cotton mill, is fully equipped with all the necessary machinery for instruction in manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of the cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, cotton fabrics of different kinds from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department two courses of instruction are offered, the four-year course leading to the degree of Bachelor of Engineering, and the two-year course in carding and spinning, weaving, designing, and dyeing.

Four-year Course.

The four-year course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

Two-year Course.

The two-year course is offered to students who can not spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus. It is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Throughout, its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and class room for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton-mill machinery manufactured by American builders. The following is a list of the machines and their makers:

Carding Department.

Opening Room.—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

Carding Room.—One 40-inch revolving flat card, 112 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head, with coiler, metallic rolls, and improved evener motion, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One sliver lap machine, one ribbon lap machine and one six-head combing machine, made by Whitin Machine Works, Whitinsville, Mass. One 36-spindle slubber for 11x5 1-2-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9x4 1-2-inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7x3 1-2-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press

Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6x2 1-2-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Department.

Spinning Room.—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling, made by Saco and Pettee Machine Shops, Biddeford, Me. One 48-spindle spinning frame, combination build, made by D. A. Tompkins Co., Charlotte, N. C. One 240-spindle mule spinning frame, 1 1-2-inch gauge, made by Asa Lees & Co., Oldham, England.

Spooling, Twisting, and Winding.—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 40-spindle spooler, made by D. A. Tompkins Co., Charlotte, N. C. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 100-spindle wet twister, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 40-spindle reel, made by Draper Company, Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One section warper, 400 ends, made by Draper Company, Hopedale, Mass.

Weaving Department.

Warp Preparation.—One 12-spindle bobbin-winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One beaming machine, made by Lewiston Machine Co., Lewiston, Me. One beaming machine, complete, made by the T. C. Entwistle Co., Lowell, Mass.

Looms.—One Northrop-Draper print-cloth loom; two Northrop-Draper sateen looms; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Three high-speed

sheeting looms, made by Killburn, Lincoln & Co., Fall River, Mass. One sheeting loom, one 12-harness dobby loom and one 24-harness dobby loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2x1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One 4-harness twill loom, made by Lowell Machine Shop, Lowell, Mass. One Crompton 4x1 box gingham loom, one Crompton 4x1 box loom with 20-harness dobby, one Crompton 2 and 1-box loom with 400-hook Jacquard machine, one Knowles Gem loom with 4x4 box, one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass. One single-box loom with 200-hook table-napkin Jacquard machine. One 4x1 box table-cover loom with 624-hook Halton Jacquard machine, made by Crompton-Thayer Loom Co., Worcester, Mass. One Whitin loom with 624-hook Halton Jacquard for Crocket Quilts. Ten 4x4 box hand looms with 30-harness witch-heads for narrow fabrics. Two 4x4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thos. Halton's Sons, Philadelphia, Pa.

Knitting.—One Full Automatic Knitting Machine, made by Geo. D. Mayo Machine Company, Laconia, N. H. One Combination Ribber and Footer, one Ribber made by Scott & Williams, Philadelphia. One "Banner" Knitting Machine, made by Hemphill Manufacturing Co., Pawtucket, R. I. One Ribber, made by Wildman Manufacturing Co., Norristown, Pa. One Looper, made by Beattie Manufacturing Co., Cohoes, N. Y. One Looper, made by Grosser Machine Company, New York.

Dyeing Department.

The Dyeing Department is located in the basement of the Textile Building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office, and a room seventy by fifty feet which is fitted up to give instruction in practical dye-house work.

The dyeing laboratory is well fitted up with appropriate work tables, and all the necessary apparatus for doing experimental dyeing, dye-testing, color-matching, the testing of dyed samples to light, acids, alkalis, etc., as well as carrying out the various chemical operations necessary in dyeing. The dye-house is equipped with the proper dyeing machinery needed in the dyeing of large quantities of material, and the giving of practical instruction in boiling out, bleaching, dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dyestuffs and color cards. Through the kindness of the various dyestuff dealers and manufacturers the department is regularly supplied with all new dyestuffs and color cards as soon as they are put on the market, thus affording the student ample opportunity to become familiar with the latest methods and products for commercial work. The department is indebted to the following firms for donations of dyestuffs and chemicals:

H. A. Metz & Co., New York.
Badische Company, New York.
Farbenfabriken of Elberfeld Co., New York
Danker & Marston, Boston, Mass.
Berlin Aniline Works, New York.
Cassella & Co., New York.

Dye-house Equipment.—Seven dye vats; one Roesler & Hasslacher bleaching vat; one Jefferson high-pressure boiling-out kier; one hand-dyeing jigger; one 15-gallon steam jacketed copper kettle; one steam aging box; one Fairmount warp dyeing machine; one Textile Finishing Co.'s warp dyeing machine; one Textile Finishing Co.'s warp sizing machine; one 5-can upright dryer; one small Lightfoot raw stock dyeing machine; one Tolhurst Machine Works hydro-extractor; one Schaum & Uhlinger hydro-extractor; one Mather & Platt cloth printing machine; one Fries warp dyeing machine; one dry closet.

A full equipment of analytical balances and other necessary apparatus for experiment work.

Power and Power Transmission.

One 30-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving weaving machinery.

One 10-horse-power 3-phase 550-volt motor, made by Fairbanks-Morse Co., for driving dyeing machinery.

Pulleys, shaftings, hangers, and couplings, made by Jones & Laughlin Co., Ltd., Pittsburg, Pa.

Belting, made by Fayerweather & Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

TEXTILE COURSES.

VIII. The Four-year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400†.....	1	1	1
Weaving, 401.....	2	2	2
Mechanical Drawing, 430.....	2	2	2
Wood-work, 431.....	2	2	2
Forge-work, 432.....	2	2	..
Foundry, 433.....	..	..	2
Algebra, 441.....	5	3	..
Geometry, 442.....	..	2	5
Elementary Physics, 440.....	2	2	2
Composition and Rhetoric, 450.....	3	3	3
Military Drill, 480.....	3	3	2

Sophomore Year.

Carding and Spinning, 400.....	2	2	2
Weaving, 401.....	2	2	2
Textile Designing, 402.....	2	1	1
Cloth Analysis, 403.....	..	1	1
Inorganic Chemistry, 420.....	3	3	3
Inorganic Chemistry (laboratory), 421.....	2	2	2
Geometry, 443.....	5	..	..
Advanced Algebra, 444.....	..	3	..
Trigonometry, 445.....	..	2	5
American Literature, 451.....	3	3	3
Military Drill, 480.....	3	3	3
Military Tactics, 481.....	1	1	1

*The lecture and recitation periods are one hour; the laboratory, shop and other practice periods, two hours.

†The figures immediately following the names of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400.....	4	4	4
Weaving, 401.....	3	3	3
Textile Designing, 402.....	2	1	1
Cloth Analysis, 403.....	--	1	1
Dyeing, 410.....	2	2	2
Dyeing (laboratory), 411.....	2	2	2
Steam Engines and Boilers, 435.....	2	2	2
Advanced Rhetoric, 452.....	2	2	--
Public Speaking, 453.....	--	--	2
Economics, 470.....	1	1	1
Military Drill, 480.....	3	3	2
German, 400.....	3	3	3

Senior Year.

Carding and Spinning, 400.....	4	4	4
Weaving, 401.....	4	4	4
Textile Designing, 402.....	2	2	2
Cloth Analysis, 403.....	1	1	1
Dyeing, 410.....	1	1	1
Dyeing (laboratory), 411.....	2	2	2
Machine-shop work, 434.....	2	2	2
Elect two subjects from the following:			
English Literature, 454.....	3	3	3
Military Drill, 480.....	3	3	2
German, 400.....	3	3	3

DESCRIPTION OF SUBJECTS.

400. Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning; baling and marketing the raw

staple. Cotton at the mill; selecting and mixing. Openers and lap-pers: cards, sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton Spinning*, by Nasmith. Required of Freshmen, Sophomores, Juniors, and Seniors. Assistant Professor Parker.

401. Weaving.—Lectures and practice in warp preparation; operating and fixing looms, cloth-finishing machinery. Warp preparation: pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing: steam cylinder slasher; hot-air slasher; construction of slasher; creel; cylinder; immersion roll; squeeze rolls; drying fan; separator rolls; winding yarn on beam; cone drive; slow motion; measuring and cut marking motion. Sizing: construction of size kettle; size mixing and boiling; division of sizing; ingredients; value of ingredients; sizing receipts for light, medium, and heavy sizing. Loom-mounting: reeds and harnesses; drawing in, and putting warps in loom. Looms: hand looms and power looms; construction of plain loom; principal movements in weaving; let-off and take-up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms, construction and advantages. Drop box looms: chain building for box looms; changing boxes to have easy-running looms; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building, arrangement of colors in boxes to give easy-running loom. Ball and shoe-pick motion. Construction and fixing of head motion. Dobby, single and double index; construction and fixing of doobby; extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard: single and double lift; construction and tie-up. Weave-room calculations; speed and production calculations; relative speed of looms; counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering, tentering; folding and packing for the market. Equipment necessary for

warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of Freshmen, Sophomores, Juniors, and Seniors in the Four-year Course and of first and second year students in the Short Course. Professor Nelson and Mr. Steed.

402. **Textile Designing.**—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piques. Double plain; figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Required of Sophomores, Juniors, and Seniors. Professor Nelson and Mr. Steed.

403. **Cloth Analysis and Fabric Structure.**—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of Sophomores, Juniors, Seniors. Professor Nelson and Mr. Steed.

DYEING COURSE.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dye stuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with the general studies of English, History, Mathematics, Physics, and General Chemistry, which are required in all the Four-year Courses.

VII. The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400.....	1	1	1
Weaving, 401.....	2	2	2
Mechanical Drawing, 430.....	2	2	2
Wood-work, 431.....	2	2	2
Forge-work, 432.....	2	2	--
Foundry, 433.....	--	--	2
Algebra, 441.....	5	3	--
Geometry, 442.....	--	2	5
Elementary Physics, 440.....	2	2	2
Composition and Rhetoric, 450.....	3	3	3
Military Drill, 480.....	3	3	2

TEXTILE COURSES.

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Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400.....	2	2	2
Weaving, 401.....	2	2	2
Textile Designing, 402.....	2	1	1
Cloth Analysis, 403.....	..	1	1
Inorganic Chemistry, 420.....	3	3	3
Inorganic Chemistry (laboratory), 421.....	2	2	2
Geometry, 443.....	5	..	..
Advanced Algebra, 444.....	..	3	..
Trigonometry, 445.....	..	2	5
American Literature, 451.....	3	3	3
Military Drill, 480.....	3	3	2
Military Tactics, 481.....	1	1	1

Junior Year.

Dyeing, 410.....	2	2	2
Dyeing (laboratory), 411.....	2	2	2
Organic Chemistry, 422.....	2	2	2
Analytical Chemistry, 424, 425.....	5	7	7
Advanced Rhetoric, 452.....	2	2	..
Public Speaking, 453.....	..	..	2
Economic, 470.....	1	1	1
Military Drill, 480.....	3	3	2
German, 460.....	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Dyeing, 410.....	3	3	3
Dyeing, (laboratory), 411.....	2	2	2
Organic Chemistry, 423.....	2	2	2
Analytical Chemistry, 425.....	6	6	6
Organic Chemistry (laboratory), 426.....	3	3	3
Elect two subjects from the following:			
English Literature, 454.....	3	3	3
Military Drill, 459.....	3	3	2
German, 460.....	3	3	3

DESCRIPTION OF SUBJECTS.

410. **Dyeing.**—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers; the action of acids, alkalis, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing, such as the boiling out and bleaching of cotton, and the chemical reactions involving each step. The adaptability of water for bleaching and dyeing, followed by the theories of dyeing. Substantive dyestuffs and their application to cotton. After-treatment of direct dyestuffs, including diazotising and developing and the topping with basic dyestuffs. The application to cotton of basic dyestuffs, acid dyestuffs, mordant dyestuffs, including a study of the various mordants and their fixation with metallic salts. Dyeing with sulphur dyestuffs, indanthrenes, indigo, natural and artificial, aniline black, turkey red, and the insoluble azo colors developed on the fiber. The methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers. The scouring and bleaching of wool. The carbonization and chlorination of wool. The application of basic, acid, chrome, eosine, and direct colors to wool. Dyeing wool with logwood, fustic, and other natural dyewoods. Methods of the making and dyeing of artificial silk. The boiling off, bleaching and

dyeing of natural silk. Study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods. The use of the various kinds of machines used in bleaching and dyeing. The dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions. The science of color-mixing. Color-matching on textiles. The use of the tintometer and colorimeter. Calico printing, including the various methods of preparing the various pastes, thickening agents, mordants and assistants used in printing. Quantitative analysis of mixed yarns, and fabrics composed of cotton, wool, and silk. The testing of dyestuffs for their shade, tinctorial power, and leveling properties. Comparative dye trials to determine money value. Testing for mixtures. The reactions of acids, alkalis and reducing agents on several samples taken from the different classes of dyestuffs.

The course of lectures, as outlined above, will include the consideration of many difficult problems that arise in the dye-house, with especial reference to the dyeing, mercerizing, and finishing of cotton yarns and pieces. Required of Juniors and Seniors in Textile Industry. Mr. Halstead.

411. **Dyeing Laboratory.**—A series of experiments is performed which covers all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dye-house. Special stress is put on the matching of colors and the dyeing of sulphur and indanthrene dyestuffs. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a pattern book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth, and yarn in the dye-house, as well as prints samples on the laboratory printing machine. This work will be supplemented by visits to the mills which do dyeing in the city of Raleigh. Required of Juniors and Seniors in Textile Industry. Mr. Halstead.

CHEMISTRY.*

420. **Inorganic Chemistry.**—Mel'herison & Henderson's *Elementary Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor Withers and Doctor Williams.

*For further information, see course in Chemistry.

421. **Inorganic Chemistry.**—Laboratory work. McPherson & Henderson's *Exercises in Chemistry*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class room. The latter part of the year is devoted to an introductory course in qualitative analysis. Two periods. Required of Sophomores. Mr. Hill.

422. **Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon*. The fundamental principles of organic chemistry and the more important compounds are studied through the aliphatic series. Two periods. Required of Juniors in Dyeing. Professor Withers.

423. **Organic Chemistry.**—A continuation of 422, beginning with the aromatic series. Two periods. Required of Seniors in Dyeing. Professor Withers.

424. **Analytical Chemistry.**—Treadwell's *Qualitative Analysis*. A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Five periods, first term. Required of Juniors in Dyeing. Doctor Williams.

425. **Analytical Chemistry.**—Treadwell's *Quantitative Analysis*, Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Seven periods, second and third terms. Required of Juniors in Dyeing. Six periods. Required of Seniors in Dyeing. Doctor Williams.

426. **Organic Chemistry.**—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry*, translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dyestuffs is prepared and the properties studied. Three periods. Required of Seniors in Dyeing. Doctor Ray.

MECHANICAL ENGINEERING*

430. **Mechanical Drawing.**—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine; elementary principles of descriptive geometry; cylinders, cones, and prisms;

*For full information, see course in Mechanical Engineering.

intersection and development of surfaces; miscellaneous problems. Two periods. Required of Freshmen. Mr. Vaughan.

431. **Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood-turning. Two periods. Required of Freshmen. Mr. Clay.

432. **Forge-work.**—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods, first and second terms. Required of Freshmen. Mr. Wheeler.

433. **Foundry.**—Recitations and exercises in foundry work, including moulding, core making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Required of Freshmen, third term. Mr. Wheeler.

434. **Machine-shop Work.**—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Textile Seniors. Mr. Park.

435. **Steam Engines and Boilers.**—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and a study of inertia and tangential pressures; also a study of the steam-engine indicator, of indicator rigging, and of steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction noted. The number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and methods of preventing foaming, incrustation and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed-water heaters; mechanical stokers; smoke-consumers and chimneys are studied in detail. Two periods. Required of Juniors in Textile Industry. Professor Satterfield.

PHYSICS*

440. **Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Mr. Latané.

*For full information, see course in Electrical Engineering.

MATHEMATICS.

441. **Algebra.**—Wells's *New Higher Algebra*. Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutation, combinations and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite: For first term, entrance requirements; for second term, the work of the first term. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

442. **Plane Geometry.**—Wentworth's *Plane and Solid Geometry*. A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

443. **Solid Geometry.**—A thorough course in Solid Geometry, with more than two hundred original exercises. Also, the application of Plane Geometry to conic sections. Required of Sophomores. Five periods, first term. Prerequisite, first term Freshman mathematics and 442. Professor Yates, Mr. Richardson, and Mr. Harrelson.

444. **Advanced Algebra.**—Wells's *New Higher Algebra*. The general theory of equations, the solution of higher equations, determinants, etc. Required of Sophomores. Three periods, second term. Prerequisite: 441 and 442. Professor Yates and Mr. Richardson.

445. **Trigonometry.**—Wells's *Plane and Spherical Trigonometry*. Plane Trigonometry. Definitions of the Trigonometric functions; derivation of formulæ, with their application. Solution of plane triangles, etc. Spherical Trigonometry. Solution of Spherical triangles. This course includes the solution of many practical problems. Required of Sophomores. Two periods, second term; five periods, third term. Prerequisite, 441 and 442. Professor Yates and Mr. Richardson.

ENGLISH.

450. **Composition and Rhetoric.**—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Professor Harrison, Doctor Summey, and Mr. Faulkner.

451. **American Literature.**—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor Harrison, Doctor Summey, and Mr. Faulkner.

452. **Advanced Rhetoric.**—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor Harrison.

453. **Public Speaking.**—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, and the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor Harrison.

454. **English Literature.**—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor Harrison.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humorous anecdotes, interesting short stories and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English. The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lessons are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may elect German during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German and French.

460. **German**.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German*; *Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Elective for Juniors and Seniors. Doctor Rudy.

461. **French**.—Worman's *Modern Languages*, first and second French books; Worrain's *Grammaire Française*; selected short stories of French literature, and scientific readers. Doctor Rudy.

This subject may be taken by special petition to the Faculty.

ECONOMICS.

This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. Doctor Summey.

MILITARY SCIENCE.

480. **Drill**.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; and two periods, third term. Required of all classes except Seniors. Seniors are to either take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

481. **Tactics**.—Theoretical instruction in Infantry Drill. Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Sophomores. Lieutenant Young.

Short Courses.

In order to meet the necessities of young men who wish to prepare themselves for the industrial arts rather than for industrial science and art, the following short courses are offered. None of these courses, of course, lead to graduation, and they are not, in any sense, intended as preparatory courses to the regular four-year classes. They are designed simply to help young men better fit themselves, by a year or two of practical work under competent and interested supervision, for their chosen sphere of industrial activity.

These students whose inclinations, limitations, or necessities lead them to take these shorter courses will be carefully drilled in the handicraft and mechanism of their art and in the application of elementary science to the farm, garden, dairy and orchard.

ONE-YEAR COURSE IN AGRICULTURE.

Agriculture (Elementary).—The course in Elementary Agriculture will consist of lectures and recitations from text-book on soils, crops, fertilizers, farm equipment, and farm machinery. One period per week will be devoted to practical exercises, taking up the analysis and classification of soils; identification and habit of growth of farm crops; drawing plans of farms and farm buildings. The work will be made practical and will be suited to the needs of the student. Five periods, first, second and third terms. Professor Newman.

Animal Husbandry.—Study of breeds, live-stock judging and their management, animal breeding and stock feeding. Lectures will begin on all the above subjects, which will be supplemented with practical work as far as possible. Three periods, first, second and third terms. Professor Michels.

Dairying.—This course is designed to give a good working knowledge of farm dairy operations.

The student while in the dairy laboratory uses the leading makes of separators, churns, butter-workers, Babcock testers, etc., until he is familiar with their construction and until he becomes proficient in operating them.

The laboratory course is supplemented with lectures of a practical nature, covering the most important features of dairying. It is a course of study which should meet the requirements of the farmer and dairyman who handle dairy products, whether for home use or for commercial purposes. Five periods, third term. Professor Michels.

Veterinary Science.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live-stock to prevent

diseases, and the treatment of some of the most common diseases. Five periods, first term. Doctor Roberts.

Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, second and third terms. Mr. Jeffrey.

Fruit Culture.—This course includes a discussion of the fruit sections of the State, and the possibilities of fruit-growing in each section. This is followed by lectures on the culture of the leading fruits. These deal with the kind of soil; preparation of soils for fruits; varieties; origination of new varieties; planting; cultivation; fertilizing; pruning; harvesting, and marketing. Emphasis is laid on the home fruit garden. Three periods, first and second terms. Associate Professor Reimer.

Vegetable Gardening.—This course discusses the great trucking industry in the State, and the possibilities of the industry. This is followed by lectures on the best methods of growing the leading vegetables. Three periods, third term.

Laboratory Work.—This includes practices in plant propagation, as budding, grafting, top-grafting, cuttings; pruning of fruit and ornamental trees; fruit-bud studies; planting trees, transplanting, and construction of cold-frames and hot-beds. Associate Professor Reimer.

Diseases of Plants.—Practical instruction will be given concerning the chief fungous or bacterial diseases attacking farm crops, fruit trees, etc.; how to recognize them and how to prevent them, including instruction concerning the preparation of spraying mixtures. Three periods, second term. Professor Stevens.

Plant Life.—The structure of the leading types of plants is studied and the general principles of nutrition, growth, reproduction, are discussed in an elementary and practical way. Four periods, first term. Professor Stevens.

Entomology.—This is a short course in which the more noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Two periods, second term, and three periods third term. Mr. Smith.

Military Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms. Two hours, third term. Commandant and Officers of the Battalion.

One Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture.....	5	5	5
Animal Husbandry.....	3	3	3
Dairying.....	..	..	5
Veterinary Science.....	5	..	..
Poultry Husbandry .....	..	3	3
Fruit Culture.....	3	3	..
Vegetable Gardening.....	..	..	3
Plant Life.....	..	4	..
Diseases of Plants.....	3	..	..
Entomology.....	..	2	3
Forge-work.....	2	..	..
Wood-work.....	..	2	2
Drill.....	3	3	2

WINTER SHORT COURSES IN AGRICULTURE.

One-Week Corn Course.

Begins January 4 and Ends January 10, 1911. Professor Newman, Professor Stevens, and Mr. Smith.

This course is offered in the place of the **One-week Cotton Course**, which has been given for the past two years. The work is to be strictly practical and will embrace the preparation of the soil; fertilizers for corn; mixing of fertilizers and home manures; manner and time of applying; varieties; planting; cultivation; harvesting, storing and marketing; judging and grading; seed selection and breeding; botanical characters; insect pests; fungus and bacterial diseases and their remedies.

The main object of this course will be to aid those who wish to grow more corn and better corn on less land at lower cost. Emphasis will be given soil preparation, fertilization, rotation, and the improvement of the seed by breeding and selection.

Those taking this course will have no expenses other than board and lodging. Board may be had at the Mess Hall at \$2.50 per week. No examinations are required.

SEVEN WEEKS' COURSE IN GENERAL AGRICULTURE.

Begins January 12, and Ends March 2, 1911.

The College is frequently called upon to supply young men to take charge of farms of wealthy owners, to operate dairies, fruit farms, truck and market gardens. The National Department of Agriculture, the State Experiment Stations, the Agricultural and Mechanical Colleges and the hundreds of commercial industries requiring scientifically trained men are eagerly seeking young men of such force and training as are given in the Agricultural and Mechanical Colleges. The demand is greater than the supply. The teaching of agriculture in the public schools and the organization of agricultural high schools, with agricultural instruction as an important feature, have met with a serious check for no other reason than that there are not enough trained teachers to supply the demand. This course is meant to help those (1) who want to cultivate their own farms with more knowledge and who want to keep informed as to recent improvements and recent farm literature; who (2) want to improve their teaching of agricultural subjects; who (3) want to specialize for a few weeks in some particular phase of farm industry.

EQUIPMENT.

The new Agricultural Building is devoted entirely to agriculture, and contains laboratories and class rooms built and furnished especially for the purposes for which they are used. Equipment is constantly being added and facilities for instruction become better every year. The professors in each department of the School of Agriculture are specialists in their chosen work, and are devoting their lives to study and to methods of improving rural life.

EXPENSES.

No tuition is charged for the seven weeks' course, and board may be had in the mess hall for \$2.50 per week. The College will furnish lodging in the dormitories free if it has room. Students who expect to room in the dormitories should provide themselves with bed-cover, sheets, pillow-cases and towels.

While engaged in work in the dairy laboratory, students are required to wear white suits. These suits may be had at \$1 apiece. The total expense of the course need not exceed \$25 over and above railroad fare.

ADMISSION.

No examinations are required for entrance to the seven weeks' course. Any person over sixteen years of age may enter and enjoy the full privileges of the instruction. The greater part of the instruction is given in the form of lectures and laboratory work, and the full time of the student is provided for. Some of the evenings will be taken up by lectures on important subjects and others by student meetings for their mutual improvement.

The regular work of the seven weeks' course begins January 12th, and all should arrive the day before, in order that their board and room may be arranged for, so that each man may be ready for the work when it begins.

Should further information be desired, either the President or the Professor of Agriculture will take pleasure in furnishing it.

Outline of Courses.

GENERAL AGRICULTURE.

28 periods.

Professor Newman and Mr. Lunn.

Soils.—Study of origin, formation and classes of the soils of the State; their physical properties, natural and induced fertility; the tillage treatment of the different classes of soils and special tillage practice for the leading crops of the State; principles and practices of farm drainage.

Farm Equipment and Farm Management.—Selection and laying out of farm; building of farm fences, roads, houses; tools and machinery and their economic use; rotation; farming as a business.

Fertilizers.—Commercial fertilizers, farm manures, green manures; composition of fertilizers and the time and method of application; special composition for special crops; mixing of commercial fertilizers.

Farm Crops.—Selection of crops to be grown and their economic relationship in farm operations; preparation and cultivation; methods of planting; seed selection and plant breeding; studies of the staple crops; corn and cotton judging, special crops to be grown in association with the live-stock industries.

AGRICULTURAL BOTANY.

14 periods.

Professor Stevens.

This course will consist of the practical study of the diseases of plants, how to recognize them and how to prevent them; bacteria, their nature, their effects for good or harm in the farm home, and how to control them, their function in the soil as nitrogen gatherers; the cross-breeding of plants; how to accomplish it, its object, and the benefits to be derived therefrom.

FEEDS AND FEEDING AND STOCK RAISING.

21 periods.

Professor Michels.

Lectures on this subject will treat of the composition and digestibility of home-grown and commercial feeds; methods of calculating rations for different classes of farm animals, the suggestions as to the best and the most economical feeds for the different classes of live stock.

An outline will also be given of the characteristics, care, and management of the most prominent breeds of live stock.

BREEDS OF LIVE STOCK AND STOCK JUDGING. 21 periods.

Professor Michels and Mr. Arey.

Lectures on this subject will treat of the characteristics of the different breeds of dairy cattle.

The practical part of the work will be given in the judging room, where the student is required to score the animals and pass upon their respective merits.

DAIRY FARMING. Lectures, 14 periods. Laboratory, 21 periods.

Professor Michels.

Lectures are given on the nature, composition, and secretion of milk, its uses and value as a food; the production and care of sanitary milk, management of dairy herd, details in the production of high-grade cream and butter; the marketing of dairy products; and their value when sold as milk, cream, butter and cheese.

The dairy laboratory course, given in connection with the farm dairy lecture course, consists of twenty-four periods of two hours each and comprises every detail of dairy work, butter-making, retailing milk, making cottage cheese and skim milk, buttermilk, pasteurizing milk and cream, making and using starters, and making tests of all sorts of dairy products and standardizing milk and cream.

DAIRY EQUIPMENT.

The dairy laboratories occupy about four thousand feet of floor space on the ground floor of the new Agricultural Building, besides the locker rooms, toilet and bath-rooms on the same floor, and the dairy lecture room on the first floor, used by dairy students.

The main dairy laboratory is 36 by 57 feet and is fitted throughout with modern equipment, suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for farm dairying consists in the main of De Laval, Sharples, Empire, National, and Simplex separators; swing and barrel hand-churns of different sizes; cream vats; hand and power butter-workers; aerators and coolers; milk testers, and other articles useful in doing farm dairy work.

Recently a new dairy barn has been erected which is a model in dairy-barn construction, embodying every feature that goes to make a barn convenient and sanitary.

DISEASES OF LIVE STOCK.

21 periods.

Professor G. A. Roberts and Mr. Hornaday.

To maintain the usefulness of animals and to advance the live-stock interests, all who handle live stock should have some knowledge of the causes of disease and the nursing of sick animals.

A general conception of the structures of the body and their uses being essential to competent judging and feeding of animals, as well as to a knowledge of disease, a short time will be given to this subject. The structures will be divided into groups, so that in a limited time one may gain a fair idea of the composition of the body. Comparisons will be made of the structures of the various farm animals with those of man. Mounted skeletons of the horse, cow and man, in the lecture room, enable the student readily to become familiar with this part of the body.

The lectures will include the care and management of live-stock to prevent disease; the nature, causes and treatment of the more common diseases and injuries.

One period each week will be devoted to a clinic where animals will be treated medicinally and operated upon. During the course there will be a practical demonstration of the tuberculin test upon the dairy herd.

HORTICULTURE.

21 periods.

Professor Reimer.

The course includes both lectures and laboratory work, and is made especially applicable to North Carolina conditions.

Fruit Culture.—Includes a discussion of the fruit sections of the State, and the possibilities of fruit-growing in each section. This is followed by lectures on the culture of our leading fruits, which deal with the kind of soil, preparation of soils for fruits, varieties, planting, cultivation, fertilization, pruning, harvesting, and marketing. Special emphasis is laid on the home fruit garden.

Vegetable Gardening.—Lectures on the best methods of growing the leading vegetables for market and home use.

Laboratory Work—Includes practice in plant propagation, such as budding, grafting, top-grafting, pruning of fruit and ornamental trees; fruit bud studies; planting and transplanting of trees and vegetables; construction of cold frames and hot beds.

Equipment.—The Horticultural Department is well equipped for this work. The College has a very complete fruit plantation; this includes all the standard varieties of the following fruits: apple, pear, peach, plum, cherry, quince, persimmon, pecan, fig, muscadine grapes, fox grapes, raspberries, dewberries and strawberries. Also a nursery, where various methods of budding and grafting are carried on.

The department also operates a very extensive vegetable garden, supplying the College dining-room with fresh vegetables throughout the entire college year.

POULTRY RAISING.

21 periods.

Mr. Jeffrey.

The subject of poultry raising will be considered from the farm standpoint. Instruction will include lectures and work with the fowls. Students will be told what to do and how to do it, and will also be required to do the work.

Instruction will be given in poultry-house construction, the breeds of fowls best suited to the farm, their breeding, feeding and management. Egg production and the production of market poultry will receive special attention. The former will be considered both from the standpoint of breeding and feeding, and the results obtained at our own and other Experiment Stations discussed. Market poultry will include the production of broiler or frying-size chickens, roasters and capons. Incubation and brooding, both natural and artificial, will also be studied.

The Poultry Department is equipped with twenty-five breeding pens of several different types; a good incubator cellar and several different makes of incubators; a brooder-house and both indoor and outdoor brooders of both the heated and fireless types; a feed room with steam engine and both grist and bone mills. Good specimens of ten different varieties of poultry best suited to farm requirements are kept so that students may become familiar with the requirements of the different breeds.

Students wanting to specialize in poultry will be given extra work in this department, taking charge of a pen of fowls, operating an incubator, raising chicks in a brooder, and keeping all the records necessary in poultry work.

ENTOMOLOGY.

21 periods.

Professor Smith.

The course in Entomology is intended to teach students the general facts concerning the common injurious and beneficial insects, with which every one should be familiar.

Insect injury to farm crops, fruit and vegetables amounts annually to thousands and even millions of dollars. A conservative estimate has shown that fully 10 per cent of the values of all agricultural products is destroyed each year, and yet there are many farmers who know very little of the habits and life-history of the most common insects. We should know how insects pass the winter, when they are most easily destroyed or prevented, and the best methods of combating them.

The course will consist of a number of lectures, illustrated by specimens, photographs and charts, to familiarize the student with the principal insects affecting general farm crops and fruit trees. Field observations will be made to study insects that may be found during January and February. The preparation and application of various spray mixtures for controlling insects, including the use of spraying apparatus, will be made a special feature of the work.

For further information, apply to

C. L. NEWMAN,
Professor of Agriculture,
West Raleigh, N. C.

THE TWO-YEAR COURSE IN MECHANIC ARTS.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing.....	3	3	3
Wood-work.....	3	3	3
Forge-work.....	2	2	--
Foundry.....	--	--	2
Mechanical Technology.....	1	1	1
Physics.....	2	2	2
Arithmetic.....	5	--	--
Algebra.....	--	5	5
Preparatory English.....	3	3	3
Military Drill.....	3	3	2

Second Year.

Machine Drawing.....	3	3	3
Machine-shop work.....	3	3	3
Power Machinery.....	3	3	3
Algebra.....	5	2	--
Geometry.....	--	3	5
English.....	3	3	3
Drill.....	3	3	3
Elective Work:			
Machine Shop or Drawing.....	2	2	2
Pattern Work.....	--	2	2
Foundry.....	2	--	--

SUBJECTS OF INSTRUCTION.

Mechanical Drawing.—Instruction in care and use of instruments; lettering, geometrical drawing; projection drawing; isometric and cabinet projections; drawings from working sketches of machine details; tracing; blueprinting; elements of Descriptive Geometry; cylinders;

cones; prisms; intersections and developments; miscellaneous problems. Two periods. Required of first year short course. Mr. Selby.

Note.—Each student will be required to furnish at his own expense, the following outfit. To insure uniformity in grade of instruments and other supplies the department keeps for sale, at practically cost, the articles named below. These may be purchased elsewhere, but must be approved by the department. Estimated cost of outfit, \$10.00:

- Drawing board 21x30 inches.
- T-square 30 inches.
- 60 degrees triangle 9 inches, transparent.
- 45 degrees triangle 7 inches, transparent.
- 12 degrees triangle, Architect's scale.

Irregular Curve.

- 4 H. pencil. H. or F. pencil.
- Erasers for ink and pencil.
- Penholder with fine points.
- Pencil sharpener.

Instrument set consisting of:

- 6-inch compass with pen, pencil and leng.
- 5½-inch dividers with hair-spring adjustment.
- 3-inch bow dividers, 3-inch bow pencil, 3-inch bow pen.
- 5½-inch ruling pen, 4½-inch ruling pen.

Wood-work.—The use and care of the ordinary wood-working bench tools. Exercises in laying out and working from drawings, sawing, planing and making of joints. The use and care of wood-working machines such as saws, planers, sharpers, dovetailers, tenoner, etc. Exercises in wood turning. Work on repairs about the college. Two periods. Required of first year Short Course. Mr. Clay.

Forge-work.—Treatment of iron and steel, the uses of the fuller, swage, punch and set hammer; drawing and upsetting; butt, scarf and jump welding; making of forge and machine shop tools, with tempering of tool steel; exercises on power hammer: Special work on equipment and repairs about the College. Required of First Year Short Course. Two periods, first and second terms. Mr. Wheeler.

Foundry.—Recitations and exercises in foundry work, including working condition of the sand, use and care of tools, moulding, core-making management of cupola and crucible furnaces in iron and brass melts. Required of first year short course. Elective for second year Short Course. Two periods, third term. Mr. Park and Mr. Wheeler.

Mechanical Technology.—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Arrangement, sizes, and care of belting and shafting; elementary power problems, steel-making, etc. One period. Required of first year Short Course. Professor Satterfield.

SUBJECTS OF INSTRUCTION.

Second Year.

Machine Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Required of second year short course students. Two periods. Assistant Professor Ellis.

Machine-shop Work.—Bench and machine work. Exercises in shaping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper-work. Required of second year Short Course students. Two periods. Mr. Park.

Power Machinery.—Descriptive study of the machinery of steam power plants, engines, boilers, condensers, pumps, steam turbines, piping, care and management, study of gas and oil engines. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Required of second year Short Course students. Three periods. Professor Satterfield.

Pattern-making.—A study of pattern-making in its relation to moulding; the practical construction of patterns to prevent warping and twisting, making of special patterns, cores and core-boxes, introducing draft, shrinkage, finish and the appliances and usages of modern pattern work. Prerequisite, Wood-work. Flective for second year Short Course students. Two periods, second and third terms. Mr. Clay and Mr. Morris.

PHYSICS.

An elementary, practical course in physics designed to meet the needs of artisans. Properties of matter; units and measures; mechanics of materials; simple machines; heat. Two periods. Required of first year men in Mechanic Arts. Mr. Latané.

MATHEMATICS.

Arithmetic.—Milne's *Standard Arithmetic*. A thorough consideration of the fundamental methods and operations of Arithmetic, beginning with decimal fractions and completing the subject. Five periods, first term. Mr. Harrelson and Mr. Stephens.

Algebra.—Wells's *New Higher Algebra*. A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, with special attention to factoring, fractions, simple equations, simultaneous equations in two or more unknowns, and problem solving. Five periods, second and third terms. Professor Yates, Mr. Harrelson, and Mr. Stephens.

Second Year.

Algebra.—Wells's *New Higher Algebra*. Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; two periods, second term. Prerequisite: For first term, entrance; for second term, the work of the first term. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

Plane Geometry.—Wentworth's *Plane and Solid Geometry*. A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Prerequisite: Entrance requirements. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

TWO-YEAR COURSE TEXTILE INDUSTRY.

The two-year course is offered to students who can not spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving instruction in textile work.

VIIIa. The Two-year Course in Textile Industry.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning	2	2	2
Weaving	3	3	3
Textile Designing.....	2	1	1
Cloth Analysis.....	--	1	1
Mechanical Drawing	2	2	2
Forge-work.....	2	2	--
Foundry.....	--	--	2
Arithmetic.....	5	--	--
Algebra.....	--	5	5
English.....	3	3	3
Military Drill.....	3	3	2

Second Year.

Carding and Spinning.....	5	5	5
Warp Preparation.....	--	--	1
Weaving.....	4	4	3
Textile Designing.....	2	1	1
Cloth Analysis.....	--	1	1
Dyeing.....	3	3	3
Machine-shop Work.....	2	2	2
English.....	3	3	3
Military Drill.....	3	3	2

DESCRIPTION OF SUBJECTS.

Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning, baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lap-pers; cards; sliver lap machines; ribbon lap machines; combers; rail-way-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton Spinning*, by Nasmith. Required of first and second year students. Assistant Professor Parker.

Weaving.—Lectures on construction of plain, twill, sateen, ging-ham, pick, and pick looms are given, also construction of dobbies and jacquards.

Lectures begin with the construction of plain loom, first taking up the principal movements in weaving, then the various secondary or auxiliary movements, and the relation and timing of one movement to another. Additional motions and parts required to be added to a plain loom in order to weave twill and sateen cloths. Magazine looms; construction and advantages. Drop box looms; construction of the various motions; arranging colors in boxes; methods of building box chains. Dobby: construction of single and double index; setting, and starting up doobby on loom; fixing doobby. Pick and pick looms: construction of loom; construction of head motion; building box chains to have easy-running loom. Jacquard: single and double lift; construction and tie-up. Weave-room calculations for speed and production; counts of reed and cotton harness. Finishing cotton fabrics. Necessary equipment for warp preparation, weaving, finishing, approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of first and second-year students. Professor Nelson and Mr. Steed.

Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves; plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and

figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp. Cloths ornamented with extra filling. Combination of plain and fancy weaves. Practical application of weaves to fabrics. Advanced designs. Required of first and second year students. Professor Nelson and Mr. Steed.

Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of first and second-year students. Professor Nelson and Mr. Steed.

DRAWING AND SHOP WORK.

Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing: isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Elementary principles of descriptive geometry; cylinders, cones, and prisms; intersection and development of surfaces; miscellaneous problems. Two periods. Required of first-year students. Mr. Selby.

Forge-work.—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods. Required of first-year students.

MATHEMATICS.

Arithmetic.—Milne's *Standard Arithmetic*. A thorough consideration of the fundamental methods and operations of Arithmetic, beginning with decimal fractions and completing the subject. Five periods, first term. Required of first-year students. Mr. Harrelson and Mr. Stephens.

Algebra.—Wells's *New Higher Algebra*. A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, with special attention to factoring, fractions, simple equations, simultaneous equations in two or more unknowns, and problem solving. Five periods, second and third terms. Required of first-year students. Professor Yates, Mr. Harrelson and Mr. Stephens.

Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours for first and second terms; two hours, third term. Required of first and second-year students. Commandant and Officers of the Battalion.

ADDITIONAL SUBJECTS IN THE SECOND YEAR.

Warp Preparation.—Lectures on construction of warp preparation machinery, spooler; section warper, ball warper; size kettle; slasher. Practice in operating machines. Laying out pattern warps for long and short chain beaming. Size mixing and boiling; value of ingredients used in sizing; sizing receipts for light, medium, and heavy sizing. One period, third term. Required of second-year students.

Dyeing.—The object of this course is to give the student a sound practical knowledge of the fundamental principles which underlie the arts of bleaching, dyeing, mercerizing, etc., of cotton yarns and fabrics. The manipulation of the various machines used in bleaching, dyeing and mercerizing is carefully explained. The physical and chemical properties of the material to be dyed receive first consideration, followed by a study of the adaptability of water for bleaching, dyeing, mordanting, etc. The practical application of the dyestuffs themselves is treated in the most thorough and detailed manner, *e. g.*, the substantive dyestuffs dyed direct, diazotised and developed, after-treated with metallic salts, topped with basic dyes, etc., the basic dyestuffs, sulphur dyestuffs, indanthrene dyestuffs, etc. Practice in color-mixing and matching is given. The student in this way acquires a collection of several hundred dyed samples which, when mounted in his pattern book, serve as a valuable reference. The course is supplemented by lectures, which will include the consideration of many difficult problems that arise in the dye-house. Three periods. Required of second-year students. Mr. Halstead.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of second-year students. Mr. Park.

Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of second-year students. Professor Harrison, Doctor Summey, and Mr. Faulkner.

Normal Courses.

I. For Rural Teachers:

- (a) Two-year Course.
- (b) One-year Course.
- (c) A Two-weeks Spring Course.

II. For City Teachers:

- (a) Two-year Course.
- (b) One-year Course.
- (c) A Two-weeks Spring Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education, particularly in agriculture, is being introduced into our public schools, and the College has a constant demand for teachers well trained in these subjects. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The Courses for Rural Teachers are devoted largely to agriculture and nature study; the Courses for City Teachers, to drawing and manual training. Each of these courses also includes a review of other public-school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short course, or May School, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines, but also in the other public-school branches and in one or more sciences, or in higher mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The exercises in the Normal Courses are the same as in the other courses of the College, except in the May School.

The Normal Courses are as follows:

I. Courses for Rural Teachers.

(a) TWO-YEAR COURSE.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture.....	3	3	3
Nature Study { Plants.....	3	3	3
{ Animals.....	3	3	3
English.....	3	3	3
Mathematics.....	5	5	5
Military Drill.....	3	3	2

Second Year.

Farm Equipment.....	4	--	--
Soils.....	--	4	--
Crops.....	--	--	4
Plant Diseases.....	3	--	--
Physica.....	--	3	--
Botany.....	--	--	3
Mathematics.....	4	4	4
English.....	3	3	3
Drawing.....	2	2	2
History.....	2	2	2
Military Drill.....	3	3	2

(b) ONE-YEAR COURSE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Methods of Teaching Agriculture.....	2	2	2
Agriculture (general).....	3	3	3
Horticulture.....	3	3	3
Animal Husbandry.....	3	3	3
Dairying.....	5	--	--
Diseases of Live-stock.....	--	5	--
Botany.....	3	--	--
Poultry.....	--	3	3
Entomology.....	--	--	3
Diseases of Plants.....	--	--	2
Agricultural Literature.....	1	1	1

Elective in any College department, *e. g.*, Agricultural Chemistry, Land Surveying, Physics and Physical Laboratory, Drawing, and others.

II. Courses for City Teachers.

(a) TWO-YEAR COURSE.

First Year.

Drawing.....	2	2	2
Wood-work.....	1	1	1
Forge-work.....	1	1	1
Mechanical Technology.....	1	1	1
Algebra and Geometry.....	5	5	5
English.....	3	3	3
History.....	2	2	2
Drill.....	3	3	2

Elective, 3 periods required: Physics 2, Nature Study (Plants) 3, Nature Study (Animals) 3.

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing.....	2	2	2
Wood-work.....	4	4	4
Forge-work.....	1	1	1
English.....	2	2	2
Architecture and Descriptive Geometry.....	2	2	2
Architectural Drawing.....	2	2	2
Geometry and Trigonometry.....	5	5	5
Military Drill.....	3	3	2

Elective, at least 2 periods required: Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Descriptive Geometry 2, Plant Diseases, Human Physiology 3, Physiological Botany 3.

(b) ONE YEAR COURSE.

Drawing.....	3	4	4
Wood-work.....	4	5	5
Forge-work.....	2	2	2
Architecture.....	2	--	--
Architectural Drawing.....	2	2	2
Algebra and Geometry.....	5	5	5
Military Drill.....	3	3	2

Elective: Physics 2, English (132) 3, English (133 and 135) 2, History 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Plant Diseases 3, Human Physiology 3, Physiological Botany 3, Geometry and Trigonometry 4, Descriptive Geometry 2.

THE MAY SCHOOL FOR TEACHERS.

May 16 to 28, 1910.

Agriculture, Nature Study and Common Branches.—This course is designed to meet the needs of teachers of the public, common and high schools who desire more preparation in Nature Study and Agriculture. Attention is also given to school gardens. The common branches are reviewed. Attendance here meets the legal requirement of attendance at an institute once in each two years.

The laboratories, library, specimens and all other equipment of the College are at the service of students of this course, affording an excellent opportunity for instruction.

The work is so arranged that teachers desiring to devote all of their time to Agriculture and Nature Study can do so, while those teachers wishing to devote part of their time to Agriculture and Nature Study and part to the common branches can pursue this course.

Instruction will be offered in the following subjects, from which election may be made to best meet particular needs:

Elementary Agriculture and Nature Study, Prof. F. L. Stevens.

School Management, Supt. Z. V. Judd.

School Gardens, Supt. F. M. Harper.

Farm Crops, Prof. C. L. Newman.

Farm Animals, Mr. J. A. Arey.

Horticulture, Prof. F. C. Reimer.

Insects, Mr. R. I. Smith.

Poultry, Mr. J. S. Jeffrey.

Arithmetic, English, History, etc., will be taught by the regular instructors of the College.

No fees are charged for this course. Board may be had at \$2.50 a week and lodging at about \$1 a week.

Only a limited number can be accommodated. Rooms must be engaged in advance.

For particulars and reservation, write to

F. L. STEVENS, Superintendent,
West Raleigh.

Donations.

To the Chemistry Department.

Standard Oil Company of New York.—A dozen samples representing crude petroleum and the products obtained.

Armour & Co., of Chicago, Ill.—Some samples of fertilizing materials.

Donations to Textile Department.

Leisel Co., Greensboro, N. C.—Dye house equipment.

Scott & Williams, Philadelphia.—One combination ribber and footer machine.

Hemphill Manufacturing Co., Pawtucket, R. I.—One "Banner" knitting machine.

Grosser Knitting Machine Co., New York.—One looper.

Wildman Manufacturing Co., Norristown, Pa.—One ribber.

Thomas Haltcn's Sons, Philadelphia.—One crochet quilt jacquard.

Caldwell & Gilderd, Fall River, Mass.—One electric warp stop motion.

Draper Company, Hopedale, Mass.—Bobbins and loom supplies.

Emmons Loom Harness Co., Lawrence, Mass.—Reeds and harness.

Holyoke Belting Co., Holyoke, Mass.—Cone belts.

New York and New Jersey Lubricant Co., New York.—Samples non-fluid oils.

Champlain Silk Mills, Whitehall, N. Y.—Two pounds silk yarn.

Hampton Manufacturing Co., Easthampton, Mass.—Mercerized cotton yarns.

Elizabeth Mills, Charlotte, N. C.—Yarn on cones.

C. R. Judge Knot-tier Co., Lowell, Mass.—Four knot-tiers.

Textile Manufacturer, Charlotte, N. C.

Mill News, Charlotte, N. C.

Wool and Cotton Reporter, Boston, Mass.

Fibre and Fabric, Boston, Mass.

Textile Manufacturers Journal, New York.

Journal of Commerce, New York.

New York Commercial, New York.

To the Poultry Department.

Y. E. Smith, East Durham.—White Plymouth Rock cockerel.

Park & Pollard, Boston, Mass.—Six brooders.

Donations to Mechanical Department.

2 H. P. McVicker gasoline engine, by Alma Manufacturing Company, Alma, Mich.

2 H. P. International gasoline engine, by International Harvester Company.

Injectors by—

Sellers Injector Company, Philadelphia.

Penberthy Injector Company, Detroit, Mich.

Lunhenheimer Injector Company, Cincinnati, O.

Hayden & Darby Co., New York.

Model Pump, by A. S. Cannon Pump Company, New York City.

Model of valve motion on Lentz Engine, by Erie Iron Works, Erie, Pa.

Handbooks, catalogs, etc., from several companies for use in class.

To Agricultural Department.

The Oaks Manufacturing Company, of New Bern, a cotton and corn planter and fertilizer distributor.

The National Department of Agriculture, an economic collection of 100 kinds of weed seeds.

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1909-10

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JAMES HENRY DURHAM, JR.,	Wilmington,	Min.
JOSEPH OSCAR GREEN.	Franklinton.	Agr.
DEVER LITTLE	Gaffney S. C.,	Tex.
EDWARD MURRAY,	Raleigh.	Tex.
FRED BARNETT WHEELER.	Archdale.	M. E.

TWO-YEAR COURSES.

First Year.

HAL BARBER BAHNSON.	Farmington,	Tex
FRED RUSH BOST,	Concord.	M. A.
CAREY PARKS BUCHANAN.	Charlotte,	Tex.
CHARLES CALLOWAY,	Franklin,	Tex
LESLIE MANNING CHRISTIAN,	Durham,	M. A.
CARROLL BERTRAND FAGAN.	Darden,	M. A.
EDWARD BYNUM GASKILL,	Tarboro,	M. A.
HENRY LEE GRANT, JR.,	Manteo,	M. A.
WILLIAM TISDALE HURTT,	New Bern,	M. A.
PAUL MARTIN JOHNSON,	Mount Airy,	M. A.
CHARLIE COOK KEARNEY,	Franklinton,	M. A.
FRANK ALBERT KENDALL,	Ansonville. R. 1.	M. A.
HENRY GRADY LIFE,	Matthews. R. 19.	M. A.
LEEWOOD McCALLUM,	Rowland.	Tex.
ERROL DEWITT MORTON,	Roxboro, R. 3,	M. A.
EDGAR BYRON NICHOLS,	Mount Airy. R. 3.	M. A.
HERBERT BURNS NORRIS,	Raleigh,	M. A.
BENJAMIN HARVEY PARKER,	Lasker.	M. A.
CHARLIE HOMER PAYLOR.	Greensboro,	M. A.
JOSEPH JENNINGS PHILLIPS,	Portsmouth, Va.,	M. A.
HENRY MARION POPE,	Durham. R. 2.	M. A.
JAMES DENNIS POPE,	Durham, R. 2.	M. A.
JOHN B. ROSS,	Sanford,	M. A.
CLEMENT OSCAR SEIFERT,	New Bern.	M. A.
JOHN EARLE SHUTE,	Monroe,	M. A.
WALTER HERBERT SMITH,	Prospect Hill. R. 1.	M. A.
ROY CLINTON STOCKWELL,	Raleigh,	M. A.
BRUCE STROWD,	Chapel Hill,	M. A.
JOHN THOMPSON,	Thomasville,	M. A.

<i>Name.</i>	<i>Post-office.</i>	<i>Course.</i>
JAMES BAXTER TICKLE,	Elon College, R. 1,	M. A.
THOMAS SETTLE TUCKER,	Fair Bluff,	M. A.
CLARENCE LEO UNDERWOOD,	Newton Grove,	M. A.
MERANE STRANGE WHITE,	Mebane, R. 3,	M. A.
HEBER JOURDIN WILKINSON,	Belhaven,	M. A.
JOHN DAVIS WILLIS,	Morehead City,	M. A.
CHARLES CONLEY WILSON,	Morganton, R. 1,	M. A.
GEORGE HOPTON WILSON,	Goldsboro,	Tex.
HENRY HALL WILSON,	Monroe,	M. A.
JOHN WILDS WILSON,	Johnson City, Tenn.,	M. A.
WARREN EDMUNDSON WINSLOW,	Goldsboro,	M. A.
CLEM COVINGTON YARBOROUGH,	Locust Hill,	M. A.

TWO-YEAR COURSES.**Second Year.**

ROBERT BENCINI,	High Point,	Tex.
TURNER BOND COOPER,	Windsor,	M. A.
JOHN C. COSBY,	Asheville,	Tex.
ARTHUR LEROY FAULKNER,	Smithfield,	Tex.
JOHN MEANS HARDEN, JR.,	Winnsboro, S. C.,	M. A.
ALBERT LOUIS KEASLER,	Anderson, S. C.,	M. A.
JAMES DOUGLAS LYTCH,	Laurinburg,	M. A.
CHARLES WAYLAND SPRUILL, JR.,	Quitsna,	Tex.
HENRY BATTLE TICE,	Wadesboro,	M. A.
ROBERT GRADY WHITE,	Concord,	Tex.

ONE-YEAR COURSE IN AGRICULTURE.

CHARLIE MEEKINS BRICKHOUSE,	Columbia.
HAROLD CHARLES BRIM,	Swan Quarter.
HARLEY WILSON BULLARD,	Chadbourn, R. 2.
JOHN ALEXANDER BYRNE, JR.,	Red Springs.
EUGENE MOORE CONRAD,	Pfafftown, R. 1.
NEILSON FALLS, JR.,	Washington, D. C.
GEORGE ALEXANDER FORSYTE,	Greensboro, R. 6.
LEE FRIES FRANKLIN,	Mount Airy, R. 3.
JAMES THOMAS GARVEY,	Beaver Creek, R. 1.
GROVER CLEVELAND GLENN,	Arden.
LEONARD PARKS HARDY,	Seven Springs.
ROBERT WARD JOHNSON,	Plymouth.
WILLIAM PALL LUCAS,	Plymouth, R. 1.

<i>Name.</i>	<i>Post-office.</i>
ARCHIE BRASWELL KNIGHT,	Tarboro.
JOHN ELVIS LYNCH,	Durham, R. 5.
CECIL BLACKSTOCK McELROY,	Stocksville.
JOSEPH PERRY McNIDER,	Winfall, R. 1.
EDWARD NAPOLEON MURRAY,	Fairfield.
NEAL ARCH ODUM,	Pembroke, R. 1.
ERNEST LINWOOD PERKINS,	Adako.
ROBERT McLEAN PITTS,	Selma, Ala.
MAURICE FELS POOLE,	Randleman, R. 3.
LUBY WHITLEY STEVENS,	Goldsboro, R. 4.
CARL ALEXANDER THOMPSON,	Fairmont.
BRAXTON MILTON WESTON,	Swan Quarter, R. 1.

WORK COURSE—AGRICULTURAL.

JOB SWAIN BARNARD,	Asheville, R. 1.
SAMUEL CONNER BRIM,	Mount Airy.
JAMES PATIE CARTER,	Buckhorn.
TITUS EDWARD CHAPPELL,	Tyner.
THOMAS JEFFERSON CROOM,	Colly.
JOHN ELLIS DODSON,	Greensboro, R. 2.
JOHN RAY EATON,	Cana, R. 2.
TIMOTHY FRANCIS EATON,	Cana, R. 2.
DAVID KERR FLEMING,	Bahama, R. 1.
ALVIN EDWIN GUNN,	Wentworth, R. 1.
ARCHIE PHELPS HOBBS,	Windsor.
JULIAN THOMAS HUGHES,	Snow Hill, R. 1.
WILLIAM DANTZLIER JERNIGAN,	Maxton, R. 2.
ALEXANDER McNEILL,	Wade.
RUSSELL LANY MITCHELL,	Dillard.
CARROLL CLARENCE MORGAN,	Candler.
JESSE MURRAY,	Burgaw, R. 2.
JOHN THOMAS NEWTON,	Canton,
WILLIAM CRAWFORD POPE,	Barium Springs.
JOHN ALLEN RHEM,	Halifax, R. 1.
JAMES EDWIN SCOTT,	Haw River, R. 2.
RALPH SHARPE,	Barium Springs.
JESSE BRYAN WETHINGTON,	Grafton, R. 1.
JOHN WILLIAM WILLIAMSON,	Archer, R. 1.
BURTON HUDSON WOOD,	Lincolnton, R. 1.

WINTER COURSE IN AGRICULTURE.

<i>Name.</i>	<i>Address.</i>	<i>County.</i>	<i>State.</i>
JAMES BAYARD ALLEN,	Henderson,	Vance,	N. C.
THOMAS NATHANIEL ALLEN,	Laws,	Durham,	N. C.
EARL EMMETTE ALLISON,	Concord,	Cabarrus,	N. C.
HENRY BEATTY,	Gravel Hill,	Bladen,	N. C.
CARLOS RANDOLPH BERRY,	Swan Quarter,	Hyde,	N. C.
NATH'L DANIEL BOYD,	Townesville,	Vance,	N. C.
JAMES LOUIS BRITT,	Garner,	Wake,	N. C.
JUNIUS PETTIGREW CHAMBLEE,	Spring Hope,	Nash,	N. C.
CLARENCE BREVARD CHOATE,	Pineville,	Mecklenburg,	N. C.
MILLS CLINE,	Shelby,	Cleveland,	N. C.
THOMAS CLYDE DALRYMPLE,	Jonesboro,	Lee,	N. C.
BENJAMIN GARDEN DEANS,	Middlesex,	Nash,	N. C.
JOHN THOMAS DIXON,	Lowell,	Gaston,	N. C.
NUMA GRAY DAUB,	Tobaccoville,	Forsyth,	N. C.
EZRA LEWIS FURCHES,	Mocksville,	Davie,	N. C.
GEORGE HENDERSON GLOVER,	Salisbury,	Rowan,	N. C.
FRANK GRADY HALL,	Barber,	Rowan,	N. C.
THOMAS CLINTON HAMILTON,	Beaver Creek,	Ashe,	N. C.
BENJAMIN HARRISON HARDIN,	Beaver Creek,	Ashe,	N. C.
NORMAN JAMES HERRING,	Garland,	Sampson,	N. C.
CICERO ULYSSES HINSHAW,	Greensboro, R. 6,	Guilford,	N. C.
SYLVESTER CASS HOPKINS,	Spring Hope,	Nash,	N. C.
WILLIAM FRANKLIN HUTCHISON,	Exway,	Richmond,	N. C.
LESLIE THOMAS JEFFRESS,	Norlina,	Warren,	N. C.
CLAUD VESTAL JONES,	Trinity,	Randolph,	N. C.
ROGER VANDEVENTER KNIGHT,	Corapeake,	Gates,	N. C.
ARTHUR EDGAR LENTZ,	Statesville,	Iredell,	N. C.
HENRY ALVIN LITCHFIELD, JR.,	Creswell,	Washington,	N. C.
NEILL CAMERON MCFADYEN,	Raeford,	Cumberland,	N. C.
PERCY JAMES LEE MEDLIN,	Cary,	Wake,	N. C.
ENNIS MARION MIDYETTE,	Bath,	Beaufort,	N. C.
ELMOTT DALE MOORE,	Jackson,	Northampton,	N. C.
WILLIAM HEVY ROUSE,	Middlesex,	Nash,	N. C.
SANKY MORRIS,	Apex,	Wake,	N. C.
ORVILLE LINDSAY RIPPLE,	Lexington,	Davidson,	N. C.
ZEB ROSCOE SAINÉ,	Lincolnton,	Lincoln,	N. C.
ROBERT NEWTON SHEARON,	Wake Forest,	Wake,	N. C.
GWYNN DARBY SMITH,	Fort Mill,	Mecklenburg,	N. C.

<i>Name.</i>	<i>Address.</i>	<i>County.</i>	<i>State.</i>
WILLIAM ALFRED SWAIN,	Plymouth,	Washington,	N. C.
HUGH CARTER TAYLOR,	Charleston,	Charleston,	S. C.
LUTHER NEAL UNTZ,	Concord,	Cabarrus,	N. C.
JAMES BRACKIN WATLINGTON,	Ruffin,	Rockingham,	N. C.
GEORGE SHERWOOD WILLIAMS,	Salisbury,	Rowan,	N. C.
THOMAS JACOB WILLIS,	Lawndale,	Cleveland,	N. C.
ARCHIE COLUMBAT YOW,	Greensboro,	Guilford,	N. C.

NIGHT SCHOOL STUDENTS.

Textile.

JOSEPH N. ALLEN,	Raleigh.
JOHN B. BAKER,	Raleigh.
EDWARD L. BROWN,	Raleigh.
FRED L. BROWN,	Raleigh.
NEAL T. BROWN,	Raleigh.
ALBERT CAMPBELL,	Raleigh.
W. B. COLMANS,	Raleigh.
JOHN M. COX,	Raleigh.
ARTHUR J. DAVIS,	Raleigh.
ARTHUR S. DAVIS,	Raleigh.
ALBERT V. DIXON,	Raleigh.
CHARLES E. FITZGERALD,	Raleigh.
ARTHUR L. FOSTER,	Raleigh.
JOHN F. GRAY,	Raleigh.
HENRY HARRISON,	Raleigh.
WALTER A. HARVEY,	Raleigh.
FREDERICK S. HASTY,	Raleigh.
LEONARD A. KING,	Raleigh.
FRED McDAY,	Raleigh.
MAURICE F. McLEAN,	Raleigh.
WILLIAM H. McLEAN,	Raleigh.
CLEVELAND A. MANGUM,	Raleigh.
WILL MOODY,	Raleigh.
HAL MOORE,	Raleigh.
VIRGIL P. STONE,	Raleigh.
TAYLOR STRICKLAND,	Raleigh.
ALBERT A. WEST,	Raleigh.
ELBERT WHITE,	Raleigh.
WILLIAM M. WOODLIEF,	Raleigh.

CATALOGUE OF STUDENTS.

MAY SCHOOL FOR TEACHERS.

<i>Name.</i>	<i>Address.</i>
DANIEL HUBERT BONEY,	Teachey's.
BEULAH BRAGG,	Durham.
ANNIE LAURIE BRYAN,	Moncure.
JOHN THOMAS COLWELL,	Watha.
GERTRUDE AGNES WALKER CREE,	Embro.
LAURA FAUCETTE,	Lenoir.
JESSE WALTON FUSSELL,	Teachey's.
GERTRUDE HARTS,	Parkton.
KITTIE McNEILL JOHN,	Lumber Bridge
ALICE McDANELL KING,	Kinston.
NAN ELIZABETH LANSDELL,	Semora.
LENA BRIDGES LUTHER,	Fayetteville
TIMOTHY RAYMOND McMILLAN,	Teachey's.
ANNIE ISABEL MOSELEY,	Wentworth.
ELSIE PHERABE PENNY,	Garner.
ORIN G. REYNOLDS,	Rockingham
MINOR RICHARDSON,	Neuse
MARY ROWE,	Conover.
PHILIP ERVIN SHAW,	Teachey's.
VIRGINIA SHIVERS,	Rocky Mount
MABEL VIOLA SMITH,	Willow Springs
ARTHUR LEE TEACHEY,	Teachey's.
JAMES DANIEL TEACHEY,	Teachey's.
KATE DIBRELL WALKER	Raleigh.
CALLIE WEBSTER,	Siler City.
MARY CLEMMER WILLIAMS,	Raleigh R 3
CHAPPEL WILSON,	Howellsville

Nineteenth Annual Commencement.

May 27, 1909.

DEGREES CONFERRED.

BACHELORS OF SCIENCE.

In Agriculture.

John Allen Arey,	Wayne Arington Hornaday,
William Hunt Eaton,	James Edward Latham,
Ralph Ringgold Faison,	Ralph Long,
Frank Lindsay Foard,	Ralph Cecil Mason,
Andrew Hartsfield Green,	Arthur Ballard Massey,
Bascombe Britt Higgins,	Robert Richard Reinhardt.

In Chemistry.

William Roy Hampton,	Francis Webber Sherwood,
Daniel Harvey Hill, Jr.,	James Edwin Toomer.

BACHELORS OF ENGINEERING.

In Civil Engineering.

William Herbert Doughty Banck,	Benjamin Franklin Montague,
Cecil DeWitt Brothers,	Julius Monroe Parker,
Thorne McKenzie Clark,	Peter Penick Pierce,
Fred Atha Duke,	Alfred Pratte Riggs,
Lewis Price Gattis,	James Olin Sadler,
Albert Sidney Goss,	Robert Arnold Shope,
Charlie Pool Gray,	William Neville Sloan,
Thomas Frederick Haywood,	Hugh Stewart Steele,
William Fladger R. Johnson,	Samuel Fatio Stephens,
Frederick John Jones,	Henry Newbold Sumner,
Samuel Macon Mallison,	Joseph Slaughter Whitehurst,
Paul Adams Witherspoon.	

In Electrical Engineering.

Joseph Frank Davidson,	John Gilbert Paschal,
Gordon Harris,	Joseph Henry Robertson,
Samuel Huxley McNeely,	Malvern Hill Terrell,
Samuel Loftin Oliver,	John Spicer Wilson.

In Mechanical Engineering.

Walter Miller Cowles,	William Roydan Marshall,
William Alexander Faison,	William Flaud Morris,
John William Harrelson,	Paul Miller Pitts,
Leonard Henderson,	John Moir Price,
John William Ivey,	Claude Stratton Tate,
	Robert Job Wyatt.

In Textile Industry.

William Samuel Dean,	Roscoe Loomis Fox,
Carlton O'Neal Dougherty,	Walker Morehead Millner,
	George Gray Simpson.

Wiley Theodore Clay, Course in Mechanical Engineering, Mechanical Engineer.

Lillian Lee Vaughan, Course in Mechanical Engineering, Mechanical Engineer.

Jarvis Benjamin Harding, Course in Civil Engineering, Civil Engineer.

James Kemp Plummer, Jr., Course in Chemistry, Master of Science.

Jesse Page Spoon, Course in Agriculture, Master of Science.

Honors.**HONORS IN SCHOLARSHIP.**

For Four Years.

J. W. Harrelson.

For 1908-09—Senior Class. C. A.

J. A. Arey,	J. M. Parker,
W. S. Dean,	P. P. Pierce,
W. H. Eaton,	J. M. Price,
B. B. Higgins,	A. P. Riggs,
W. A. Hornaday,	F. W. Sherwood,
J. W. Harrelson,	G. G. Simpson,
J. W. Ivey,	W. N. Sloan,
R. C. Mason,	H. S. Steele,
W. M. Millner,	S. F. Stephens,
W. F. Morris,	H. N. Sumner,
	J. S. Wilson.

DEGREES AND HONORS.

Junior Class. \ 6

L. H. Kirby,	E. H. Smith,
U. C. Loftin,	C. B. Stainback,
E. B. Moore,	T. B. Stansel,
W. M. Neale,	T. B. Summerlin,
C. E. Walton.	

Sophomore Class. \ 1

C. E. Bell, *	F. T. Peden,
J. H. Brown, *	J. P. Quinerly, *
K. Bryan,	G. W. Ross,
R. W. Graeber, *	T. W. Thorne,
W. P. Thurston.	

Freshman Class. \ \

J. G. Kellogg,	J. E. McGee.
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Honors for Punctuality.

J. P. Betts,	W. C. Pennington,
W. F. Eller,	B. M. Potter,
J. M. Gray,	J. M. Price,
R. M. Hardison,	A. P. Riggs,
Frank Hawks,	E. L. Sherlock,
D. R. Hinkle,	T. B. Stansel,
S. B. Howard,	H. S. Steele,
R. W. Howell,	H. N. Sumner,
J. W. Ivey,	W. T. Shull,
C. W. Lee,	H. B. Tice,
B. A. Lide,	H. M. Walton,
L. J. Moody,	H. P. Whitted,
J. M. Parker,	M. R. Yarbrough.

Medals Awarded.

National Association of Cotton Manufacturers . . . George Gray Simpson.

Register of Alumni.

CLASS OF 1893.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ROBERT WILSON ALLEN,	B. E.,	Sanford, N. C.
	Superintendent of School.	
SAMUEL ERSON ASBURY,	B. S.,	College Station, Tex.
	M. S. 1896. Assistant State Chemist.	
HENRY EMIL BONITZ,	B. E.,	Wilmington, N. C.
	Architect.	
FRANK FULLER FLOYD,	B. E.,	Knoxville, Tenn.
	Vice-President and Sales Manager Jellico Coal Mining Co.	
CHARLES DUFFY FRANCKS,	B. E.,	Richlands, N. C.
	Teacher and Farmer.	
EDWARD MOORE GIBBON, †	B. E.,	Jacksonville, Fla.
	William W. Lyon Engineering Co.	
GEORGE PENDER GRAY, †	B. S.,	Tarboro, N. C.
	Commercial Traveler Read Phosphate Co., of Nashville, Tenn.	
CHARLES BOLLING HOLLADAY,	B. E.,	Wilmington, Del
WILLIAM McNEIL LYTCH,	B. E.,	Laurinburg, N. C.
	Operator Machine Shops.	
JAMES WILLIAM MCKOY,	B. E.,	Black Mountain, N. C.
	Civil Engineer and Merchant.	
WALTER JEROME MATHEWS,	B. E.,	Goldsboro, N. C.
	Machine Broker.	
FRANK THEOPHILUS MEACHAM,	B. S.,	Statesville, N. C.
	M. S. 1894. Superintendent State Test Farm	
CARL DEWITT SELLARS,	B. E.,	Greensboro, N. C.
	Coke Export and Commission Co.	
CHARLES EDGAR SEYMOUR,*	B. S.,	Raleigh, N. C.
BUXTON WILLIAMS THORNE,*	B. E.,	Holly Springs, Miss.
WILLIAM HARRISON TURNER,	B. E.,	Winston-Salem, N. C.
	Wholesale Dealer in Mill Feed, Hay and Grain.	
CHARLES BURGESS WILLIAMS,	B. S.,	West Raleigh, N. C.
	M. S. 1896. Director of N. C. Experiment Station.	
LOUIS THOMAS YARBROUGH,	B. E.,	Raleigh, N. C.
	Registry Clerk Raleigh Post Office.	
SAMUEL MARVIN YOUNG,	B. E.,	Raleigh, N. C.
	Traveling Salesman Supplee Hardware Co., Philadelphia, Pa.	

*Deceased.

†Not heard from this year.

It is the purpose of the College to keep in touch with the Alumni. Please notify the Registrar promptly of any change of address.

CLASS OF 1894.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES EDWARD CORPENING,	B. E.,	Lenoir, N. C., R.F.D. 3. Farmer and Dealer in Lumber.
DAVID COX,	B. E.,	Hertford, N. C. Civil Engineer and Manager Yeopim Lumber Co.
ROBERT DONNELL PATTERSON,	B. S.,	Chase City, Va. M. S. 1838. Cashier First State Bank.
CHARLES PEARSON,	B. E.,	Atlanta, Ga. Superintendent of Construction, Gude & Co. Home Address, Raleigh, N. C.
ZEBBIE GEORGE ROGERS,	B. E.,	Washington, D. C. Resident Engineer Baltimore and Ohio Railroad.
JOHN HYER SAUNDERS,	B. E.,	Rocky Mount, N. C. Locomotive Engineer Atlantic Coast Line Railway.
BENJAMIN FRANKLIN WALTON,	B. S.,	Raleigh, N. C., R. F. D. 1. Farmer.
JOHN McCAMY WILSON,	B. E.,	Spartanburg, S. C. Mechanical and Electrical Engineer Inman Cotton Mills.

CLASS OF 1895.

THOMAS MARTIN ASHE,*	B. E.,	Raleigh, N. C.
JAMES ADRIAN RIZZELL,	B. S.,	Ithaca, N. Y. M. S. 1900. Ph.D. Cornell University. Assistant Professor Soil Technology N. Y. State College of Agriculture.
JOHN ISHAM BLOUNT,	B. E.,	Birmingham, Ala. C. E. 1897. M. E. Cornell University. Proprietor J. I. Blount & Co., Sales Agents for Machinery Builders.
JAMES WASHINGTON BRAWLEY,	B. S.,	Greensboro, N. C. Superintendent of Agents Southern Life and Trust Co.
WILLIAM AUSTIN BULLOCK,	B. S.,	Amsterdam, Ga. Superintendent of Tobacco Plantation A. Cohn & Co.
DAVID CLARK,	B. E.,	Charlotte, N. C. M. E. 1895. C. E. 1897. M. E. Cornell University 1898. Editor American Textile Manufacturer.
GEORGE WASHINGTON CORBETT, JR.,	B. E.,	Currie, N. C., R. F. D., 2. Corbett & Corbett, Manufacturers of Lumber.
EDWIN SPEIGHT DARDEN,	B. S.,	Wilson, N. C. Warehouseman and Farmer.
WILLIAM KEARNEY DAVIS, JR.,	B. E.,	Marion, S. C. Superintendent Marion Manufacturing Co.
JOSEPH CHARLES DEY,	B. S.,	Norfolk, Va. Produce Broker.
LEE BORDEN ENNETT,	B. S.,	Cedar Point, N. C. Farmer and County Superintendent of Schools.

*Deceased.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ISAAC HENRY FAUST,	B. E.,	Ramseur, N. C. Contractor and Farmer.
CHARLES WILLIS GOLD, Secretary and Superintendent of Agencies Jefferson Standard Life Insurance Co.	B. S.,	Raleigh, N. C.
WILLIAM HENRY HARRIS, M. E. 1896. Treasurer and Agent Slater Manufacturing Co.	B. E.,	Pawtaucket, R. I.
CHRISTOPHER MILLER HUGHES, B. S. 1893. Vice-President W. J. McDiarmid Co., Wholesale Lumber.	B. E.,	Fayetteville, N. C.
MALCOLM BEALL HUNTER, President Acme Plumbing and Electric Co.	B. E.,	Charlotte, N. C.
SAMUEL CHRISTOPHER MCKEOWN, Sumter Telephone Manufacturing Co.	B. E.,	Sumter, S. C.
MANN CABE PATTERSON, Patterson & Roach Manufacturing Co.	B. E.,	Durham, N. C.
ABRAM HINMAN PRINCE, Tobacco Farmer, also Special Agent U. S. Department of Agriculture.	B. S.,	San Augustine, Tex.
CHARLES MARCELLUS PRITCHETT, C. E. 1896. Chief Division Engineer Philippine Government.	B. E.,	Manila, P. I.
VICTOR VASHTI PRIVOTT,† Merchant.	B. E.,	Suffolk, Va.
HOWARD WISWALL, JR.,† Engineer and Timberman Midland Timber Co.	B. E.,	Charleston, S. C.
CHARLES GARRETT YARBROUGH, Construction Western Electric and Manufacturing Co.	B. E.,	Chicago, Ill.

CLASS OF 1896.

DANIEL ALLEN, Traveling Salesman.	B. S.,	Raleigh, N. C.
GEORGE STRONACH FRAPS, Ph.D. Johns Hopkins University. State Chemist and Chemist Texas Experiment Station. Chemist Feed Control.	B. S.,	College Station, Tex.
MARION JACKSON GREEN, Pattern Maker Cole Manufacturing Co.	B. S.,	Charlotte, N. C.
JOHN HOWARD, Civil and Mining Engineer.	B. S.,	Middleboro, Ky.
WILLIAM COLBERT JACKSON, Merchant and Farmer.	B. S.,	Middlesex, N. C.
ROBERT GRAHAM MEWBORNE, Chemist Kentucky Tobacco Product Co.	B. S.,	Louisville, Ky.
LEVI ROMULUS WHITTED, C. E. 1897. Superintendent of Construction U. S. P. Buildings.	B. S.,	St. Louis, Mo.
HENRY LLOYD WILLIAMS,† Manager of Sawmill, Cofield Manufacturing Co.	B. S.,	Cofield, N. C.

†Not heard from this year.

CLASS OF 1897.

<i>Name.</i>	<i>Degree.</i>	<i>Address</i>
JOSEPH SAMUEL BUFFALOE,	B. S.	Garner, N. C.
		M. D. Baltimore Medical College. Physician.
JOHN WILLIAM CARROLL,	B. S.	Wallace, N. C.
		M. D. University of Maryland 1903. Physician.
CHARLES EDWARD CLARK,	B. S.,	Charlotte, N. C.
		Superintendent of Demonstration Work in Mecklenburg County. U. S. Department of Agriculture.
WM. ALEXANDER GRAHAM CLARK,	B. S.,	Raleigh, N. C.
		M. E. 1899. M. E. Cornell University. Special Agent Department of Commerces and Labor, U. S. A. Now in South America
NICHOLAS LOUIS GIBBON,	B. S.,	Providence, R. I.
		Cotton Mill Engineer and Architect, C. R. Makepeace & Co.
CEBURN DODD HARRIS,	B. S.,	Louisville, Ky.
		A. M. Cornell University. Strater Bros. Tobacco Co.
JERE EUSTIS HIGHSMITH,†	B. S.,	Parkersburg, N. C.
		Farmer.
CLYDE BENNETT KENDALL,	B. S.,	Washington, D. C.
		Assistant Topographer U. S. Geological Survey.
SYDNEY GUSTAVUS KENNEDY,	B. S.,	Sanford Fla.
		Round House Foreman Atlantic Coast Line Railroad Co.
JOSEPH LAWRENCE KNIGHT,†	B. S.,	Dewey, Fla.
		Pas Manufacturing Co., Naval Stores.
WALTER JONES MCLENDON, JR.,	B. S.,	Marshall, N. C.
		President and General Manager Capitola Manufacturing Co
REPTON HALL MERRITT,	B. S.,	Raleigh, N. C.
		Secretary and Treasurer Powell & Powell (Incorporated).
ALBERT HICKS OLIVER,	B. S.,	Mount Olive, N. C.
		Farmer.
HUGH WILLIAMS PRIMROSE,*	B. S.	Raleigh, N. C.
		M. S. 1900.
WILLIS HUNTER SANDERS,	B. S.,	Roanoke Rapids, N. C.
		Superintendent of Power Plant Roanoke Navigation and Water Power Co.
THOMAS JEHU SMITHWICK,		Mt. Airy, N. C.
		Chief Engineer and Electrician N. C. Granite Corporation.
JORDAN LEA WATSON,	B. S.,	Atlanta, Ga.
		District Manager Allis-Chalmers Co.
BRADLEY JEWETT WOOTTEN,*	B. S.	Wilmington, N. C.

CLASS OF 1898.

DORSEY FROST ASBURY,†	B. S.	Washington, D. C.
		Draftsman Naval Gun Factory.
SIDNEY HAMILTON BECK,†	B. S.,	Washington, D. C.
		Marine Engine and Boiler Draftsman Navy Department.

*Deceased.

†Not heard from this year.

<i>Name.</i>	<i>Degres.</i>	<i>Address.</i>
ANSON ELIKEM COHOON, Forest Supervisor U. S. Department of Agriculture.	B. S.,	Eugene, Ore.
HUGH McCULLOM CURRAN, U. S. Forest Service.	B. S.,	Manila, P. I.
BENJAMIN CAREY FENNEL, M. E. 1900. Manager Southern Office American Blower Co.	B. S.,	Atlanta, Ga.
ALPHEUS ROUNTREE KENNEDY,† Draftsman Fore River Shipbuilding Co.	B. S.,	Quincy, Mass.
FREDERICK CREECY LAMB,† City Chemist and Bacteriologist. Home address, Elizabeth City, N. C.	B. S.,	El Paso, Tex.
EDWIN BENTLEY OWEN, Registrar N. C. College of Agriculture and Mechanic Arts.	B. S.,	West Raleigh, N. C.
B. MOORE PARKER, Assistant Professor of Textile Industry North Carolina College of Agriculture and Mechanic Arts.	B. S.,	West Raleigh, N. C.
NUMA REID STANSEL, Engineer General Electric Co.	B. S.,	Schenectady, N. Y.
TEISAKU SUGISHITA,† Civil Engineer.	B. S.,	Kokufu, Japan.
GEORGE FREDERICK SYME C. E. 1907. Assistant Engineer Seaboard Air Line Railway.	B. S.,	Raleigh, N. C.

CLASS OF 1899.

WM. DAVIDSON ALEXANDER, JR., Engineer Charlotte Contract Co.	B. S.,	Charlotte, N. C.
IRA WILSON BARBER, Superintendent Light and Power Plant and Waterworks	B. S.,	Mt. Airy, N. C.
JOHN HENDERSON BIRDSONG, Chemist The National Malleable Castings Co.	B. S.,	Chicago, Ill.
FRANCIS MARION FOY,*	B. S.,	Scott's Hill, N. C.
ALBERT SIDNEY LYON, Superintendent Public Works City of Rocky Mount	B. S.,	Rocky Mount, N. C.
CARROLL LAMB MANN, Civil Engineer and Assistant Professor of Civil Engineering N. C. College of Agriculture and Mechanic Arts.	B. S.,	C. E., West Raleigh, N. C.
O'KELLY W. MYERS, Civil Engineer U. S. Engineering Department.	B. S.,	Boston, Mass.
EUGENE LEROY PARKER, Manager E. L. Parker & Co. Laboratory.	B. S.,	Mt. Pleasant, Tenn.
EUGENE GRAY PERSON,† Train Dispatcher Central of Georgia Railway.	B. S.,	Macon, Ga.
FREDERICK ERASTUS SLOAN General Agent The Security Life and Annuity Co. of Greensboro, N. C.	B. S.,	Raleigh, N. C.

*Deceased

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ANDREW THOMAS SMITH, Draftsman in charge New York Shipbuilding Co.	B. S.,	Camden, N. J.
ALEXIS PRESTON STEELE, Mechanical Engineer J. C. Steele & Sons.	B. S.,	Statesville, N. C.
WILLIAM ANDERSON SYME,*	B. S., M. S.,	Raleigh, N. C.
HUGH WARE,† Chemist Decatur Car Wheel and Manufacturing Co.	B. S.,	Birmingham, Ala.
CLAUDE B. WILLIAMS, Physician.	B. S.,	Elizabeth City, N. C.

CLASS OF 1900.

KEMP ALEXANDER, Superintendent Marion Knitting Mill.	B. E.,	Marion, N. C.
LESLIE LYLE ALLEN,† Cotton Broker Firm of Cooke & Allen.	B. E.,	Spartanburg, S. C.
ROBERT LINN BERNHARDT, Salisbury Hardware and Furniture Co.	B. S.,	Salisbury, N. C.
LESLIE GRAHAM BERRY, Contracting Engineer Des Moines Bridge and Iron Works.	B. E.,	Des Moines, Ia.
JAMES HARRY BUNN, Assistant Secretary Henderson Cotton Mills.	B. E.,	Henderson, N. C.
SAMUEL MERRILL HANFF, Episcopal Minister.	B. S.,	Duke, N. C.
GEORGE ROLAND HARRELL, With the Grasselli Chemical Co.	B. S.,	Grasselli, N. J.
HENRY ALLEN HUGGINS, Bookkeeper George W. Huggins, Jeweler.	B. S.,	Wilmington, N. C.
GARLAND JONES, JR.,† Chemist Armour & Co.	B. S.,	Fort Worth, Tex.
LOUIS HENRY MANN, D. D. S. University of Maryland 1904. Dentist.	B. E.,	Washington, N. C.
ROBERT HALL MORRISON, President Mariposa Cotton Mills.	B. E.,	Stanley, N. C.
WILLIAM MONTGOMERY PERSON, Maryland Steel Company.	B. E.,	Sparrow's Pt., Balto., Md.
JUNIUS EDWARD PORTER,† Railroad Contractor with Wade, Morrison & Co.	B. E.,	Weldon, N. C.
ROGER FRANCIS RICHARDSON, Construction Engineer Tennessee Coal, Iron and Railroad Co.	B. E.,	Ensley, Ala.
WILLIAM EDWIN ROSE,† Newport News Shipbuilding and Dry Dock Co.	B. E.,	Newport News, Va.
FLOYD DE ROSS,† Salesman Fostoria Incandescent Lamp Co.	B. E.,	Charlotte, N. C.

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
IRA OBED SCHAUB, Professor of Agricultural Extension N. C. College of Agriculture and Mechanic Arts.	B. S.,	West Raleigh, N. C.
JOHN WADE SHORE, Farmer and Teacher.	B. S.,	Boonville, N. C.
WILLIAM TURNER SMITH, Contractor Crofts & Smith.	B. E.,	Dublin, Ga.
SOLOMON ALEXANDER VEST, Chief Chemist F. G. Smith Laboratory and Chemist Rockdale Iron Co.	B. S.,	Mt. Pleasant, Tenn.
ROSCOE MARVIN WAGSTAFF, Engineering Draftsman U. S. Navy Department.	B. E.,	Norfolk, Va.
GAITHER HALL WRITING,*	B. S.,	Richmond, Va.

CLASS OF 1901.

FLETCHER HESS BARNHARDT, Employ Board of Engineers Quebec Bridge.	B. E.,	Montreal, Canada.
WILLIAM OSBORNE BENNETT, Manager South Atlantic Oil Co.	B. E.,	Wadesboro, N. C.
FRED WILHELM BONITZ, Attorney at Law.	B. E.,	Wilmington, N. C.
ZOLLY MOSBY BOWDEN, Electrician Florida Mining Co.	B. E.,	Mulberry, Fla.
BEDFORD JETHRO BROWN, In Charge of Meter Department Southern Power Co.		Charlotte, N. C.
PAUL COLLINS, Assistant Chemist Agricultural Experiment Station.	B. S.,	College Park, Md.
WILLIAM PESCU D CRAIGE, † With Peter F. Pescud, Underwriter.	B. S.,	New Orleans, La.
WILLIAM LOIS CRAVEN, Draftsman York Bridge Co.	B. E.,	York, Pa.
FELIX GRAY CRUTCHFIELD, Secretary and Treasurer Maynard-Crutchfield Co., Plumbers, etc.	B. E.,	Winston-Salem, N. C.
GEORGE MASLIN DAVIS, Draftsman Chief Engineer's Office Southbound Railway Co.	B. E.,	Winston-Salem, N. C.
WILLIAM DOLLISON FAUCETTE, Assistant to the President Seaboard Air Line Railway.	B. E.,	Portsmouth, Va.
BENJAMIN OLIVER HOOD, With F. A. Burdett, Consulting Engineer.	B. E.,	New York, N. Y.
MARTIN KELLOGG, Register of Deeds of Gates County.	B. Agr.,	Gatesville, N. C.
JESSE JULIAN LILES, Commercial Department General Electric Co.	B. E.,	Pittsburg, Pa.
LEWIS OMER LOUGEE, Of the Firm of George S. Baton & Co., Civil and Mining Engineers.	B. E.,	Pittsburg, Pa.

*Deceased.

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLES HARDEN McQUEEN, Civil Engineer Atlantic Bitulithic Co.	B. E.,	Richmond, Va.
WILLIAM FRANKLIN PATE, Assistant Chemist Agricultural Experiment Station.	B. S.,	Wooster, Ohio.
EDWARD OSCAR SMITH, Special Draftsman Newport News Shipbuilding and Dry Dock Co.	B. E.,	Newport News, Va.
WALTER STEPHEN STURGILL, First Lieutenant Second Field Artillery, U. S. Army.	B. E.,	Vancouver Barracks, Wash
BEVERLEY NATHAN SULLIVAN, Superintendent Winston-Salem Light and Fuel Co.	B. S.,	Winston-Salem, N. C.
CHARLES AUGUSTUS WATSON,*	B. S.,	Raleigh, N. C.
BENJAMIN VADEN WRIGHT, Bridge Engineer N. O. M., and C. R. R. Co.	B. E.,	Laurel, Miss.

CLASS OF 1902.

WILLIAM DAVID BOSEMAN, Farmer.	B. E.,	Rocky Mount, N. C.
JUNIUS SIDNEY CATES, M. Agr. 1904. Assistant Agriculturist. B. P. I., U. S. Department of Agriculture.	B. S.,	Washington, D. C.,
ROBERT BAXTER COCHRAN,† Electrical Engineer. Home address, Statesville, N. C.	B. E.,	Urbana, Ohio.
JAMES LUMSDEN FEREBEE,† Resident Engineer Water Department City of Wilmington.	B. E.,	Wilmington, Del.
ROBERT IRVING HOWARD, Student in Civil Engineering N. C. College of Agriculture and Mechanic Arts	B. E.,	West Raleigh, N. C.
JOHN LUTHER MCKIMMON, Farmer.	B. Agr.,	Laurinburg, N. C.
LAURIE MOSELEY, Southern Agent Owego Bridge Co.; Also President Carolina Concrete Co.	B. E.,	Greensboro, N. C.
VASSAR YOUNG MOSS, Draftsman Fort Pitt Bridge Works	B. E.,	Cannonsburg, Pa.
CHARLES ARTHUR NICHOLS, Secretary and Treasurer Third Street Grocery Co.	B. E.,	Muscogee, Indian Ter.
JAMES LAFAYETTE PARKER, Assistant Engineer H. C. Keith, Consulting Engineer.	B. E.,	New York, N. Y.
WILLIAM BENEDICT REINHARDT, Electrician Dawson Electric Light and Power Co., Ltd	B. E.,	Dawson, Y. T.
RUSSELL ELSTNER SNOWDEN, Civil Engineer S. A. L. Railway.	B. E.,	Norfolk, Va.
JOSEPH PLATT TURNER, Vice-President and Superintendent Lily Mills.	B. E.,	Spray, N. C.
CLEVELAND DOUGLAS WELSH, Mayes Manufacturing Co.	B. E.,	Mayesworth, N. C.

†Not heard from this year

CLASS OF 1903.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
WILLIAM NORTON BOGART,†	B. E.,	Washington, N. C.
LESLIE NORWOOD BONEY,	B. E.,	Florence, S. C.
	Architect.	
JOHN SAMUEL P. CARPENTER,	B. E.,	Cherryville, N. C.
Superintendent and Director		Melville Manufacturing Co.
WALTER CLARK, JR.,	B. E.,	Raleigh, N. C.
	Lawyer,	
JOHN ELLIOT COIT,	B. Agr.,	Whittier, Cal.
Ph. D. Cornell University. Assistant Professor of Pathology		University of California
SUMMEY CROUSE CORNWELL,	B. E.,	Atlanta, Ga.
Civil Engineer Solomon-Norcross Co.,		Atlanta, Ga.
CHARLES LESTER CREECH,	B. S.,	New York, N. Y.
Manager New York Office of John W. Fises.		
EUGENE ENGLISH CULBRETH,	B. E.,	Raleigh, N. C.
Bookkeeper Commercial National Bank.		
WALTER LEE DARDEN,	B. E.,	Portsmouth, Va.
Chief Draftsman Seaboard Air Line Railway,		Portsmouth, Va.
JUNIUS FRANKLIN DIGGS,	B. S.,	Rockingham, N. C. R 1
Farmer and Merchant.		
TREOPHILUS THOMAS ELLIS,	B. E.,	Henderson, N. C. R 4.
Farmer.		
JOHN DANIEL FERGUSON,	B. E.,	Bladenboro, N. C.
Civil Engineer and Farmer.		
HUGH PIERCE FOSTER,	B. E.,	Mt. Pleasant, Ga.
Associated with Southern Manufacturing Co.,		Pittsburg, Pa.
OLIVER MAX GARDNER,	B. S.,	Shelby, N. C.
Lawyer.		
LAMAR CARSON GIDNEY,	B. E.,	Shelby, N. C.
Shelby Plumbing and Electric Co.		
JOHN HOWARD GLENN,*	B. E.,	Crowder's Creek, N. C.
EMIL GUNTER,	B. E.,	Chihuahua, Mexico
Electrical Engineer American Securities Co.		
EUGENE COLISTUS JOHNSON,	B. E.,	Ingold, N. C.
Sawmilling.		
JAMES MATTHEW KENNEDY,	B. E.,	Raleigh, N. C.
Architect.		
BENNETT LAND, JR.,	B. E.,	Jacksonville, Fla.
Division Engineer Seaboard Air Line Railway.		
JOHN THOMAS LAND,†	B. E.,	Norfolk, Va.
Civil Engineer with E. C. Foreman and J. T. Land.		
EDMOND SHAW LYTCH,	B. E.,	Laurinburg, N. C.
Laurinburg Machine Co.		

*Deceased.

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JESSE JOHN MORRIS, †	B. E.,	Norfolk, Va. Civil Engineer Norfolk and Southern Railroad.
DAVID STARR OWEN,	B. E.,	Fayetteville, N. C. Superintendent Standard Turpentine Co.
JOHN HARVEY PARKER,	B. E.,	New Bern, N. C. Pepsi-Cola Co.
JOEL POWERS,	B. E.,	Goldsboro, N. C. Draftsman Dewey Bros.
EDWARD HAYS RICKS,	B. E.,	Rocky Mount, N. C. Salesman H. E. Brewer & Co.
GASTON WILDER ROGERS,	B. E.,	Birmingham, Ala. C. E. 1905. Student of Medicine.
CHARLES BURDETTE ROSS,	B. E.,	Charlotte, N. C. J. D. Ross & Son.
JOHN HOUSTON SHUFORD,	B. S.,	Charlotte, N. C. Technical Representative and Salesman Berlin Aniline Works.
EDWARD ROE STAMPS,	B. E.,	Macon, Ga. Superintendent F. S. Royster Guano Co.
GEORGE YATES STRADLEY,	B. E.,	Steelton, Pa. Pennsylvania Steel Co.
CHARLES EDWARD TROTTER,*	B. S.,	Franklin, N. C.
JONATHAN WINBORNE WHITE, †	B. S.,	State College, Pa. Assistant Chemist Agricultural Experiment Station.
EDWIN SEYMOUR WHITING,*	B. E.,	Hamlet, N. C.

CLASS OF 1904.

NELSON ADAMS,	B. E.,	McColl, S. C. Farmer.
HAYWOOD LEWIS ALDERMAN,	B. E.,	Greensboro, N. C.
EUGENE CLEVELAND BAGWELL,	B. E.,	Plant City, Fla. Resident Engineer S. A. L. Railway.
EDWARD PAR BAILEY,	B. E.,	Wilmington, N. C. President Wilmington Iron Works.
JAMES CLAUDIUS BARBER,	B. E.,	Barber, N. C. Farmer.
WILLIAM WALTER BARBER,	B. E.,	Barber, N. C. Farmer.
WILLIAM ALEXANDER BARRETT,	B. E.,	Missoula, Mont. Electrician Missoula Light and Power Co.
TIMOTHY ELDRIDGE,	B. E.,	Mt. Olive, N. C. Superintendent Electric Light Plant.

*Deceased.

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JAMES WILLIAM FARRIOR, † General Electric Company, Testing Department.	B. E.,	Schenectady, N. Y.
WILLIAM WALTER FINLEY, Proprietor Fair View Dairy and Stock Farm.	B. S.,	North Wilkesboro, N. C.
GEORGE WASHINGTON FOUSHEE, Bookkeeper Dick's Laundry Company.	B. E.,	Greensboro, N. C.
EDGAR WILLIAM GAITHER, Assistant Chemist Ohio Agricultural Experiment Station.	B. S.,	Wooster, Ohio.
PAUL STREWALT GRIERSON, Electrician in charge Charles Cory & Son, New York.	B. E.,	Newport News, Va.
JOSEPH PERRIN GULLEY, JR., Traveling Salesman Giese Manufacturing Co.	B. E.,	Raleigh, N. C.
JARVIS BENJAMIN HARDING, Textile 1904. Civil 1905. National Railways, J. M. Reid, Chief Engineer.	B. E.,	Mexico, D. F.
GEORGE HERBERT HODGES, Mechanical Draftsman H. C. Frick Coke Co.	B. E.,	Scottsdale, Pa.
JESSE McRAE HOWARD, Overseer of Dyeing Gibson Manufacturing Co.	B. E.,	Concord, N. C.
BRANTON FAISON HUGGINS, Central Georgia Land and Lumber Co.	B. E.,	Macon, Ga.
HILL McIVER HUNTER, Assistant Purchasing Agent Proximity Manufacturing Co. and White Oak Mills.	B. E.,	Greensboro, N. C.
WILLIAM KERR, Agriculturist Murray State School of Agriculture.	B. S.,	Tishomingo, Okla.
ERNEST EDWIN LINCOLN, Draftsman Phoenix Bridge Co.	B. E.,	Phoenixville, Pa.
JOHN FAIRLY McINTYRE, † Farmer.	B. E.,	Laurinburg, N. C.
JAMES McKIMMON, General Bookkeeper Raleigh Banking and Trust Co.	B. E.,	Raleigh, N. C.
JOSEPH ALFRED MILLER, JR., Vice-President and Manager Miller Supply Co.	B. E.,	Brevard, N. C.
WILLIAM FIELD MORSON, Assistant Engineer N. & S. C. Railroad.	B. E.,	Dillon, S. C.
LEON ANDREW NEAL, Assistant Engineer Virginia and Southwestern Railway Co.	B. E.,	Bristol, Tenn.
WILLIAM JOEL PATTON, † Lumber Business.	B. E.,	Brevard, N. C.
FREDERICK COLWELL PHELPS, Fort Wm. McKinley, 12th Infantry.	B. E.,	Manila, P. I.
WILLIAM WALTER RANKIN, Professor of Mathematics, Fredericksburg College.	B. E.,	Fredericksburg, Va.

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
RISDEN PATTERSON REECE, Mechanical Designer Salem Iron Works	B. E.,	Winston-Salem, N. C.
WILLIAM RICHARDSON, JR., Engineer H. C. Frick Coke Co.	B. E.,	Scottdale, Pa.
JAMES CLARENCE TEMPLE, M. S. 1908. Bacteriologist Georgia Experiment Station.	B. S.,	Experiment, Ga.
JOSEPH KENDALL WAITT, Chief Engineer Prairie Pebble Phosphate Co.	B. E.,	Mulberry, Fla.
MARION EMERSON WEEKS, Draftsman Bureau of Equipment.	B. E.,	Washington, D. C.,
ALBERT CLINTON WHARTON, JR., Farmer.	B. S.,	Clemmons, N. C.

CLASS OF 1905.

LEROY FRANKLIN ABERNETHY, With the Abernethy Hardware Co.	B. Agr.,	Hickory, N. C.
ROBERT JAMES AVERY,†	B. Agr.,	Morganton, N. C., R. 5.
OSCAR LUTHER BAGLEY, Manager Coca-Cola Bottling Works.	B. S.,	Weldon, N. C.
BENJAMIN ALEXANDER BROOM, Assistant Shop Engineer, Chicago, Burlington and Quincy Railway Co.	B. E.,	Chicago, Ill.
JOEL W. BULLOCK, Bullock Bros., Tobacco Farm.	B. Agr.,	Whigham, Ga., R. 4.
HENRY BROZIER CARTWRIGHT, Assistant Civil Engineer Seaboard Air Line Railway.	B. E.,	Raleigh, N. C.
WILLIAM MILLER CHAMBERS, Pay-roll Clerk W. M. Ritter Lumber Co.	B. E.,	Maben, W. Va.
WALTER GOSS FINCH, Civil Engineer War Department.	B. E.,	Vicksburg, Miss.
STERLING GRAYDON, Superintendent Atherton Mills.	B. E.,	Charlotte, N. C.
RICHARD HUGH HARPER,† Manager Green Park Hotel.	B. S.,	Green Park, N. C.
JERE ISAAC HERRITAGE, Surveyor John L. Roper Lumber Co.	B. E.,	Jacksonville, N. C.
LABAN MILES HOFFMAN, JR., Bank of Dallas.	B. E.,	Dallas, N. C.
LOYD RAINEY HUNT, Electrician Cotton Mills.	B. E.,	Lexington, N. C.
ARTHUR TEMPLETON KENYON, Assistant Leotting Engineer Cataca Valley R. R. Co.	B. E.,	Calhoun, Columbia.
WM. FRANKLIN KIRKPATRICK, 1904. B. Agr First Assistant Division of Biology R. I. Experiment Station.	B. E.,	Kingston, R. I.

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
STARR NEELY KNOX, Assistant Engineer	B. E.,	Charlotte, N. C. Southern Railway.
JAMES HERRITAGE KOONCE, Assistant Civil Engineer	B. E.,	Wilmington, N. C. Seaboard Air Line Railway.
HENRY MARVIN LILLY, Draftsman and Building Superintendent	B. E.,	Port Arthur, Tex. S. P. Herbert & Co.
LIPSCOMBE GOODWIN LYKES, With Lykes Bros.,	B. E.,	Havana, Cuba. Cattle Dealers.
GEORGE GREEN LYNCH, JR., Draftsman	B. E.,	Wilmington, N. C. Atlantic Coast Line Railway.
MALCOLM ROLAND MCGIRT, Farmer.	B. Agr.,	Fayetteville, N. C.
WALTER HOGE MCINTYRE, M. S. Pa. State College. Assistant in Agronomy	B. S.,	State College, Pa. Pennsylvania State College.
JAMES OSCAR MORGAN, Professor of Agronomy	B. Agr.,	Agricultural College, Miss. Mississippi Agricultural College.
LINDSAY ALEXANDER MURR, Resident Engineer	B. E.,	Jacksonville, Fla. Seaboard Air Line Railway.
GARLAND PERRY MYATT, Chemist	B. S.,	Camden, N. J. General Chemical Co.
JOHN ALSEY PARK, Carolina Garage and Machine Co.	B. E.,	Raleigh, N. C.
JAMES HICKS PIERCE, Wholesale Lumber.	B. S.,	Warsaw, N. C.
PLEASANT H. POINDEXTER, JR., † Manager	B. Agr.,	Canadian, Tex. Yard Panhandle Lumber Co.
EDWARD GRIFFITH PORTER, † Bridge Engineer	B. E.,	Tampa, Fla. Seaboard Air Line Railway.
ROBERT WALTER SCOTT, JR., Superintendent of Edgewood Test Farm.	B. Agr.,	Rocky Mount, N. C. N. C. Agricultural Department.
JONATHAN RHODES SMITH, Structural Draftsman	B. E.,	Phoenixville, Pa. The Phoenix Bridge Co.
JOHN DAVIDSON SPINKS, Junior Engineer	B. E.,	Wilmington, N. C. U. S. Engineering Office, War Department.
ERVIN BLAKENEY STACK, Electrical Engineer and Contractor.	B. E.,	Monroe, N. C.
SYLVESTER MURRAY VIELE, Pennsylvania Railroad Co.	B. E.,	New York, N. Y.
WALTER JENNINGS WALKER, † General Electric Co.	B. E.,	Schenectady, N. Y. Home address, Winston-Salem, N. C.
STEVEN DOCKERY WALL,*	B. E.,	Rockingham, N. C.

*Deceased.

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
WALTER WELLINGTON WATT, JR., Draftsman-Salesman, A. H. Washburn Co., Charlotte, N. C.	B. E.,	Charlotte, N. C.
ARCHIE CARRAWAY WILKINSON,† Locating Engineer Shooford & Seaver, Civil Engineers. Home address, Charlotte, N. C.	B. E.,	Waynesville, N. C.
CLASS OF 1906.		
DURANT STEWART ABERNETHY, Civil Engineer Southern Railway.	B. E.,	Lynchburg, Va.
GEORGE GILDEROY ALLEN, Gibson Manufacturing Co.	B. E.,	Concord, N. C.
GEORGE PAGE ASBURY,† Civil Engineer C., C. & O. Railway.	B. E.,	Jonesboro, Tenn., R. 5.
JAMES CLAUDIUS BEAVERS, Scientific Assistant U. S. Department of Agriculture.	B. Agr.,	Washington, D. C.
NEEDHAM ERIC BELL, Farm Management Assistant Chemist Agricultural Experiment Station.	B. S.,	Auburn, Ala.
KENNET LEON BLACK,† Civil Engineer with I. J. Smith Co., Contractors.	B. E.,	Richmond, Va.
WILLIAM ANDREWS BUYS,† Civil Engineer for Interstate Cooperation Co.	B. E.,	Belhaven, N. C.
MARK HOPKINS CHESBRO, Dairyman and Farmer.	B. Agr.,	Claremont, Va.
CONNOR CALHOUN CLARDY, Inspector Construction and Tests, Detroit River Tunnel Co.	B. E.,	Detroit, Mich.
JOHN WASHINGTON CLARK, B. E. (Tex.) 1907. Gibson Manufacturing Co.	B. E.,	Concord, N. C.
JAMES DUNCAN CLARK, Carbonic Acid Manufacturer.	B. S.,	Tampa, Fla.
SAMUEL HERBERT CLARKE,† Civil Engineer.	B. E.,	Statesville, N. C.
WILEY THEODORE CLAY, M. E. Instructor N. C. College of Agriculture and Mechanic Arts.	M. E.,	West Raleigh, N. C.
DUNCAN ARCHIBALD COX, Grocery Business.	B. S.,	Rowland, N. C.
ALEXANDEE DOANE CROMARTIE,† Farmer.	B. Agr.,	Garland, N. C.
LATTA VANDERION EDWARDS, Instructor in Railroad Engineering, Cornell University.	B. E.,	Ithaca, N. Y.
WELDON THOMPSON ELLIS, M. E. 1908. Assistant Professor of Mechanical Engineering N. C. College of Agriculture and Mechanic Arts.	B. E.,	West Raleigh, N. C.
ALBERT EDWARD ESCOTT, Secretary Raleigh Cotton Mills and Neuse River Mills.	B. E.,	Raleigh, N. C.

†Not heard from this year.

REGISTER OF ALUMNI.

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<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
WILLIAM CARLYLE ETHERIDGE, M. S. 1903. Assistant in Field Crops, North Carolina Agricultural Experiment Station.	B. Agr.,	West Raleigh, N. C.
JAMES BECKETT EWART, Western Electric Co.	B. E.,	Hawthorne, Ill.
SHIRLEY WATSON FOSTER, Agent and Expert Bureau of Entomology, U. S. Department of Agriculture.	B. Agr.,	Washington, D. C.
ARTHUR WYNNE GREGORY, British-American Tobacco Co.	B. S.,	Shanghai, China.
HORACE LESTER HAMILTON, Technical Writer General Electrical Co.	B. E.,	Schenectady, N. Y.
JOHN FREDERICK HANSELMAN, Northern Alabama Reduction Co.	B. E.,	Sheffield, Ala.
CLARENCE WILSON HEWLETT, Graduate Student and Student Assistant Johns Hopkins University.	B. E.,	Baltimore, Md.
JAMES ALLAN HIGGS, JR., † Draftsman Southern Railway.	B. E.,	Knoxville, Tenn.
WILLIAM GRAHAM KNOX, Chemist Western Electric Co.	B. E.,	New York.
JOE POINDEXTER LOVILL, † Civil Engineer North Coast Lumber Co.	B. E.,	Spokane, Wash.
THOMPSON MAYO LYKES, Secretary The Lykes Company.	B. E.,	Tampa, Fla.
HORACE SMITH McLENDON, Farm Manager. Holder Real Estate Co.	B. Agr.,	Sanford, Fla.
RAYMOND MAXWELL, Chief Engineer Mattamuskeet Railroad.	B. E.,	Belhaven, N. C.
LACY MOORE, Engineering Department Southern Railway.	B. E.,	Lynchburg, Va.
JOSEPH GRAHAM MORRISON, Merchant and Cotton Manufacturer.	B. Agr.,	Stanley, N. C.
JESSE CLARENCE MYRICK, † Electrician Tidewater Power Co.	B. E.,	Wilmington, N. C.
CHARLES FRANKLIN NIVEN, † Professor of Agriculture in North Georgia Agricultural College.	B. Agr.,	Dahlonega, Ga.
LOLA ALEXANDER NIVEN, Horticulturist Winthrop Normal and Industrial College.	B. Agr.,	Rock Hill, S. C.
LEWIS MILTON ODEN, Dairyman.	B. Agr.,	Raleigh, N. C.
THOMAS JEFFERSON OBGURN, JR., Everett Waddey Co.	B. E.,	Richmond, Va.
CLYDE ESTER PARKER, Firm of Parker Bros. & Co., Cotton Brokers and Merchants.	B. S.,	Raleigh, N. C.

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address</i>
SAMUEL OSCAR PERKINS,	B. S.,	Odako, N. C.
	Farmer.	
ANGELO BETTLENA PIVER,†	B. E.,	Phoenixville, Pa.
	Draftsman	Phoenix Bridge Co.
WILLIAM CRAWFORD PIVER,	B. S.,	New York, N. Y.
	With F. C. R. Hemingway,	Chemist.
DURANT WAITE ROBERTSON,	B. E.,	Washington, D. C.
	Special Agent Bureau of The Census.	
FREDDIE JACKSON TALTON,	B. Agr.,	Pikeville, N. C., R. 2.
	Farmer.	
RICHARD HENRY TILLMAN,	B. E.,	Baltimore, Md.
	Industrial Engineer Consolidated Gas, Electric Light and Power Co. of Baltimore.	
WILLIAM SIDNEY TOMLINSON,	B. E.,	Portsmouth, Va.
	Civil Engineer Seaboard Air Line Railway.	
REID TULL,	B. E.,	Woodsboro, N. C.
	Assistant Engineer Winston-Salem Southbound Railway.	
JACKSON CORPENING TUTTLE,	B. E.,	Schenectady, N. Y.
	Designing Engineer General Electric Co.	
ROBERT PEELE UZZELL,†	B. Agr.,	Goldsboro, N. C.
	Farming.	
PETER VALAER, JR.,	B. S.,	Washington, D. C.
	Assistant Chemist Bureau Internal Revenue.	
LILLIAN LEE VAUGHAN,	B. E.,	New York.
	Student Columbia University.	
JOHN HARLEY WILLIAMS,	B. E.,	Chicago, Ill.
	Student Institute and Training School of the Y. M. C. A.	
LEWIS TAYLOR WINSTON,	B. Agr.,	Bristol, Tenn.
	Assistant Cashier Bristol Gas and Electric Co.	

CLASS OF 1907.

HERBERT SCANDLIN BATTIE,	B. E.,	Steelton, Pa.
	Pennsylvania Steel Co.	
JOE PITTMAN BIVENS,†	B. E.,	New York, N. Y.
	Meter Tester New York Edison Co.	
CARNEY JOHN BRYAN,	B. E.,	Panama City, Fla.
	Wholesale Dealer in Fish and Oysters.	
LINDSAY FERGUSON CARLETON,	B. E.,	Charlotte, N. C.
	Secretary Ideal Electric Co.	
ROBERT HILL CARTER,	B. E.,	Corozal, Canal Zone, Panama.
	United States Government.	
JACOB TATUM EATON,	B. Agr.,	Farmington, N. C.
	Farmer and Dairyman.	
SEBA ELDRIDGE,	B. E.,	New York City, N. Y.
	Student Columbia University.	

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
BENJAMIN BRYAN EVERETT,	B. Agr.,	Palmyra, N. C.
	Farmer.	
JOHN LINDSAY FERGUSON,	B. E.,	Wilkinsburg, Pa.
Testing Department Westinghouse	Electric and Manufacturing Co.	
ELIAS VAN BUREN FOWLER,	B. E.,	Schenectady, N. Y.
Testing Department	General Electric Co.	
CLEMENT LEINSTER GARNER,	B. E.,	Manila, P. I.
U. S. Coast and Geodetic Survey.		
LOVIC RODGERS GILBERT,	B. E.,	Rock Hill, S. C.
Purchasing Agent	Hamilton-Carhart Cotton Mills.	
ROY JOSEPH GILL,	B. E.,	Manila, P. I.
Civil Engineer	Bureau of Lands.	
ROBERT STRICKLER GRAVES,	B. E.,	Cincinnati, O.
Salesman	General Electric Co.	
GEORGE ROM. HARDESTY,	B. E.,	Goldsboro, N. C.
Chief Engineer	State Hospital.	
PHILIP WILLIAM HARDIE,	B. E.,	Manila, P. I.
Civil Engineer	U. S. Government.	
JOKTON LAFAYETTE HEMPHILL,	B. E.,	Schenectady, N. Y.
With General	Electric Co.	
LAWRENCE JAMES HERRING,	B. Agr.,	Experiment, Ga.
Animal Pathologist and Veterinarian.		
GUY FRANCIS HINSHAW,	B. E.,	Winston-Salem, N. C.
City Engineer.		
WILLIAM NORMAN HOLT,†	B. E.,	Smithfield, N. C.
Manager	Brokerage Co., Holt & Adams.	
ALBERT CARL JONES,	B. Agr.,	High Point, N. C.
City Meat and Milk Inspector and Veterinarian.		
WILLIAM WHITMORE JONES,	B. E.,	Franklin, N. C.
Engineer	Franklin Light and Power Co.	
LAFAYETTE FRANCK KOONCE,	B. Agr.,	Raleigh, N. C.
D. V. S. Kansas City Veterinary College.	Veterinarian.	
LOUIS EDGAR LOUGEE,†	B. S.,	Pittsburg, Pa.
Jones & Laughlin	Steel Co.	
HENRY KREIGER MCCONNELL,	B. S.,	West Nashville, Tenn.
Chemist	Federal Chemical Co.	
OSCAR FRANKLIN MCNAIRY,	B. E.,	Greensboro, N. C.
Employ of	Seaboard Air Line Railway.	
EUGENE FRANKLIN MEADOR,	B. E.,	Danville, Va.
Machinist	Riverside Cotton Mills.	
BENNETT TAYLOR MIAL,		Gadsden, Ala.
Resident Engineer	McClintoc-Marshall Construction Co.,	Pittsburgh, Pa.
FRANK CURTIS MICHAEL,	B. E.,	New York.
Erecting Engineer	Consolidated Engine Stop Co.	

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JOHN MAPLE MILLS,	B. E.,	Raleigh, N. C.
		Raleigh and Southport Railroad.
HENRY STARBUCK MONTAGUE,	B. S.,	Agricultural College, Miss.
		Assistant to State Chemist.
JOHN LIGHTFOOT MORSON,	B. E.,	Raleigh, N. C.
		Civil Engineer Seaboard Air Line Railway.
JAMES ELWOOD OVERTON,†	B. Agr.,	Ahoskie, N. C.
		Dealer in Peanuts.
THOMAS FRANKLIN PARKER,	B. Agr.,	Rome, Ga.
		M. S. 1908. Agriculturist Berry School.
FRED MAYNARD PARKS,	B. E.,	Wilksburg, Pa.
		Westinghouse Electric and Manufacturing Co.
ARTHUR LEE PASCHAL,	B. Agr.,	Labaina, H. I.
		Territorial Government School.
GUY PINNER,	B. E.,	Wilmington, Del.
		Structural Draftsman The American Bridge Co.
WINSLOW GERALD PITMAN,†	B. E.,	Cumberland, Md.
		McClintic-Marshall Construction Co., Pittsburg, Pa.
		Home address, Lumberton, N. C.
JAMES KEMP PLUMMER,	B. S.,	Ithaca, N. Y.
		M. S. 1909. Assistant in Chemistry Cornell University.
LEON JACOB SCHWAB,	B. E.,	Savannah, Ga.
		Civil Engineer Central of Georgia Railway.
JOHN OSCAR SHUFORD,	B. E.,	Lincolnton, N. C.
		Superintendent Lincolnton Electric Light Plant.
VANCE SYKES,	B. E.,	Wilmington, N. C.
		Assistant Engineer Seaboard Air Line Railway.
LUTHER RUSSELL TILLET,	B. E.,	Manila, P. I.
		Civil Engineer, Bureau of Lands.
WILLIAM BROOKS TRUITT,	B. E.,	Greensboro, N. C.
		Greensboro Boiler and Machine Works.
JOHN ED. TURLINGTON,	B. Agr.,	Ithaca, N. Y.
		Graduate Student Cornell University.
EDMUND FARRISS WARD,	B. Agr.,	Smithfield, N. C.
		Lawyer.
LINDSAY MARADE WEAVER,	B. E.,	Lexington, N. C.
		Bookkeeper, Cotton Mills.
JOHN JACKSON WELLS,	B. E.,	Rocky Mount, N. C.
		Civil Engineer.
DAVID LYNDON WHITE,†	B. Agr.,	Greensboro, N. C., R. 2.
		Dairyman Greensboro Creamery.
CECIL BERNARD WHITEHURST,	B. E.,	Philadelphia, Pa.
		Salesman Western Electric Co.
ARTHUR JOHN WILSON,	B. S.,	Ithaca, N. Y.
		M. S. 1908. Assistant in Chemistry, Cornell University.

†Not heard from this year.

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CLASS OF 1908.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JOHN CAMILLUS APP, † Chief Chemist and Bacteriologist	B. S.,	Charleston, W. Va. Kanawha Water and Light Co.
FRANK OSCAR BALDWIN, Mathieson Alkali Works.	B. S.,	Saltville, Va.
GEORGE FRANCIS BASON, Crocker-Wheeler Electric Co.	B. E.,	Ampere, N. J.
JOHN LELAND BECTON, Deputy City Engineer.	B. E.,	Wilmington, N. C.
HARWOOD BEEBE, † Farming.	B. E.,	Spies, N. C.
WILLIAM LAMAR BLACK, † Southern Power Co.	B. E.,	Rock Hill, S. C.
ASA GRAY BOYNTON, Landscape Engineer	B. E.,	Biltmore, N. C. Vanderbilt Estate.
FRANK HAMILTON BROWN, Teacher	B. Agr.,	Cullowhee, N. C. Cullowhee Normal and Industrial School.
JOHN HARVEY BRYAN, Superintendent	B. E.,	Washington, N. C. Electric Light Plant.
WILLIAM BRYANT BURGESS, Electrical Draftsman	B. E.,	Portsmouth, Va. Navy Yard.
LEWELLYN HILL COUCH, Southern Bell Telephone and Telegraph Co.	B. E.,	Hamlet, N. C.
CLAUD COUNCIL DAWSON, Mayes Manufacturing Co.	B. E.,	Charlotte, N. C.
ALVIN DEANS DUPREE, †	B. E.,	Greenville, N. C.
RAYMOND ROWE EAGLE, Civil Engineer	B. Agr.,	New Bern, N. C. Brown & Eagle.
MINNIC LUTHER EARGLE, Agriculturist	B. Agr.,	Yadkin Valley, N. C. Patterson School.
ISAAC HERBERT FARMER, Draftsman	B. E.,	Portsmouth, Va. Seaboard Air Line Railway.
BENJAMIN TROY FERGUSON, Farm Superintendent	B. Agr.,	Pomona, N. C. J. Van Lindley Nursery Co.
PERCY LEIGH GAINES, Instructor	B. Agr.,	West Raleigh, N. C. N. C. College of Agriculture and Mechanic Arts.
JUNIOUS TALMAGE GARDNER, Shelby Insurance and Realty Co.	B. E.,	Shelby, N. C.
SETH MANN GIBBS, Civil Engineer		Birmingham, Ala. Seaboard Air Line Railway.
MAURICE MORDECAI GLASSER, †	B. E.,	Charleston, S. C.
MOSES HENRY GOLD, Civil Engineer		Monroe, N. C. Seaboard Air Line Railway.

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JOHN DAVID GRADY, Manager of Dairy Farm.	B. Agr.,	Columbus, Ga., R. 4.
DORSEY YATES HAGAN,† Bandy & Myers, Consulting Engineers.	B. E.,	Greensboro, N. C.
MAURICE HENDRICK, Cliffside Cotton Mills.	B. E.,	Cliffside, N. C.
HERBERT WILLIAM KUEFFNER, Civil Engineer with Gilbert C. White.	B. E.,	Durham, N. C.
CLAUDE MILTON LAMBE, Assistant Resident Engineer	B. E.,	Norwood, N. C.
CHARLES EDWARD LATTA, Grocer.	B. E.,	Raleigh, N. C.
DAVID LINDSAY, Assistant Superintendent	B. E.,	Draper, N. C.
JOHN HENRY LITTLE, General Electric Co.	B. E.,	Pittsfield, Mass.
GEORGE LAFAYETTE LYERLY, Shuford Hardware Co.	B. E.,	Hickory, N. C.
CLARENCE TALMAGE MARSH, Second Lieutenant U. S. Army.	B. E.,	Fort McKinley, Me.
DAVID JOHN MIDDLETON, Farming, Employ of G. B. D. Parker.	B. Agr.,	Warsaw, N. C.
BENJAMIN FRANKLIN PITTMAN,† Virginia Passenger and Power Co.	B. E.,	Richmond, Va.
LAWRENCE LYON PITTMAN, Civil Engineer and Surveyor.	B. E.,	Whitakers, N. C.
RUBLE ISAAC POOLE, Student Cornell University.	B. E.,	Ithaca, N. Y.
HARRY ALEXANDER POWELL, Turpentine Business.	B. E.,	Melbourne, Fla.
JAMES ALEXANDER POWELL, Apprentice Engineer Westinghouse Machine Co.	B. E.,	Wilkinsburg, Pa.
THOMAS MILTON POYNER, Civil Engineer Seaboard Air Line Railway.	B. E.,	Aberdeen, N. C.
EDGAR ENGLISH SMITH,† Deck Officer U. S. Coast and Geodetic Survey.	B. E.,	San Juan, Porto Rico.
JAMES LAWRENCE SMITH, JR., Assistant Engineer Raleigh and Southport Railway.	B. E.,	Fayetteville, N. C.
JESSE PAGE SPOON, Kansas City Veterinary College.	B. Agr.,	Kansas City, Neb.
JOHN SNIPES STROUD, Durham Hosiery Mill Co.	B. E.,	Chapel Hill, N. C.
JOHN LAWRENCE VON GLAHN, Instructor N. C. College of Agriculture and Mechanic Arts.	B. E.,	West Raleigh, N. C.

†Not heard from this year.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
ROYALL EDWARD WHITE,	B. E.,	Aulander, N. C.
	(Civil Engineer.	
JOHN C. WILLIAMS,	B. E.,	Savannah, Ga.
	Draftsman Central of Georgia Railroad.	
WOODFIN BRADSHAW YARBROUGH,	B. E.,	Locust Hill, N. C.
	Farming.	
JOHN FRANKLIN ZIGLAR,	B. E.,	Winston-Salem, N. C.
	Draftsman Winston-Salem Southbound Railway.	

CLASS OF 1909.

JOHN ALLEN AREY,	B. S.,	West Raleigh, N. C.
	Instructor N. C. College of Agriculture and Mechanic Arts.	
WILLIAM HERBERT DOUGHTY BANCK,	B. E.,	Montgomery, Ala.
	Draftsman U. S. Engineering Office.	
CECIL DEWITT BROTHERS,	B. E.,	Knight's Key, Fla.
	Florida East Coast Railway, Pigeon Key Camp.	
THORNE MCKENZIE CLARK,	B. E.,	Raleigh, N. C.
	Commercial National Bank.	
WALTER MILLER COWLES,	B. E.,	Ithaca, N. Y.
	Student at Cornell University.	
JOSEPH FRANK DAVIDSON,	B. E.,	Norwood, O.
	Electrical Testing Department, Allis-Chalmers Co.	
WILLIAM SAMUEL DEAN,	B. E.,	Henderson, N. C.
	Textile Work. (Home address, Oxford, N. C., R. F. D. 2.)	
CARLTON O'NEAL DOUGHTERY,	B. E.,	Bellamy, S. C.
	Belton Cotton Mills.	
FRED ATHA DUKE,	B. E.,	Raleigh, N. C.
	Civil Engineer Club Construction Co.	
WILLIAM HUNT EATON,	B. S.,	Raleigh, N. C.
	Assistant State Dairying, N. C. Department of Agriculture. (Home address, Cleveland, N. C.)	
RALPH RINGGOLD FAISON,	B. S.,	Manila, P. I.
	Philippine Constabulary, Third Lieutenant.	
WILLIAM ALEXANDER FAISON,	B. E.,	Champaign, Ill.
	Student University of Illinois.	
FRANK LINDSAY FOARD,	B. S.,	Winston Salem, N. C.
	Reid Grocery Co.	
ROSCOE LOOMIS FOX,	B. E.,	Kannapolis, N. C.
	Working Through Mill.	
LEWIS PRICE GATTIS,	B. E.,	Wilmington, N. C.
	Civil Engineer Atlantic Coast Line Railroad.	
ALBERT SIDNEY JOHNSTON GOSS,	B. E.,	Union, S. C.
	Assistant Engineer Hydro-Electric Department, Southern Power Co.	

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
CHARLIE POOL GRAY,	B. E.,	Buxton, N. C.
ANDREW HARTSFIELD GREEN,	B. S.,	Raleigh, N. C.
WILLIAM ROY HAMPTON,	B. S.,	Plymouth, N. C.
		General Manager W. H. Hampton Co.
JOHN WILLIAM HARRELSON,	B. E.,	West Raleigh, N. C.
		Instructor N. C. College of Agriculture and Mechanic Arts.
GORDON HARRIS,	B. E.,	Schenectady, N. Y.
		Student Engineer General Electric Co.
THOMAS FREDERICK HAYWOOD,	B. E.,	Trenton, N. C.
LEONARD HENDERSON,	B. E.,	Wilkinsburg, Pa.
		Westinghouse Electric and Manufacturing Co.
BASCOMBE BRITT HIGGINS,	B. S.,	West Raleigh, N. C.
		Instructor N. C. College of Agriculture and Mechanic Arts.
DANIEL HARVEY HILL, JR.,	B. S.,	Princeton, N. J.
		Student Princeton University.
WAYNE ARINGTON HORNADAY,	B. S.,	West Raleigh, N. C.
		Instructor N. C. College of Agriculture and Mechanic Arts.
JOHN WILLIAM IVEY,	B. E.,	Macon, Ga.
		Erecting Machinist, Murph Machinery Co.
WILLIAM FLADGER R. JOHNSON,	B. E.,	Dillon, S. C.
		Civil Engineer, J. M. Johnson, Marion, S. C.
FREDERICK JOHN JONES,	B. E.,	New Bern, N. C.
		Surveyor U. S. Engineering Department.
JAMES EDWARD LATHAM,	B. S.,	Manila, P. I.
		Philippine Constabulary, Third Lieutenant.
RALPH LONG,	B. S.,	Suffolk, Va.
		Grain Business.
SAMUEL HUXLEY McNEELY,	B. E.,	Schenectady, N. Y.
		Testing Engineer, General Electric Co.
SAMUEL MACON MALLISON,	B. E.,	Washington, N. C.
WILLIAM ROYDEN MARSHALL,	B. E.,	Swissvale, Pa.
		Apprentice and Erecting Engineer, Westinghouse Machine Co.
RALPH CECIL MASON,	B. S.,	Edenton, N. C.
		Farming for J. W. Mason.
ARTHUR BALLARD MASSEY,	B. S.,	Gainesville, Fla.
		Assistant Entomologist, Experiment Station.
WALKER MOREHEAD MILLNER,	B. E.,	Spray, N. C.
		Working Through Mill.
BENJAMIN FRANKLIN MONTAGUE,	B. E.,	Winston-Salem, N. C.
		Assistant Engineer, with J. N. Ambler.
WILLIAM FLAUD MORRIS,	B. E.,	West Raleigh, N. C.
		Instructor N. C. College of Agriculture and Mechanic Arts.
SAMUEL LOFTIN OLIVER,	B. E.,	East Norwood, Ohio.
		Graduate Student, Allis-Chalmers Co., Bullock Works.

<i>Name.</i>	<i>Degree.</i>	<i>Address.</i>
JULIUS MONROE PARKER, Draughtsman, General Fire Extinguisher Co.	B. E.,	Charlotte, N. C.
JOHN GILBERT PASCHAL, Missouri Pacific Railroad.	B. E.,	St. Louis, Mo.
PETER PENICK PIERCE, Florida East Coast Railway, Pigeon Key Camp.	B. E.,	Knight's Key, Fla.
PAUL MILLER PITTS, Mechanical Engineer, Greensboro Boiler and Machine Co.	B. E.,	Greensboro, N. C.
JOHN MOIR PRICE, Student Lehigh University.	B. E.,	South Bethlehem, Pa.
ROBERT RICHARD REINHARDT, Graduate Student North Carolina College of Agriculture and Mechanic Arts.	B. S.,	Raleigh, N. C.
ALFRED PRATTE RIGGS, Florida East Coast Railway, Pigeon Key Camp.	B. E.,	Knight's Key, Fla.
JOSEPH HENRY ROBERTSON, Electric Meterman, North Carolina, Public Service Co.	B. E.,	Greensboro, N. C.
JAMES OLIN SADLER, L. & N. Railway.	B. E.,	Louisville, Ky.
FRANCIS WEBBER SHERWOOD, Assistant Chemist North Carolina Agricultural Experiment Station.	B. S.,	West Raleigh, N. C.
ROBERT ARNOLD SHOPE, Philippine Constabulary, Third Lieutenant.	B. E.,	Manila, P. I.
GEORGE GRAY SIMPSON, Associate Editor Textile Manufacturer.	B. E.,	Charlotte, N. C.
WILLIAM NEVILLE SLOAN, Sloan Brothers, Merchant.	B. E.,	Franklin, N. C.
HUGH STUART STEELE, Florida East Coast Railway, Pigeon Key Camp.	B. E.,	Knight's Key, Fla.
SAMUEL FATIO STEPHENS, Instructor North Carolina College of Agriculture and Mechanic Arts.	B. E.,	West Raleigh, N. C.
HENRY NEWBOLD SUMNER, Second Lieutenant U. S. Army.	B. E.,	Washington, D. C.
CLAUDE STRATTON TATE, Machinist, Sterling Manufacturing Co.	B. E.,	Littleton, N. C.
MALVERN HILL TERRELL, Piedmont Electric Co.	B. E.,	Asheville, N. C.
JAMES EDWIN TOOMER, Assistant Chemist, Pennsylvania Experiment Station.	B. S.,	State College, Pa.
JOSEPH SLAUGHTER WHITEHURST, Clerk for Norfolk and Southern Railroad Co.	B. E.,	Elizabeth City, N. C.
JOHN SPICER WILSON, Testing Department Allis-Chalmers Co.	B. E.,	Cincinnati, Ohio.
PAUL ADAMS WITHERSPOON, Student Lehigh University.	B. E.,	South Bethlehem, Pa.
ROBERT JOB WYATT, Clerk Job P. Wyatt & Son.	B. E.,	Raleigh, N. C.