THE

NORTH CAROLINA COLLEGE

OF

AGRICULTURE AND MECHANIC ARTS,

WEST RALEIGH.

1905-1906

RALEIGH:
E. M. UZZELL & CO., STATE PRINTERS AND BINDERS.
1906.

CALENDAR.

1906.

JANUARY.

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1907.

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COLLEGE CALENDAR.

1906.

Thursday,	July	12,	Entrance examination at each county court-house, 10 A. M.
Wednesday,	September	5,	Entrance examination at the College, 9 A. M.
Thursday,	September	6,	First Term begins; Registration Day.
Wednesday,	September	5,	Examinations to remove conditions. See page 21.
Thursday,	September	6,	
Friday,	September	7,	
Saturday,	September	8,	
Thursday,	November	29,	Thanksgiving Day.
Thursday,	December	20,	First Term ends.

1907.

Friday,	January	4,	Second Term begins; Registration Day.
Saturday,	February	2,	Examinations to remove conditions. See page 21.
Saturday,	February	9,	
Saturday,	February	16,	
Saturday,	February	23,	
Saturday,	March	16,	Second Term ends.
Monday,	March	18,	Third Term begins; Registration Day.
Sunday,	May	26,	Baccalaureate Sermon.
Monday,	May	27,	Alumni Day.
Tuesday,	May	28,	Annual Oration.
Wednesday,	May	29,	Commencement Day.

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(State Board of Agriculture.)

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CHARLES WILLIAM BURKETT, M.Sc., Ph.D., Professor of Agriculture.

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FRANK LINCOLN STEVENS, M.Sc., Ph.D., Professor of Botany and Vegetable Pathology.

ELLERY BURTON PAINE, M.S., E.E., Professor of Electrical Engineering and Physics.

H. HAROLD HUME, B.Agr., M.S., Professor of Horticulture.

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WILSON GILLHAM HEATON, First Lieutenant U. S. A., Professor of Military Science and Tactics.

BENJAMIN WESLEY KILGORE, M.S., Lecturer on Soils and Fertilizers.

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JOHN CHESTER KENDALL, B.S., Assistant Professor of Dairy Husbandry.

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THOMAS NELSON, Instructor in Weaving and Designing.

CARROLL LAMB MANN, B.S., Instructor in Mathematics.

PINCKNEY GUSTAVE DEAL, Instructor in Forge Shop and Pattern-making.

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GEORGE SUMMEY, JR., Ph.D., Instructor in English.

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CHARLES WALKER, Ph.D., Instructor in Chemistry.

ALFRED DE ST. AMANT, B.S., Instructor in Drawing.

RANDOLPH FITZHUGH MASON, B.A., Instructor in English.

FRANK REIMER, M.S., Instructor in Horticulture.

JOHN HOUSTON SHUFORD, B.S., Instructor in Dyeing.

CLARENCE ANDREW SPRAGUE, B.S., Instructor in Physics.

ALFRED HENRY THIESSEN, B.S., Instructor in Meteorology.

RUSSELL SAGE WOGLUM, A.B., M.S.A., Instructor in Entomology.

WILEY THEODORE CLAY, Instructor in Wood-working.

CHARLES HERBERT LAWRANCE, B.S., Instructor in Drawing.

OSCAR LUTHER BAGLEY, B.S., Instructor in Chemistry.

RICHARD HUGH HARPER, B.S., Instructor in Chemistry.

JOHN ALSEY PARK, B.E., Instructor in Mathematics.

HERBERT NATHANIEL STEED, Assistant in Textile Industry.

JAMES CLARENCE TEMPLE, B.Agr., Assistant in Bacteriology.

ARTHUR JOHN WILSON, Assistant in Chemistry.

OTHER OFFICERS.

EDWIN BENTLEY OWEN, B.S., Registrar and Proctor.

ARTHUR FINN BOWEN, Bursar.

BENJAMIN SMITH SKINNER, Steward.

MISS CAROLINE BALDWIN SHERMAN, Librarian.

MRS. DAISY LEWIS, Matron.

JAMES RUFUS ROGERS, A.B., M.D., Physician.

AGRICULTURAL EXPERIMENT STATION DEPARTMENT.

GEORGE TAYLOE WINSTON, A.M., LL.D., President.

BENJAMIN WESLEY KILGORE, M.S., Director.

WILLIAM ALPHONSO WITHERS, A.M., Chemist.

CHARLES WILLIAM BURKETT, M.Sc., Ph.D., Agriculturist.

TAIT BUTLER, V.S., Veterinarian.

FRANK LINCOLN STEVENS, M.S., Ph.D., Biologist.

H. HAROLD HUME, M.S., Horticulturist.

RUSSELL SAGE WOGLUM, Acting Entomologist.

JOHN STRAUCHON JEFFREY, Poultryman.

OSCAR LUTHER BAGLEY, B.S., Assistant Chemist.

RICHARD HUGH HARPER, B.S., Assistant Chemist.

JOHN CHESTER KENDALL, B.S., Assistant, Dairy Husbandry.

WILLIAM KERR, B.Agr., Assistant, Field Experiments.

ARTHUR FINN BOWEN, Bursar.

MILITARY ORGANIZATION.

Commandant of Cadets.

FIRST LIEUTENANT WILSON G. HEATON, U. S. Army.

Cadet Major.

W. G. KNOX.

Battalion Staff.

M. H. CHESBRO, Second Lieutenant and Quartermaster.

G. P. ASBURY, Captain and Adjutant.

Non-commissioned Staff.

W. B. TRUITT, Sergeant Major.

A. C. JONES, Quartermaster Sergeant.

C. B. WHITEHURST, Color Sergeant.

Officers Unassigned.

W. C. PIVER, Captain.

T. J. OGBURN, First Lieutenant.

Band.

F. M. PARKS, Drum Major.

W. N. HOLT, Sergeant.

H. S. BATTIE, Sergeant.

L. E. LOUGEE, Sergeant.

C. J. BRYAN, Corporal.

Company A.

D. A. COX, Captain.

T. M. LYKES, First Lieutenant.

L. L. VAUGHAN, Second Lieutenant.

R. MAXWELL, Second Lieutenant.

P. W. HARDIE, First Sergeant.

L. R. GILBERT, Sergeant.

W. L. BLACK, Corporal.

J. K. PLUMMER, Corporal.

C. C. DAWSON, Corporal.

E. V. FOWLER, Corporal.

W. W. JONES, Corporal.

Company B.

D. W. ROBERTSON, Captain.

J. G. MORRISON, First Lieutenant.

A. W. GREGORY, Second Lieutenant.

K. L. BLACK, Second Lieutenant.

G. R. HARDESTY, First Sergeant.

L. J. SCHWAB, Sergeant.

H. S. MONTAGUE, Sergeant.

C. L. GARNER, Sergeant.

J. J. WELLS, Sergeant.

D. LINDSAY, Corporal.

D. Y. HAGAN, Corporal.

G. H. CALDWELL, Corporal.

E. E. SMITH, Corporal.

H. I. STANBACK, Corporal.

Company C.

R. H. TILLMAN, Captain.

A. B. PIVER, First Lieutenant.

L. MOORE, Second Lieutenant.

A. E. ESCOTT, Second Lieutenant.

R. H. CARTER, First Sergeant.

E. F. MEADOR, Sergeant.

R. GILL, Sergeant.

R. S. GRAVES, Sergeant.

L. H. COUCH, Corporal.

R. E. WHITE, Corporal.

L. M. WEAVER, Corporal.

Company D.

L. T. WINSTON, Captain.

J. F. HANSELMAN, First Lieutenant.

J. W. CLARK, Second Lieutenant.

N. E. BELL, Second Lieutenant.

G. F. HINSHAW, First Sergeant.

J. L. FERGUSON, Sergeant.

B. B. EVERETT, Sergeant.

J. O. SHUFORD, Sergeant.

J. E. OVERTON, Sergeant.

W. G. PITMAN, Sergeant.

E. W. GREGORY, Corporal.

W. G. FERGUSON, Corporal.

T. M. POYNER, Corporal.

L. J. HERRING, Corporal.

Company E.

W. S. TOMLINSON, Captain.

J. P. LOVILL, First Lieutenant.

B. B. EGERTON, Second Lieutenant.

J. H. WILLIAMS, Second Lieutenant.

J. L. HEMPHILL, First Sergeant.

L. F. CARLETON, Sergeant.

W. C. STAPLES, Sergeant.

O. F. McNAIRY, Sergeant.

J. M. MILLS, Sergeant.

C. E. STEWART, Corporal.

A. G. BOYNTON, Corporal.

A. D. DUPREE, Corporal.

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 to aid in the support of the College and of the State Agricultural Experiment Station, which is now a department of the College.

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 twelve deep wells. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns six hundred and twenty-five acres of land and sixteen buildings, and its teaching force consists of forty specialists. Its laboratories, drawing-rooms and work-shops are well equipped. Its library contains four thousand six hundred volumes, and its reading-room is well supplied with literary and technical journals and newspapers.

BUILDINGS.

The Main 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 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, which has attached a fine range of glass structures. The upper floors contain a large lecture-room and horticultural laboratory. The plant-houses are three in number and are immediately accessible from the lecture-rooms and laboratories.

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, being 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.—In honor of the late R. Stanhope Pullen, the greatest benefactor of the College, the large new building recently finished has been called Pullen Hall. 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 room is commodious, comfortable and well lighted.

The Agricultural Hall is a three-story buff press-brick building with granite trimmings and is 208 by 74 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, stock judging, farm butchering and cold-storage accommodations for the products.

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 the best accommodations for education in agriculture and allied subjects, and is especially adapted to its needs.

Watauga Hall is a three-story brick building, trimmed with brownstone and containing sixty rooms for dormitories. There is also a large dormitory in the attic, and in the basement are bath-rooms, which are free for students' use.

Dormitories.—In addition to Watauga Hall, one three-story and three two-story brick buildings are used exclusively for dormitories.

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 with open fire-places. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

The Boiler House is a single-story brick building, containing boilers, fire-pump and the machinery connected with the steam-heating plant.

The Barn is a frame building of modern design and carefully planned for the purposes to which it is devoted. The barn is fifty by seventy-two feet and three stories high.

Fire Protection.—The College is supplied with a steam-pump, reservoir, hydrants and fire-hose to protect the buildings from burning.

Heat and Light.—All the College buildings are lighted by electricity from a plant managed by the students, under the direction of the Professor of Electrical Engineering.

The third and fourth dormitories, Primrose Hall and the greenhouses attached are heated by hot water; the Textile Building is heated by the Sturtevant hot-air system, and the other College buildings are heated by the Warren-Webster vacuum system of building-heating.

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 Director's office is in the Agricultural Building in Raleigh and the laboratories are in the main 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 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, 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 any line 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 Architecture. 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 that are unable or unwilling to observe regularity, system and order in their daily work.

PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the student in the Freshman Class who earns the largest and the next largest amount of money by labor on the College farm.

The Zenner Disinfectant Company, Detroit, Mich., offers a silver medal to the student making the best report on the Live Stock Exhibit at the State Fair. The value of this medal is $25.

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.

DISCIPLINE.

The College is under military discipline and the students are regularly organized into a battalion. A printed copy of rules and regulations is furnished each student on admission, and he is expected to conform to the same during his connection with the institution. The discipline is intended to secure studious and economical habits, with punctuality, system and order in the performance of all duties. A durable uniform, which is required to be worn on all occasions, prevents extravagance and folly in dress; rooms plainly furnished and a mess-hall economically managed by the College prevents extravagance in living; regular study hours, day and night, with proper restrictions as to visiting Raleigh, check, or at least minimize, tendencies to idleness, vice, and rowdyism.

Every effort is made to develop strong, intelligent, high-toned men; and proper patience, forbearance and sympathy are used in this great work; but the College is in no sense a reform school, and its work must not be hindered by the presence of young men who are grossly vicious, idle or incompetent.

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 or to the College.

The scale of grading used is as follows:

90 per cent., or more.....grade 1
80 per cent., or more.....grade 2
70 per cent., or more.....grade 3
60 per cent., or more.....grade 4
50 per cent., or more.....grade 5
40 per cent., or more.....grade 6

The passing grade is 4. Conditions are assigned for grades 5 and 6. These must be removed at the regular condition examinations, or special examinations will be granted by the Faculty upon receipt of $1 for each.

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 required to attend religious service in Raleigh on Sunday morning at the church of his choice.

The Young Men's Christian Association, containing in its membership representatives of all the Christian denominations, meets regularly each Sunday afternoon at 2:30 o'clock for conference, Bible study and worship, and exerts a wholesome influence throughout the College.

The members of this Association will meet and welcome new students at the railroad station.

ATHLETICS.

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

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

The Faculty rules governing athletics are as follows:

1. Before any student can become a member or a substitute member of any athletic team in this College and take part in any intercollegiate contest, he must make application to the Committee on Athletics in the College and secure the endorsed approval of that committee to his application. It shall be the duty of the Athletic Committee to have the executive officers of the College endorse such application to the effect that the applicant is a regular student of the

College, registered within thirty days after the beginning of the fall session.

2. It shall be the duty of the Athletic Committee to inquire into and make a record of the athletic experiences of the applicant, and it shall be the duty of the applicant to appear before the committee and answer on his honor such questions as the committee may see fit to ask.

3. It shall be the duty of the Athletic Committee to require a pledge, in writing, of the applicant, certifying on his honor that he has never accepted, directly or indirectly, remuneration, compensatory gift, valuable consideration or promise thereof, for his athletic services, and that he is, in the proper and strict sense of the word, an amateur player in collegiate athletic sports, before the committee endorses his application.

4. No student of the College who has been a member or a substitute member of a base-ball or a foot-ball team at another college or university shall be permitted to become a member of either base-ball or foot-ball team at this College, unless and until he shall have been a student in residence at this College for at least five months.

5. No person whose name is in the faculty list or appears in the catalogue list of officers of instruction and administration of the College, and who receives a remuneration therefrom, shall be a member of any athletic team representing the College.

6. Whereas, a member of an athletic team of this College is a representative student and enjoys special honor in thus representing the College, this privilege shall be withheld from any student whose scholastic standing is discreditable.

7. Any student who has participated as a player on a college team, in either base-ball or foot-ball, or both, for a period of four years, shall thereafter be ineligible for such athletic contests of the College.

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, foot-ball, track athletics, etc.

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 four thousand volumes. There are also reference libraries in the different departments. The library is kept open from 9 A. M. to 6 P. M. The Libra-

rian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh, containing now about seven 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.

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

The Berzelius Chemical Society meets fortnightly for the discussion of chemical subjects and for review of the current chemical literature with which the College is well supplied.

Electrical Engineering Society.—The members of the Society meet once a week in the physical laboratory. To review the articles on

electrical engineering in the current journals is one of the chief objects of the Society. The Society has at its disposal the best periodicals, most of which are furnished free of charge by the publishers.

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

The Glee Club is composed of about twenty young men, embracing the best musical talent of the College. It aims to give one concert each year, and afterwards to sing at various College entertainments and functions during the year.

The Alumni Association meets on Monday of each year 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 (through simple equations), 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-year courses will be examined on Arithmetic (through decimal fractions), English Grammar and Composition, and American History.

Applicants for admission to the two-year courses in Agriculture and Textile Industry, if they are twenty years of age, or over, will not be required to take the entrance examinations.

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 court-house in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1906 is July 12th. These examinations will save the expense of a trip to Raleigh

in case the candidate should fail or if 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 1906 is September 5th.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, over eighteen years of age.

2. Applicants for admission to the two-year course in Agriculture, if they are over twenty years of age.

3. School-teachers holding teachers' certificates.

4. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

CONDITION EXAMINATIONS.

Examinations will be held during September and February for the removal of conditions. Students will be admitted to these examinations without charge.

During 1906-1907 these examinations will be held on the following days, beginning at 9 o'clock A. M.:

Wednesday, September 5th, and Saturday, February 2d—Agriculture, Horticulture, Civil Engineering, Architecture, Mechanical Engineering, Electrical Engineering, Mining, Metallurgy, and Textile Industry.

Thursday, September 6th, and Saturday, February 9th—Chemistry, Dyeing, Physics, Geology, Mineralogy, Botany and Vegetable Pathology, Zoology, Entomology, Veterinary Science, History, Political Economy, Military Science.

Friday, September 7th, and Saturday, February 6th—English.

Saturday, September 8th, and Saturday, February 3d—Mathematics.

Special examinations for the removal of conditions may be held at other times only upon petition to the Faculty, said petition to be accompanied by a receipt from the Bursar for one dollar for each special examination, and to be signed by the head of the department in which the examination is to be held. All moneys collected as fees for special examinations will be turned over to the loan fund for needy students.

Conditions not removed within a year can be removed only by taking the subject again in class, except that a student who enters college with conditions in practice work may be allowed to carry half of his conditions in practice work to the second year if he remove half of these conditions during his first year.

In order to be graduated, a student must be clear of all conditions before beginning the March examinations of the Senior Year.

A student who fails in three studies for any term will be dropped to a lower class or from the College rolls.

The Registrar will include in the report of each student for each term a list of conditions against the student and a notice of the time at which condition examinations will be held.

SESSION.

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

EXPENSES.

The total expense of a student for the first year is as follows:

Tuition	$30.00
Room rent	10.00
Fuel and lights	12.50
Furniture	2.00
Library	1.00
Incidental	1.00
Medical attention and medicine	6.00
Physical culture	2.00
Lectures	1.00
Registration	2.00
Board	90.00
Shop (material and use of tools)	1.00
Drawing (material furnished)	1.00
Uniform and cap	14.30
Drawing instruments (complete outfit)	8.85
Books (estimated cost)	5.00
Laundry (estimated cost)	10.00
Total expense for year	$197.65

The total expense, as shown in the above table, for the year amounts to $197.65.

Students having scholarships do not pay tuition. Their total expense is $30 less, or $167.65.

Freshmen and first-year students in Agriculture are not required to take drawing or shop work. Their total expense for the year is $186.80 without scholarship, or $156.80 with scholarship.

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

The largest payments are made in September and in January. A student on entering college will need about sixty dollars to meet his various dues for the first month. The following table shows the distribution of the total expense for the session by months:

Expense.

DISTRIBUTION BY MONTHS.

Payments required on first day of	*Without Scholarship.*	*With Scholarship.*
September	$ 58.37	$ 43.37
October	20.41	20.41
November	11.11	11.11
December	11.11	11.11
January	52.21	37.21
February	11.11	11.11
March	11.11	11.11
April	11.11	11.11
May	11.11	11.11
Total	$197.65	$167.65

Tuition, fuel and lights, and room rent, together with the registration, furniture, physical culture, and medical fees, are collected one-half ($32.25) in September, or whenever the student enters, and one-half ($32.25) in January. Students registering on the day appointed for registration are excused from paying the registration fee. Library, incidental, and lecture fees ($4) are collected in September, or whenever the student enters. Board is payable in installments of $10 per month on the first day of each month from September to May, inclusive. Board for less time than one month is charged for at the rate of fifty cents a day, or $3 per week. Choice is given between paying by the month, by the week, or by the day. The College Bursar is forbidden by the Trustees to give credit, and there is no deviation from this rule.

Students withdrawing from College within two weeks from date of entrance will have refunded all moneys paid by them except charges for board during the time here. Students withdrawing later than two weeks from entrance will have no moneys refunded except board for balance of month.

Drawing instruments are not required in the Freshman Class nor in the First-year Mechanic Arts course until the beginning of the second term. These instruments are furnished by the College at cost to all students requiring them. New students are advised not to purchase instruments before consulting the drawing instructors.

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

In addition to the fees enumerated above, students are required to pay fees as follows: A fee of $1 from students taking work in biological (except bacteriological), physical, or electrical laboratory, for material furnished. The deposits for the Chemistry Department are as follows: Inorganic laboratory, $3; analytical laboratory, $5; organic laboratory, $1; determinative mineralogy and assaying, $3. A deposit of $3 from Juniors and $4 from Seniors taking dyeing or bacteriology, to cover cost of breakages. A deposit of $5 from textile students, to cover cost of designing, supplies, tools, etc. Any unused portion of deposits to chemical, bacteriological or dyeing laboratories or to the Textile Department will be returned at the end of the year. If the deposit made is not sufficient to cover breakages and cost of material furnished, the students are required to make good the deficiency.

UNIFORM.

The College uniform must be worn by all students except winter-course students. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care it will last a year. New students are especially cautioned not to bring with them to the College a supply of citizens' clothing, as the uniform must be worn on all occasions. Each student is required to wear an overcoat during cold weather. Overcoats may be brought from home or purchased in the city. In order to secure uniformity, dark colors (black or dark gray) are required.

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.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from $4 to $10 a month. There is also occasional employment, paying from $2.50 to $5 a month. The work offered is mainly on the farm, in the barn, milking and feeding cattle, etc., and is for agricultural students only. There is very little work available for others, except serving in the dining-room. Young men should not rely upon material help from work the first year, as most of the work is given to students who have had a year's experience at the College. Application for work should be made before the student comes to college.

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 is given for repayment 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 $1,187.29.

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, bed-spreads, 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.

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, at frequent intervals, are made by the College physician. There is an abundant supply of pure water from twelve deep wells. 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 10 o'clock, and in cases of serious illness as frequently as may be required.

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

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, Mining Engineering, Industrial Chemistry, and Dyeing.

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 Agriculture is conferred upon a graduate in the Four-year Course in Agriculture. The degree of Bachelor of Science is conferred upon a graduate of the Four-year Course in Chemistry or Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other Four-year Courses.

II. **Short Courses** of two years (not leading to a degree) in Agriculture, in Textile Industry, in the Mechanic Arts (including Carpentry, Wood-turning, Blacksmithing, Machine-shop Work, Drawing, and Dynamo and Engine Tending, and in Applied Electricity.

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 or for those who are unable to complete the Four-year Courses.

III. **Winter Courses** in Agriculture and Dairying and in Textile Industry, beginning at the opening of College in January and extending to the close of the term ending in March.

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

V. **The Summer School.**

VI. **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.

AGRICULTURAL COURSES.

I. The Four-year Course in Agriculture.
Ia. The Two-year Course in Agriculture.
Ib. The Winter Course in Agriculture and Dairying.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their profession. 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 four distinct courses:

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 domains of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of English Literature and of Political Economy as training studies, and reasonable attention to these studies is required.

The two-year course is designed to meet the needs of those who are unable to take the longer course. It is especially devoted to the practical study of Agriculture and Horticulture and their various branches, and the natural sciences which are so closely related to farming.

The ten-weeks winter course in Agriculture 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 ten-weeks dairy course is a course in practical butter-making in accordance with the most approved methods of the modern creamery.

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

The equipment for the technical work of the course is rapidly increasing. The Department of Agriculture is fitting up laboratories for investigation in Soil Physics and in the mechanical analysis of soils. 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 upon yield and upon fertility, in varieties of fruit, of vegetables and of forage crops. The methods employed and the results obtained are freely used for instruction.

In work other than purely technical the agricultural students meet the same instructors and enjoy the same privileges as other students of the College. In all departments the laboratory method is freely employed. The student uses apparatus with his own hands and consults the literature of the subject at every step.

Self-support while a Student.—The Board of Agriculture, in the interest of young men who are unable to meet necessary college expenses, has appropriated $1,500 annually for student labor. This generosity on the part of the Board enables every student to pay a good part of his college expenses; some are able to meet the entire expense this way. This sum appropriated is intended solely to pay for farm work. The work is precisely the sort of work that is done on the farm—plowing, hauling, tile-laying, feeding beef cattle, feeding dairy cattle, feeding and grooming horses, running ditches and terraces, repairing machinery and tools, harvesting crops, the care of hogs, poultry, etc.

This feature in the course of Agriculture is helpful not only in defraying college expenses, but serves as a training and education as well.

Requisites for Admission.—Applicants for admission to the four-year course in Agriculture must be at least sixteen years of age. They are examined in the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, and American History.

For the two-year course in Agriculture no entrance examinations are required if the applicant is at least twenty years old. Applicants not twenty years old desiring to enter the two-year course will stand an examination in Arithmetic (through decimal fractions), English Grammar and Composition, and American History.

For the winter courses in Agriculture and Dairying no entrance examination is required, but applicants must be over eighteen years of age.

I. Four-year Course in Agriculture, leading to the Degree of Bachelor of Agriculture.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Botany, Elementary, 31†	3	3	3
Zoology, 46	4	--	--
Physiology, 47	--	4	4
General Horticulture, 21	5	--	--
Vegetable Gardening, 22	--	5	--
Dairying, 14	--	--	5
Algebra, 84	4	--	--
Geometry, 85	--	4	4
English, 83	3	3	3
Military Drill, 99	3	2	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 subject. Under each department a number precedes the description of the study.

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Breeds of Live Stock and Stock-judging, 1	4	--	--
Thremmatology, 2	--	4	--
Stock-feeding, 3	--	--	4
Plant Diseases, 34	3	--	--
Economic Entomology, 51	--	3	--
Systematic Botany, 32	--	--	3
Inorganic Chemistry, 61	3	3	3
Inorganic Chemistry (laboratory), 62	2	2	2
Physics, 71	2	2	2
Free-hand Drawing, 76	2	--	--
Mechanical and Agricultural Drawing, 77	--	2	2
English, 89 and 91	3	3	3
Military Drill, 99	3	2	2

Junior Year.

Farm Equipment, 4	4	--	--
Soils, 5	--	4	--
Farm Crops, 6	--	--	4
Veterinary Anatomy, 41	4	--	--
Veterinary Medicine, 42	--	4	--
Veterinary Practice, 43	--	--	4
Agricultural Chemistry, 66	2	2	2
Bacteriology, 36	2	2	2
Wood-work, 78	1	1	--
Forge-work, 79	1	1	--
Mechanical Technology, 80	1	1	--
Landscape Gardening, 23	--	--	3
English and History, 93 and 92	2	2	2
Business Law and Civics, 95 and 96	1	1	1
Military Tactics, 100	1	1	1
Military Drill, 99	3	2	2

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Geology, 58	2	2	2
English, 92 and 90	2	2	2
Political Economy and Government, 97 and 98	2	2	2
Elect thirteen periods of the following:			
Animal Husbandry (horses), 8	2	--	--
Animal Husbandry (cattle), 9	--	2	--
Animal Husbandry (sheep and swine), 10	--	--	2
Farm Management, 18	2	2	2
Agronomy, 11	3	--	--
Special Crops, 12	--	3	--
Soil Physics and Soil Management, 13	--	--	3
Dairy Bacteriology, 15	3	--	--
Experimental Dairying, 16	--	3	--
Dairy Seminary, 17	--	--	3
Veterinary Medicine, 44	3	3	3
Fruit Culture, 24	5	--	--
Forestry, 25	--	5	--
Horticultural Literature, 26	--	--	5
Plant Diseases (advanced), 35	2	--	--
Bacteriology (advanced), 37	2	2	2
Systematic Entomology, 52	--	2	2
Economic Botany, 33	--	--	2
Industrial Chemistry, 68	2	2	2
Organic Chemistry, 63	2	2	2
Analytical Chemistry (laboratory), 64 and 65	9	9	9
Military Drill, 99	3	2	2

Ia. The Two-year Course in Agriculture.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Botany, Elementary, 31	3	3	3
General Horticulture, 21	--	5	--
Vegetable Gardening, 22	--	--	5
Dairying, 14	5	--	--
Zoology, 46	4	--	--
Physiology, 47	--	4	4
Arithmetic, 82	5	--	--
Algebra, 83	--	5	5
English, 87	3	3	3
Military Drill, 99	3	2	2

Second Year.

Breeds of Live Stock and Stock-judging, 1	4	--	--
Thremmatology, 2	--	4	--
Stock-feeding, 3	--	--	4
Farm Equipment, 4	4	--	--
Soils, 5	--	4	--
Farm Crops, 6	--	--	4
Veterinary Anatomy, 41	4	--	--
Veterinary Medicine, 42	--	4	--
Veterinary Practice, 43	--	--	4
Plant Diseases, 34	3	--	--
Entomology, 51	--	3	--
Forge-work, 79	--	--	1
Carpentry-work, 78	--	--	1
Farm Machinery, 7	--	--	1
Inorganic Chemistry, 61	3	3	3
Inorganic Chemistry (laboratory), 62	2	2	2

WINTER COURSES IN AGRICULTURE AND DAIRYING.

General Statement.—The Winter Course in Dairying and the Winter Course in Agriculture are designed to meet the wants of young men who are ambitious to excel in their chosen vocation of farming and who feel the need of more and better preparation before taking up their life-work. The subjects presented in the two courses are those about which every young farmer should have definite and clear knowledge. In their treatment the topics are handled in such a way as to make the information to the student useful in the highest possible degree.

There is no longer any question concerning the value of advanced, definite knowledge concerning agriculture to those who follow farming. Education and training pay on the farm as they do elsewhere in life.

The expenses of the course are so little, and the good to be derived so great, no young man in North Carolina can afford to miss the opportunity of getting this training so necessary in his work. The money necessary to meet the expenses for a whole term's instruction can be earned in a month or two before attending. Therefore no young man, even though he possess but a few dollars, can afford to miss the opportunity for training in his work.

The studies offered are dairying, stock-raising, creamery practice, stock-feeding, diseases of farm animals, dairy-farming, breeding farm animals, entomology, dairy chemistry, farm economics, and book-keeping. The class-room work is supplemented by practice in the creamery, barn, greenhouse, and workshop.

Equipment.—The work in dairying, which includes butter-making, milk-testing, handling cream separators, pasteurizing cream and milk, and dairy bacteriology, is given in the Dairy Building. The building is equipped with separators, milk-testers, pasteurizer, and all tools required in making butter and preparing milk or cream for the city markets.

Requirements for Admission.—No entrance examination is required, but the students taking either the Dairy or Winter Course must be at least eighteen years of age and should have a common-school education.

Expenses—College Dues.—Each student is required to pay a laboratory fee of five dollars. Tuition and instruction are entirely free.

Other Expenses.—Books and note-paper will cost from two to three dollars, and two white duck suits to wear in the dairy laboratory will cost one dollar each. The suits, however, are not required.

Board and room may be secured for three dollars a week. The total expenses of the whole ten weeks need not exceed thirty dollars.

Ib. The Winter Course in Agriculture and Dairying.

Butter-making.—This course includes all practical operations of creamery management. The student works with the guidance and under the direction of the instructor at the same operations of butter-making, or pasteurizing, or milk-testing, until proficiency is obtained. He is required to follow the milk from the time it enters the laboratory and creamery until the product leaves it, and determine the points in processes where losses occur and reasons why they occur. Six periods. Mr. KENDALL.

Milk and Butter Production.—This course consists of lectures and recitations on the methods of taking care of milk and the manufacturing of it into other products, also lectures upon construction, equipment and operation of creameries, dairies, and milk depots. Each student is required to draw a plan of a farm dairy and prepare an estimate for equipment of same. Two periods. Mr. KENDALL.

Feeds and Feeding and Stock-raising.—This subject consists of an elementary study of the composition of foods; the constituents of feeding, amount, combination and form necessary to give best results with various kinds of live stock.

The student is required to calculate digestibilities and nutritive ratios and to arrange therefrom proper feeding rations. Two periods. Professor BURKETT.

Dairy Farming.—Lectures are given under this subject upon the history, adaptation, care and management of the different breeds of dairy cattle. Dairy animals are studied by the score card, in accordance with the practice of judging animals for dairy purposes.

Instruction will also be given upon the character of food-stuffs, the relation of food to the animal, and kind and quality of food for the best milk production. Two periods. Professor BURKETT.

Soil Study.—Lectures and recitations upon composition, formation, kinds and physical properties of soil and their improvement by cultivation, natural and artificial fertilizers, drainage, etc.

The work in class-room is supplemented by work in the field and soil physics laboratory. One period. Assistant Professor MCCLELLAND.

Farm Crops.—In this subject is included rotation of crops, green manuring, and a critical study of corn and cotton; judging of corn; condition of germination and growth, and improvement by selection and breeding. One period. Assistant Professor MCCLELLAND.

Soils and Fertilizers.—Lectures on fertilizers and fertilizing materials and on the typical classes of North Carolina soils. Two periods. Director KILGORE.

Farm Chemistry.—Lectures on air, water, the chemistry of plant and animal nutrition, and the composition of milk and its products. Two periods. Professor WITHERS.

Plants.—This course treats of plants in general, embracing such subjects as plant breeding, seed selection, seed testing, plant propagation, nutrition, and classification, plant diseases and their prevention, and bacteria and fungi in their relation to farm produce, treating of both the beneficial bacteria of farm processes, treating of both the bacteria beneficial in farm operations and of injurious bacteria which produce disease, etc. Two periods. Professor STEVENS.

Economic Entomology.—This is a short course in which the more important 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. Mr. WOGLUM.

Diseases of Live Stock.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live stock to prevent disease and the treatment of some of the most common diseases. Four periods. Professor BUTLER.

AGRICULTURE.

Equipment.

The College possesses the following equipment for instruction in Agriculture:

The farm includes six hundred and twenty-five acres, with two hundred and fifty acres under cultivation; a large three-story basement barn, 50 by 72 feet. The first floor is occupied by farm implements and machinery; the second story is occupied by horses, grain-bins, cutting implements, etc.; the third story, by hay, which is elevated by a Ricker and Montgomery hay-carrier. Just outside the barn are two 70-ton silos and one 125-ton silo. These are connected with a No. 18 Ohio feed and ensilage cutter. Power for cutting is supplied by an eight-horse power Skinner engine. The farm is supplied with all necessary machinery for the most successful and up-to-date farming.

The Dairy Building contains three rooms and cellar, and is supplied with De Laval, Sharples, United States, Empire, National, and Reid Separators, Babcock Testers, various kinds and makes of churns, butter-workers, and cheese apparatus, etc.

The live stock consists of necessary horses and mules, a herd of dairy cattle, and a herd of swine. The Poland China and Berkshire swine are pure bred, and from high-class specimens. Breeding-stock is sold as a part of the farm products.

The poultry-yard is divided into sixteen lots. The buildings consist of incubator cellar, brooder-house, and hen-houses. Several different incubators are used. The poultry-yards contain the following breeds: White Wyandotte, White and Barred Plymouth Rock, Black Minorca, Brown Leghorn, Light Brahmas, and Pekin Ducks.

Subjects of Instruction.

1. Breeds of Live Stock.—Lectures and recitations upon the history, characteristics, care and management, and adaptation of the different breeds of live stock. Practical exercises are given in scoring and judging the various kinds of live stock with the score card. Four periods, first term. For Sophomores and second-year students. Professor BURKETT.

2. Thremmatology.—Lectures and recitations upon the laws of inheritance, and the principles and phenomena of evolution as applicable to the improvement of animals or plants. The aim is to bring every known principle of reproduction to the assistance of the breeder's art. Practical exercise in scoring and judging live stock, and in writing and tracing pedigrees. Four periods, second term. For Sophomores and second-year students. Professor BURKETT.

3. Stock-feeding and Hygiene.—Lectures and exercises upon the laws of nutrition, and the character of food-stuffs, and the kind and quality of foods to produce certain results. Practical exercises in calculating digestibility, nutritive ratios, and feeding standards. Four periods, third term. For Sophomores and second-year students. Professor BURKETT.

4. Farm Equipment.—Lectures and recitations upon selecting, planning and equipping farms; planning and erecting farm buildings; farm vehicles and machinery; power, water, and drainage; practical exercise in drawing plans of farms and farm buildings; leveling and laying drains, dynamometer tests of wagons and farm implements, etc. Four periods, first term. For Juniors and second-year students. Assistant Professor MCCLELLAND.

5. Soils.—Lectures and recitations upon composition, formation, kinds and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage and irrigation. Practical exercises in testing physical properties of several soils, determining the relation of soils to heat, moisture, air, and fertilizers,

and mechanical analysis. Four periods, second term. For Juniors and second-year students. Assistant Professor McCLELLAND.

6. **Farm Crops.**—Lectures and recitations upon the history, production, harvesting and marketing of farm crops. Practical exercise with growing and dried specimens of farm crops, including grasses, clovers, and other forage crops. Four periods, third term. For Juniors and second-year students. Assistant Professor McCLELLAND.

7. **Farm Machinery.**—Lectures and laboratory work on the tools and machinery of the farm, in reference to their design, construction, draft, durability, and care. The student is required to set up and test the various machines used on the farm. One period, third term. For second-year students. Assistant Professor McCLELLAND.

8. **Animal Husbandry.**—A critical study of the horse; his breeding and management; gaits; practice in expert judging of horses. Two periods, first term. For Seniors. Professor BURKETT.

9. **Animal Husbandry.**—A critical study of beef and dairy cattle; the breeding, feeding and management, and practice in expert judging of cattle. Two periods, second term. For Seniors. Professor BURKETT.

10. **Animal Husbandry.**—A critical study of sheep and swine in reference to type, wool or mutton, pork or bacon. The breeding, feeding and management of sheep and swine, and practical exercise in expert judging of sheep and swine. Two periods, third term. For Seniors. Professor BURKETT.

11. **Agronomy.**—A critical study of the farm crops, corn and cotton; judging corn; conditions of germination and growth, and improvement by selection and breeding. Three periods, first term. For Seniors. Assistant Professor McCLELLAND.

12. **Special Crops.**—Special crops will be studied by the student in the laboratory and field. Three periods, second term. For Seniors. Assistant Professor McCLELLAND.

13. **Soil Physics and Management.**—This course is designed for advanced work in the study of soils, both in the laboratory and the field. Three periods, third term. For Seniors. Assistant Professor McCLELLAND.

14. **Dairying.**—Practice and occasional lectures. The course consists in general management of modern dairying, the methods of milk analysis, the bacteriology of milk, the use of separators, the testing of milk, ripening of cream, churning, working, packing, and scoring butter. Five periods, third term. For Freshmen. Five periods, first term. For first-year students. Professor BURKETT and Mr. KENDALL.

15. Dairy Bacteriology.—A laboratory course in the study of bacteria in its relation to creamery, butter-making, and cheese production. Three periods, first term. For Seniors. Mr. KENDALL.

16. Experimental Dairying.—Laboratory practice in making butter and cheese. Three periods, second term. For Seniors. Mr. KENDALL.

17. Dairy Seminary.—Laboratory practice in making butter and cheese of special commercial importance. Three periods, third term. For Seniors. Mr. KENDALL.

18. Farm Management.—Lectures upon the history of agriculture; present agricultural methods in various counties, cost and relation, profits of various farm operations and systems. Two periods. For Seniors. Professor BURKETT.

HORTICULTURE.

The Horticultural Department occupies Primrose Hall and the greenhouses connected with it. This building contains an excellent class-room and two good laboratories. The laboratories are used for such work as seed-testing, seed selection, bud studies, budding, grafting, making of cuttings, transplanting, and mixing of spraying materials.

The greenhouses consist of three glass structures heated by hot water. They are used for the growing of ornamentals, vegetables, and many interesting 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, and spray pumps.

The College campus is used in teaching ornamental gardening, and a study of economic trees and shrubs.

Subjects of Instruction.

21. General Horticulture.—This course consists of text-book and lecture work. It deals with the fundamental principles of Horticulture, as seed propagation, pruning, frosts, culture. Class-room and laboratory work. Five periods, first term. Required of Freshmen. Five periods, second term. Required of first-year students. Mr. REIMER.

22. Vegetable Gardening.—Text-book and lectures, accompanied by laboratory work. This course deals with the selection and prepara-

tion of soil, making of hot-beds and cold-frames, fertilizing, handling of seeds, irrigation, transplanting, marketing and storing, and the culture of all important vegetables. Special stress is laid on the trucking industry in North Carolina. Five periods, second term. Required of Freshmen. Five periods, third term. Required of first-year students. Mr. REIMER.

23. 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 lawns, trees and shrubs, flowers and flower-beds, and the grouping of these. The campus, city parks, and many beautiful home grounds give exceptional opportunities for this. Three periods, third term. Required of Juniors. Mr. REIMER.

24. Fruit Culture.—A course dealing with the location, soil, cultivation, fertilizing, pruning, spraying, harvesting and marketing of all the principal North Carolina fruits. Five periods, first term. For Seniors. Professor HUME and Mr. REIMER.

25. Forestry.—This course consists of a thorough study of the fundamentals of forestry. It deals especially with the need, influence, formation, care and improvement of forests. Also the cutting, use, and handling of forest products. A study is made of the various forest trees of greatest importance in America. Five hours, second term. For Seniors. Mr. REIMER.

26. Horticultural Literature.—During the last term the Seniors are given an opportunity to take up any special line of horticultural work they desire. The work will consist of a thorough study of all important literature on the particular subject the student is interested in. In class each student will be required to give a condensed account of his particular line of investigation as the work progresses. Required of horticultural students. Five hours, third term. For Seniors. Professor HUME and Mr. REIMER.

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, an incubator-room, and a cold-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 pres-

sure 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.

Subjects of Instruction.

31. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, 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 Freshmen and first-year students. Professor STEVENS.

32. 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.

33. Economic Botany.—A study of the more important groups of economic plants, weeds and medicinal plants, seed-testing, nitrification, dentrification, and nitrogen fixation, origin of cultivated plants and of bacteria and fungi in their relation to Agriculture. Two periods, third term. Elective for Seniors. Professor STEVENS.

34. 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 and second-year students. Professor STEVENS.

35. **Plant Disease (Advanced).**—Methods of culture and investigation of plant disease. This course is intended to prepare the student for original investigation in plant diseases. Two periods, first term. Elective for Seniors. Professor STEVENS.

36. **General 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. TEMPLE.

37. **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. Two periods. For Seniors. Professor STEVENS.

VETERINARY SCIENCE.

The object of the teaching in this department is not to turn out veterinarians, but to more thoroughly equip the agricultural student for the breeding and management of live stock. In addition to the work required of all students in the Agricultural courses, as outlined below, the Senior students in the four-year course in Agriculture may elect to do three periods a week during the entire year. When so elected, this work will be of a more advanced nature, but supplementary to that required of all students in the Agricultural courses.

41. **Veterinary Anatomy.**—Lectures, illustrated by charts, models, skeletons, sketches, and by dissections.

Special attention will be given to the organs of digestion and locomotion and such other parts as are of particular interest to the stock farmer. Four periods, first term. Required of Juniors and second-year students. Doctor ROBERTS.

42. **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. Four periods, second term. Required of Juniors and second-year students. Professor BUTLER and Doctor ROBERTS.

43. **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. Four periods, third term. Required of Juniors and second-year students. Professor BUTLER and Doctor ROBERTS.

44. **Veterinary Medicine.**—Advanced course in veterinary medicine and surgery. Three periods. For Seniors. Professor BUTLER.

ZOOLOGY.

46. **Elementary 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 reading. One term is devoted to vertebrates and invertebrates, exclusive of insects, but including some of the common parasites infesting 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. Four periods, first term. Required of Freshmen and first-year students. Doctor ROBERTS.

47. **Animal Physiology.**—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 experiments to illustrate principles of physiology. Four periods, second and third terms. Required of Freshmen and first-year students. Doctor ROBERTS.

ENTOMOLOGY.

51. **Elementary 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, second term. Required of Sophomores and second-year students. Mr. SHERMAN and Mr. WOGLUM.

52. **Systematic Entomology.**—Systematic study of orders and families of insects, with special reference to structure, classification, life-history and habits. Lectures and laboratory practice. Two periods, second and third terms. For Seniors and Juniors. Mr. SHERMAN and Mr. WOGLUM.

GEOLOGY.

58. **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 re-

sults 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. Two periods. Required of Seniors. Dr. WALKER.

CHEMISTRY.*

61. Inorganic Chemistry.—Remsen's *Introduction to the 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 with experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS, Mr. BAGLEY, and Mr. HARPER.

62. Inorganic Chemistry.—Laboratory work. Remsen and Randall's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

63. 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. Two periods. Elective for Seniors. Professor WITHERS.

64. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work in qualitative analysis. The student is taught to detect the presence of the common metallic elements, as well as of the acids in unknown substances. A considerable portion of the time is given to lectures and recitations upon the principles involved in the different tests, writing reactions, etc. Nine periods, first term. Elective for Seniors. Dr. WALKER.

65. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Introductory work in gravimetric and volumetric analysis, followed by analyses of the substances most closely related to agriculture, as fertilizers, feeding stuffs, milk, butter, etc. A considerable portion of the time is given to the discussion of the principles involved in the different analytical methods. Nine periods, second and third terms. Elective for Seniors who have taken Course 64. Dr. WALKER.

*For further information, see course in Chemistry.

66. Agricultural Chemistry.—Ingle's *Agricultural Chemistry.* A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the chemical standpoint. Two periods. Required of Juniors. Professor WITHERS.

68. Industrial Chemistry.—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries, particularly those whose raw materials are supplied by agriculture or whose products are utilized in agriculture. Two periods. Elective for Seniors. Professor WITHERS.

PHYSICS.*

71. 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. SPRAGUE.

DRAWING.†

76. Free-hand Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Sophomores. Mr. ST. AMANT.

77. Elementary Mechanical Drawing.—Use of instruments; geometric drawing; elementary projection; isometric and cabinet drawing; drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Sophomores. Mr. ST. AMANT.

SHOP-WORK.†

78. Wood-work.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning. One period, first and second terms. Required of Juniors. Required of second-year students. Mr. CLAY.

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

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

79. Forge-work.—Exercises in forging and welding; making exercises of iron; care of forge tools and fires. One period, first and second terms. For Juniors. One period, third term. Mr. DEAL.

80. Mechanical Technology.—Classification and uses of wood-working and forging tools and machines; methods of wood-working and forging; care of belting and shafting. One period, first and second terms. For Juniors and second-year students. Mr. CLAY.

MATHEMATICS.*

82. Arithmetic.—Begin with decimal fractions and complete the subject. Five periods, first term. Milne's *Standard Arithmetic.* Required of first-year students. Mr. J. A. PARK.

83. Algebra.—Up to quadratic equations. Wells' *Higher Algebra.* Five periods, second and third terms. Required of first-year students. Mr. J. A. PARK.

84. Advanced Algebra.—Wells' *Higher Algebra.* Begin at quadratic equations; general theory of equations, solution of higher equations, etc. Four periods, first term. Required of Freshmen. Mr. YATES.

85. Geometry.—Plane and solid. Wentworth's *Plane and Solid Geometry.* Four periods, second and third terms. Required of Freshmen. Mr. YATES.

ENGLISH.

87. English Composition.—A drill on the forms of the language, the correct relation of words, the sentence, and the paragraph. Daily written exercises. Three periods. Required of first-year students. Doctor SUMMEY and Mr. MASON.

88. Introductory Composition and Rhetoric.—This course in the fundamentals of rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. MASON.

89. Rhetoric, Criticism, Essays.—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, first term. Professor HILL, Doctor SUMMEY, and Mr. MASON.

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*For full information in regard to Mathematics, see course in Civil Engineering.

90. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

91. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. MASON.

92. English Literature.—The development of English literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two hours, second and third terms. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

HISTORY.

93. English History.—The text is supplemented by lectures on important periods. Two periods, first term. Required of Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

95. Business Law.—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book, Parsons' *Laws of Business*. One period, first half year. Required of Juniors. President WINSTON.

96. Civics.—This course includes instruction in the rights and duties of citizenship, with special reference to the laws of North Carolina. One period, second half year. Required of Juniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

97. Political Economy.—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. Two periods, first half year. Required of Seniors. President WINSTON.

98. Government.—The Constitutional History of the United States and North Carolina; relations between the State and Federal governments, etc. Lectures and texts. Two periods, second half year. Required of Seniors. President WINSTON.

MILITARY SCIENCE.

99. 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 term. Two periods, second and third terms. Required of all classes except Seniors. Commandant and Officers of the Battalion.

100. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant HEATON.

ENGINEERING COURSES.

Four-year Courses in

II. Civil Engineering.
III. Mechanical Engineering.
IV. Electrical Engineering.
V. Mining Engineering.
VI. Industrial Chemistry.
VII. Dyeing.

Two-year Courses in

IIIa. Mechanic Arts.
IVa. Applied Electricity.

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 drafting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in drafting. 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 Pure Mathematics and 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.
Free-hand Drawing, 135 †	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 123	5	--	--
Geometry, 124	--	5	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Architecture, 115	2	--	--
Architectural Drawing, 116	2	2	2
Geometry, 124	5	--	--
Trigonometry, 125	--	5	5
Descriptive Geometry, 105	--	2	2
Electricity and Magnetism, 177	2	2	2
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	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 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, 102 and 103	2	2	2
Surveying (field-work), 104	2	2	2
Construction, 111	2	--	--
Drawing, 105	2	2	2
Graphic Statics, 101	--	2	2
Mechanics, 128	3	3	3
Analytical Geometry, 126	4	4	--
Calculus, 127	--	--	4
English and History, 283 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Mechanics of Materials, 112	3	--	--
Construction, 111	--	2	2
Road-building, 113	2	--	--
Roofs and Bridges, 109	3	--	--
Bridge Design, 106	--	4	4
Municipal Engineering, 107	--	2	2
Surveying (field-work), 108	2	--	--
Hydraulics, 110	--	3	3
Calculus, 127	3	--	--
Geology, 211	2	2	2
Astronomy, 114	--	2	2
English, 276 and 274	2	2	2
Political Economy, 297 and 298	2	2	2
Military Drill, 299	3	2	2

CIVIL ENGINEERING.

Equipment.

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

Subjects of Instruction.

101. 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 and in Mining Engineering. Professor RIDDICK.

102. Surveying.—Land surveying, leveling, elements of triangulation, topographical surveying, road-making. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil and in Mining Engineering and of Seniors in Mechanical Engineering. Mr. LANG.

103. Railroad Engineering.—Reconnoissance, preliminary and location surveys, cross-sections, etc. Searles' *Field Engineering*. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Mr. LANG.

104. 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 and in Mining Engineering. Two periods, second and third terms. Required of Seniors in Mechanical Engineering.

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

106. 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.

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

108. Surveying.—Field-work. Triangulation and topography, surveys for sewers, water-works, etc. Two periods, first term. Required of Seniors in Civil Engineering. Mr. MANN.

109. 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.

110. 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.* Three periods, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

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

112. 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.

113. Road-building.—Text-book on construction of roads, streets, and pavements. Lectures on practical road-making in North Carolina. Two periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

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

ARCHITECTURE.

115. 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.

116. 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.

MATHEMATICS.

121. Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students. Mr. J. A. PARK, Mr. MANN, and Mr. LANG.

122. Algebra.—Wells' *Higher Algebra.* Up to quadratic equations. Five periods, second and third terms. Required of first-year students. Mr. MANN, Mr. LANG, and Mr. J. A. PARK.

123. Advanced Algebra.—Wells' *Higher Algebra.* Begin at quadratic equations; general theory of equations, solution of higher equations, etc. Five periods, first term. Required of Freshmen and of second-year students in Mechanic Arts. Mr. YATES and Mr. J. A. PARK.

124. Geometry.—Plane and Solid. Wentworth's *Plane and Solid Geometry.* Five periods, second and third terms. Required of all Freshmen and of second-year students in Mechanic Arts. Five periods, first term. Required of Sophomores. Mr. YATES and Mr. J. A. PARK.

125. Trigonometry.—Five periods, second and third terms. Required of Sophomores. Mr. YATES.

126. Analytical Geometry.—Nichols' *Analytical Geometry.* Conic sections, higher plane curves, Geometry of three dimensions. Four periods, first and second terms. Required of Juniors in Engineering. Mr. YATES.

127. Calculus.—Osborne's *Elements of Calculus.* Differential and integral elements of differential equations. Four periods, third term. Required of Juniors. Three periods, first term. Required of Seniors in Engineering. Professor RIDDICK and Mr. YATES.

128. 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 and Mining Engineering. Mr. LANG.

COURSES IN MECHANICAL ENGINEERING AND MECHANIC ARTS.

The regular Four-year Course in Mechanical Engineering is intended to fit the student for positions of responsibility in engineering work, and also to furnish him with a basis to carry on more advanced engineering studies. It treats of the development and transmission of power, the design and construction of machines, and the calibration and efficiency tests of machinery, boilers and engines.

The Two-year Course is offered to students who wish to become machinists, draughtsmen, stationary engineers, or dynamo tenders.

The courses follow closely the methods adopted by the large manufacturing companies, both in drawing-room system and shop methods.

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.
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 123	5	--	--
Geometry, 124	--	5	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Mechanical Drawing, 139	2	2	2
Forge-work, 148	1	--	--
Pattern-making, 149	--	1	1
Geometry, 124	5	--	--
Trigonometry, 125	--	5	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Boilers, 157	2	--	--
Steam Engines, 158	--	2	--
Valve Gears, 159	--	--	2
Applied Mechanics, 169	3	3	3
Machine Design, 140	2	2	2
Machine-shop Work, 150	2	2	2
Dynamo Machinery, 183	2	2	2
Analytical Geometry, 126	4	4	--
Calculus, 127	--	--	4
English and History, 283 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Machine Design, 141	2	3	3
Machine-shop Work, 151	3	3	3
Power Plants, 161	--	--	2
Gas Engines, 162	2	--	--
Refrigeration, 163	--	2	--
Heating and Ventilation, 166	--	1	1
Pumping Machinery, 165	--	1	--
Structural Engineering, 167	--	--	1
Mechanics of Materials, 112	3	--	--
Steam Engineering Laboratory, 168	2	2	2
Surveying, 102 and 104	2	2	2
Calculus, 127	3	--	--
Hydraulics, 110	--	3	3
English, 276 and 274, or Political Economy, 297, 298	2	2	2
Military Drill, 299	3	2	2

IIIa. The Two-year Course in Mechanic Arts.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	4	--	--
Mechanical Drawing, 136	--	4	--
Descriptive Geometry, 137	--	--	4
Wood-work, 146	3	3	3
Forge-work, 147	3	3	3
Mechanical Technology, 152	1	1	1
Arithmetic, 121	5	--	--
Algebra, 122	--	5	5
English, 271	3	3	3
Military Drill, 299	3	2	2

Second Year.

Mechanical Drawing, 171	2	2	2
Machine-shop Work, 150	3	3	3
Drawing, 171, or Machine-shop Work, 150	3	3	3
Mechanical Technology, 172	1	1	1
Steam and Steam Machinery, 173	2	2	2
Physics, 195, Drawing, 171, or Shop-work, 150	5	--	--
Electricity, 196, Drawing, 171, or Shop-work, 150	--	5	--
Electrical Laboratory, 197, Drawing, 171, or Shop-work, 150	--	--	5
Algebra, 123, Drawing, 171, or Shop-work, 150	5	--	--
Geometry, 124, Drawing, 171, or Shop-work, 150	--	5	5
Military Drill, 299	3	2	2

MECHANICAL ENGINEERING.

Equipment.

The drawing and recitation-rooms and shops of the Department of Mechanical Engineering are in the 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, office and library. On the second floor are the recitation-room, two drawing-rooms, and a wood-finishing room. 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, the use of which is required.

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 gasoline engine (all of which were built by students), a twenty-five-horse-power Woodbury engine, a Wheeler surface condenser, connected with a $4\frac{1}{2} \times 6 \times 6$ Blake air-pump, an Ericsson hot-air pumping engine, apparatus for making analyses 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 15,000-pound Olsen testing machine, and other apparatus for making tests.

The boiler-house is equipped with one thirty-horse-power and two forty-horse-power horizontal return tubular boilers and two seventy-five-horse-power Babcock and Wilcox boilers and several pumps, all of which are available for experimental purposes.

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 $6\frac{1}{2}$-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 30-inch band saw; a jig saw; a shaper or edge-moulding machine,

with a very complete set of moulding cutters; a 38-inch grind-stone; 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, 30 x 40 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 the fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis and Eagan lathe with 10-foot bed, a 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 Flather lathe with 6-foot bed, three 14-inch lathes with 6-foot bed (built in the College shops by students), an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, a 32-inch American drill press, a Brown & Sharp universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, one large and one small emery tool-grinding machine, a 6-inch Curtis & Curtis pipe-threading and cutting machine, a Greenwich arbor press and an electric center grinder. The machines have full equipment of chucks, rests, and tools. The benches are well provided with vises.

The tool-room is well equipped with the necessary hand and pipe tools.

The power for the shops is furnished by a twenty-five-horse-power Woodbury engine. When the shops are running one of the students has charge of the engine.

Subjects of Instruction.

135. Free-hand Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine; use of instruments, and tracing. Two periods, first term. Required of Freshmen. Four periods, first term. Required of first-year students. Mr. ST. AMANT.

136. Elementary Mechanical Drawing.—Geometric drawing, isometric and cabinet drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Two periods, second term. Required of Freshmen. Four periods, second term. Required of first-year students. Mr. ST. AMANT.

137. Descriptive Geometry Drawing.—Elementary principles; cylinders, cones, and prisms, intersections, development of surfaces. Miscellaneous problems. Two periods, third term. Required of Freshmen. Four periods, third term. Required of first-year students. Mr. ST. AMANT.

139. Mechanical Drawing.—Working sketches and drawings of machine parts from the model. Tracing and blue-printing. Elementary machine design. Two periods. Required of Sophomores in Mechanical, Electrical, and Mining Engineering, Chemistry and Dyeing. Mr. LAWRANCE.

140. Machine Design.—Study of the communication of motion by gear wheels, cams, belts, and link-work; automatic feed, parallel and quick motions. Epicylic trains. Calculations and working drawings of machine parts, such as fastenings, hangers, couplings, and bearings. Estimating and checking of working drawings. Two periods. Required of Juniors in Mechanical Engineering. Mr. LAWRANCE.

141. Machine Design.—Estimating, checking of working drawing, original design. Calculations and working drawings of types of engines, boilers, pumps, condensers, shafting, etc. Two periods, first term. Three periods, second and third terms. Required of Seniors in Mechanical Engineering. Mr. LAWRANCE.

Students are required to stamp their drawings with the College stamp, similar to the practice in the drawing-rooms of the large manufacturing companies. Encouragement is given to original design, especially when carried through the shops to a complete working machine.

146. 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. Required of Freshmen. Two periods. Required of first-year students. Mr. CLAY and Mr. DEAL.

147. Forge-work.—Exercises in working with iron. Welding. Uses and care of forge tools and fires. Two periods. Required of Freshmen and first-year students. Mr. DEAL.

148. Forge-work.—Exercises in working with steel. Tempering. Case-hardening. One period, first term. Required of Sophomores in Mechanical, Electrical, and Mining Engineering, Chemistry and Dyeing. Mr. DEAL.

149. Pattern-making.—Exercises in making patterns and moulds of machine parts. One period, second and third terms. Required of Sophomores in Mechanical, Electrical, and Mining Engineering, Chemistry and Dyeing. Mr. CLAY.

150. 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. Three periods. Required of second-year students in Mechanic Arts. Mr. PARK.

151. Machine-shop Work.—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Three periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

In all practical courses the student's attention is directed to cost of production and its principal elements—time and method.

152. Mechanical Technology.—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Care of belting and shafting. One period. Required of first-year students in Mechanic Arts. Mr. CLAY.

157. Boilers.—Steam generation; types, care and management; fittings and appliances; corrosion and incrustation; combustion of fuel. Boiler power. Two periods, first term. Required of Juniors in Mechanical Engineering, and of Seniors in Electrical and in Mining Engineering and in Dyeing. Professor THOMAS.

158. Steam Engines.—Types—simple and compound, and triple expansion, automatic, Corliss, rotary, turbines. Care and management. Indicators, indicated and brake horse-power. Condensers. Two periods, second term. Required of Juniors in Mechanical Engineering, and of Seniors in Electrical and Mining Engineering and in Dyeing. Professor THOMAS.

159. Valve Gears.—Plain slide valve, balance valve, Corliss and other form valve gears, link and radial reversing gears. Shaft governors. Bilgram and Zenner valve diagrams. Two periods, third term. Required of Juniors in Mechanical Engineering, and of Seniors in Mining Engineering and in Dyeing. Professor THOMAS.

161. Power Plants.—Mechanical Engineering of power plants. Selection and arrangement of machinery, appliances, piping. Two periods, third term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

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

163. Refrigeration.—Various types of ice-making machinery. Compression and absorption systems. Compressed-air machines. Two periods, second term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

165. Pumping Machinery.—Direct acting, fly-wheel and duplex and centrifugal pumps. Pumping engines. Water-works machinery. Duty and efficiency. Hydraulic engines. One period, second term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

166. Heating and Ventilation.—Steam, hot water, furnace and blower systems of heating. Heating boilers. Ventilation. Design of heating and ventilating system. One period, second and third terms. Required of Seniors in Mechanical Engineering. Professor THOMAS.

167. Structural Engineering.—The manufacture and uses of different metals—rolled sections used in bridge, structural work, and general engineering. One period, third term. Required of Seniors in Mechanical Engineering. Mr. LAWRANCE.

168. 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. Two periods. Required of Seniors in Mechanical Engineering. One period. Required of Seniors in Electrical Engineering. One period, third term. Required of second-year Mechanic Arts and Applied Electrical students. Professor THOMAS and Mr. LAWRANCE.

169. Applied 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 Mechanical and Electrical Engineering. Mr. LAWRANCE.

171. Mechanical Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two periods. Required of second-year Mechanic Arts students. Two periods, first term. Required of second-year students in Applied Electricity. Mr. LAWRANCE.

172. Mechanical Technology.—Classification and use of hand-tools and machines usually found in the pattern shop, foundry, and machine shop. Materials used and methods of carrying on work in these shops. Practical problems in estimating cost and material required to complete a piece of work; arrangements and sizes of belting, pulleys, and shafting. One period. Required of second-year students in Mechanic Arts and Applied Electricity. Professor THOMAS.

173. Steam and Steam Machinery.—Descriptive study of the machinery of steam power plants—engines, boilers, condensers, pumps, piping. Care and management. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Two periods. Required of second-year students in Mechanic Arts and Applied Electricity. Professor THOMAS.

COURSE IN ELECTRICAL ENGINEERING.

Object.—The four-year course is designed for those who wish a thorough and practical training in Electrical Engineering. 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 can be seen from the list of apparatus, is well equipped with dynamos, electric motors, and testing instruments for experimental work and for investigation of problems in electrotechnics. During the Senior year a course in designing the various electrical machines is given.

A two-year course in Applied Electricity is offered to those who wish to fit themselves for positions as dynamo-tender, motorman, or electrician.

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, 176	4	4	4
Physical Laboratory, 178	1	1	1
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 123	5	--	--
Geometry, 124	--	5	5
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Mechanical Drawing, 139	2	2	2
Geometry, 124	5	--	--
Trigonometry, 125	--	5	5
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Forge-work, 148	1	--	--
Pattern-making, 149	--	1	1
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

Dynamo Machinery, 183	2	2	2
Electrical Laboratory, 180	2	2	2
Machine-shop Work, 150	2	2	2
Machine Design, 140	2	2	2
Applied Mechanics, 169	3	3	3
Analytical Geometry, 126	4	4	--
Calculus, 127	--	--	4
English and History, 283 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Alternating Currents, 184	3	--	--
Electric Power Transmission, 185	--	3	-
Electric Light and Railway Systems, 186	--	--	3
Electrical Engineering (laboratory), 189	4	-	-
Electrical Engineering (laboratory), 190	--	4	4
Electrical Design, 191	2	2	2
Electrical Engineering, 192	-	--	2
Boilers, 157	2	--	
Steam Engines, 158	--	2	-
Steam Engineering (laboratory), 168	1	1	1
Calculus, 127	3	--	-
Hydraulics, 110	--	3	3
Political Economy, 297 and 298	2	2	2
English Literature, 276 and 274	2	2	2
Military Drill, 299	3	2	2

IVa. The Two-year Course in Applied Electricity.

First Year.

Free-hand Drawing, 135	4	--	--
Mechanical Drawing, 136	-	4	--
Descriptive Geometry, 137	--	-	4
Wood-work, 146	3	3	3
Forge-work, 147	3	3	3
Mechanical Technology, 152	1	1	1
Arithmetic, 121	5	--	--
Algebra, 122	--	5	5
English, 271	3	3	3
Military Drill, 299	3	2	2

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Physics, 195	5	--	--
Electricity, 196	--	5	--
Electrical Laboratory, 197	--	--	5
Electrical Construction, 198	--	2	2
Mechanical Drawing, 171	2	--	--
Machine-shop Work, 150	2	2	2
Mechanical Technology, 172	1	1	1
Steam Engineering Machinery, 173	2	2	2
Algebra, 123	5	--	--
Geometry, 124	--	5	5
Military Drill, 299	3	2	2

PHYSICS.

Equipment.

The recitation-rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements, and tests.

Subjects of Instruction.

176. 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. Four periods. Required of Freshmen. Professor PAINE.

177. Elementary Lessons in Electricity and Magnetism.—Two periods. Required of Sophomores. Professor PAINE.

178. Physical Laboratory.—Fundamental measurements of length, mass, and time. Determination of laws and forces, velocities, friction, and periodic motion. Study of mechanical advantage and efficiency of simple machines. The strength of various metals and wood. One period. Required of Freshmen. Mr. SPRAGUE.

179. Physical Laboratory.—Continuation of Course 178. Expansion of metals, latent heat of steam. Elementary experiments in electricity and magnetism. One period. Required of Sophomores in Electrical and Mechanical Engineering. Mr. ADAMS.

180. Electrical Laboratory.—Use of laboratory instruments. Measurement of resistance, current, and electro-motive force. Use of condensers. Electrical testing of lines for insulation and grounds. Magnetic properties of iron. Two periods. Required of Juniors in Electrical Engineering. Mr. ADAMS.

ELECTRICAL ENGINEERING.

Equipment.

The electrical engineering laboratory is a small brick building 30 by 50. It contains the electric light plant, consisting of a 35-horse-power automatic Skinner engine, an 11.5 K. W. 110-volt Westinghouse dynamo, a 30 K. W. 3-phase 550-volt Westinghouse alternator, and a 20 K. W. 2-phase 110-volt Lincoln alternator. The laboratory contains in addition to this one 6-light T. H. arc machine, one 1-horse-power Sprague motor, one 8 K. W. 110-volt Siemens & Halske dynamo, connected in such a way as to give 3-phase currents, one 2-horse-power 3-phase 110-volt Gen. Elect. Co. motor, one 2 K. W. 110-volt LaRoche alternator. It also contains transformers, condensers, arc lamps, circuit breakers, etc.

The department possesses a small library of standard books on all branches of physics and electrical engineering.

183. Dynamo Machinery.—A study of direct current dynamos and motors. Efficiency. Characteristic curves. Required of Juniors in Mechanical and Electrical Engineering. Two periods. Professor PAINE.

184. Alternating Currents of Electricity.—Principles of alternating currents. Alternating current generators and motors. Static and rotary transformers. Three periods, first term. Required of Seniors in Electrical Engineering. Professor PAINE.

185. Electric Power Transmission.—Direct current systems. Power transmission by single and polyphase alternating currents. Long distance, high potential lines. Three periods, second term. Required of Seniors in Electrical Engineering. Professor PAINE.

186. Electric Light and Railway Systems.—The design and operation of lighting and railway plants. Estimates of costs. Three hours, third term. Required of Seniors in Electrical Engineering. Professor PAINE.

189. Electrical Engineering Laboratory.—Laboratory methods. Calibration of electrical measuring instruments. Study of direct current apparatus. Characteristic curves. Photometry. Efficiency of direct current generators and motors. Four periods, first term. Required of Seniors in Electrical Engineering. Mr. ADAMS.

190. Electrical Engineering Laboratory.—Characteristic curves of alternating current generators. Study of inductance and capacity. Efficiency of alternating current apparatus, including motors, generators and transformers. Four periods, second and third terms. Required of Seniors in Electrical Engineering. Mr. ADAMS.

191. Electrical Design.—The design of magnets, rheostats, dynamos, and transformers. Two periods. Required of Seniors in Electrical Engineering. Mr. ADAMS.

192. Electrical Engineering Practice.—The application of electricity for lighting and power. Electricity in cotton mills and machine shops. Two periods, third term. Required of Seniors in Electrical Engineering. Professor PAINE.

195. Physics.—The properties of matter. Mechanics. The principles of the simple machines. Five periods. Required of second-year students in Applied Electricity and in Mechanic Arts. Mr. SPRAGUE.

196. Electricity.—Principles of the electric circuit. Batteries. Electro-magnets. Dynamos. Motors. Electric bell, telephone, and telegraph systems. Five periods, second term. Required of second-year students in Applied Electricity and in Mechanic Arts. Mr. SPRAGUE.

197. Electrical Laboratory.—Management of dynamos and motors. Care of station equipment. Study of arc lamps. Transformers. Five periods, third term. Required of second-year students in Applied Electricity and in Mechanic Arts. Mr. SPRAGUE.

198. Electrical Construction.—Bell wiring. Electric light wiring. Coil winding for dynamo and motor fields. Armature winding. Repair of electrical apparatus. Two periods, second and third terms. Required of second-year students in Applied Electricity. Mr. ADAMS.

COURSE IN MINING ENGINEERING.

The course in Mining Engineering is intended to give the student the preliminary training necessary to enable him to enter upon a career in mining. To this end he is given instruction in English, History, Political Economy, and Mathematics, which are fundamental to the more technical studies and to the greatest usefulness as a citizen. Instruction in Physics and Chemistry, Mineralogy and

Geology, Surveying, Shop-work, Drawing, Machinery and Steam affords the scientific and engineering knowledge upon which the successful work of the miner must depend. The more technical portion of the instruction includes ore dressing, metal-working, ventilation, drainage, and illumination of mines.

V. The Four-year Course in Mining Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	--	-
Mechanical Drawing, 136	-	2	-
Descriptive Geometry, 137	-	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 123	5	-	-
Geometry, 124	-	5	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Mechanical Drawing, 139	2	2	2
Forge-work, 148	1	-	-
Pattern-making, 149	-	1	1
Geometry, 124	5	-	-
Trigonometry, 125	--	5	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Construction, 111	2	--	--
Graphic Statics, 101	--	2	2
Surveying, 102 and 103	2	2	2
Surveying (field-work), 104	2	2	2
Drawing, 105	2	2	2
Mechanics, 128	3	3	3
Analytical Geometry, 126	4	4	--
Calculus, 127	--	--	4
English and History, 283 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Mining, 296	--	4	4
Ore Dressing, 207	4	--	-
Geology, 211	2	2	2
Metallurgy, 208	--	2	2
Mineralogy, 212	4	--	--
Assaying, 209	--	2	2
Boilers, 157	2	-	--
Steam Engines, 158	--	2	--
Valve Gears, 159	--	--	2
Hydraulics, 110	--	3	3
Calculus, 127	3	--	--
English, 276 and 274	2	2	2
Political Economy, 297 and 298	2	2	2
Military Drill, 299	3	2	2

MINING AND METALLURGY.

206. Mining.—Lectures on methods of mining, including prospecting, sinking, sloping, hoisting, pumping, and ventilating; the location of mining claims, mine fires, fire-damp and dust explosions; inundations; rescue and relief of men. Four periods, second and third terms. Required of Seniors in Mining. Dr. WALKER.

207. Ore Dressing.—Furnishing products for metallurgical treatment. Lectures on concentrating machinery and concentrating and enriching ores by mechanical means. Four periods, first term. Required of Seniors in Mining. Dr. WALKER.

208. Metallurgy.—Introductory; combustion, calorific calculations, fuels, refractory materials, furnaces, etc. Iron and steel: the various iron and steel processes, metallography, heat-treatment, mechanical treatment, chemistry. Copper: roasting, smelting, refining, wet and electrolytic processes. Gold: stamp milling, amalgamation, cyanide and chlorination processes. The metallurgy of lead and the lesser metals. Two periods, second and third terms. Required of Seniors in Mining. Dr. WALKER.

209. Assaying.—Ricketts & Miller's *Notes on Assaying.* Lectures and laboratory practice in the crushing and sampling of ores; the assaying of gold, silver, lead, and other ores; corrected assays; bullion assays; extraction tests. Two periods, second and third terms. Required of Seniors in Mining. Dr. WALKER.

GEOLOGY AND MINERALOGY.

211. 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. Two periods. Required of Seniors in Civil Engineering, in Mining, and in Chemistry. Dr. WALKER.

212. Mineralogy.—Moses & Parsons' *Mineralogy.* Descriptive and determinative mineralogy; blowpipe analysis and the study of the more important minerals, their properties, uses, and methods of determination. Recitations and laboratory practice. Four periods, first term. Required of Seniors in Mining. Dr. WALKER.

COURSES IN INDUSTRIAL 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 the analytical or the operating departments of the various chemical industries. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in the applied chemical subjects bearing more directly on the course the student has selected. The fundamental principles of engineering, machinery, etc., which are almost indispensable to the successful management of chemical plants, are taught, together with the cultural studies included in the other courses.

Raleigh as a Chemical Center.

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.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station are located in Raleigh, and through the courtesy of the officials in charge of these departments our students are welcomed whenever they desire to visit them.

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.

Chemical Equipment.

The laboratories of general and of 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 re-agents, 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.

Graduates in Chemistry.

The chemical graduates of the College are engaged in the following lines of chemical work: Manufacture of illuminating gas, manufacture of sulphuric acid, manufacture of fertilizers, manufacture of tobacco products, refining and testing oils, metallurgy of iron, metallurgy of copper, dyeing of cotton goods, in agricultural experiment stations, in State departments of agriculture, and in teaching chemistry. These are employed in North Carolina and nine other States.

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

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137		-	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Algebra, 123	5	--	--
Geometry, 124	--	5	5
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Mechanical Drawing, 139	2	2	2
Forge-work, 148	1	--	--
Pattern-making, 149	--	1	1
Geometry, 124	5	--	--
Trigonometry, 125	--	5	5
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

Agricultural Chemistry, 232	2	2	2
Organic Chemistry, 218	2	2	2
Analytical Chemistry, 220 and 226	9	9	9
Bacteriology, 251	2	2	2
English and History, 283 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Industrial Chemistry, 233	2	2	2
Analytical Chemistry, 226	9	--	--
Synthetical Chemistry, 219	--	9	9
Geology, 211	2	2	2
Bacteriology, 252	2	2	2
English, 276 and 274	2	2	2
Political Economy, 297 and 298	2	2	2
Military Drill, 299	3	2	2

COURSES IN DYEING.

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, 301	1	1	1
Weaving, 302	1	1	1
Mill Calculations, 305	1	1	1
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wook-work, 146	1	1	1
Forge-work, 147	1	1	1
Algebra, 123	5	--	--
Geometry, 124	--	5	5
Elementary Physics, 331	2	2	2
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Designing, 303	2	2	2
Geometry, 124	5	--	--
Trigonometry, 125	--	5	5
English, 273 and 275	3	3	3
Military Drill, 299	3	3	3

Junior Year.

Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Organic Chemistry, 218	2	2	2
Analytical Chemistry, 220 and 226	9	9	9
English and History, 223 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Dyeing, 306	2	2	2
Industrial Chemistry, 233	2	2	2
Analytical Chemistry, 226	9	--	--
Synthetical Chemistry, 219	--	9	9
Boilers, 157	2	--	--
Engines, 158	--	2	--
Valve Gears, 159	--	--	2
English, 276 and 274	2	2	2
Political Economy, 297 and 298	2	2	2
Military Drill, 299	3	2	2

CHEMISTRY.

216. Inorganic Chemistry.—Remsen's *Introduction to the 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, Mr. BAGLEY, and Mr. HARPER.

217. Inorganic Chemistry.—Laboratory work. Remsen and Randall's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

218. 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. Two periods. Required of Juniors in Chemistry. Professor WITHERS.

220. 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. Nine periods, first term. Required of Juniors in Chemistry and Dyeing. Dr. WALKER.

226. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Nine periods, second and third terms. Required of Juniors in Chemistry and Dyeing. Nine periods, first term. Required of Seniors in Chemistry and Dyeing. Dr. WALKER.

228. Synthetical 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 dye-stuffs is prepared and the properties studied. Nine periods, second and third terms. Required of Seniors in Chemistry and Dyeing. Dr. WALKER.

232. Agricultural Chemistry.—Ingle's *Agricultural Chemistry.* A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the

chemical standpoint. Two periods. Required of Juniors in Chemistry. Professor WITHERS.

233. **Industrial Chemistry.**—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of engineering. Two periods. Required of Seniors in Chemistry and Dyeing. Professor WITHERS.

BACTERIOLOGY.

251. **General Bacteriology.**—Lectures and laboratory work on the nature, 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. TEMPLE.

252. **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 flexible to fit the requirements of those students taking it. Two periods. Required of Seniors in Chemistry. Professor STEVENS.

ENGLISH.

271. **English Composition.**—A drill on the forms of the language, the correct relation of words, the sentence, the paragraph. Daily written exercises. Three periods. Required of first-year students. Dr. SUMMEY and Mr. MASON.

272. **Introductory Composition and Rhetoric.**—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. MASON.

273. **Rhetoric, Criticisms, Essays.**—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, first term. Professor HILL, Doctor SUMMEY, and Mr. MASON.

274. **Argumentation.**—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

275. **American Literature.**—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. MASON.

276. **English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of all Seniors. Professor HILL.

HISTORY.

281. **American History.**—By means of a text-book, supplemented by lectures and frequent assignment of topics for special study, students are in this course familiarized with the leading facts in the history of the United States. Two periods. Required of first-year students. Doctor SUMMEY and Mr. MASON.

283. **English History.**—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

295. **Business Law.**—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book: Parson's *Laws of Business*. One period, first half year. Required of Juniors. President WINSTON.

296. **Civics.**—This course includes instruction in the rights and duties of citizenship, with special reference to the Laws of North Carolina. One period, second half year. Required of Juniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

297. **Political Economy.**—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 Seniors. Two periods. President WINSTON.

298. **Government.**—The Constitutional History of the United States and North Carolina; relations between the State and Federal governments, etc. Lectures and texts. Required of Seniors. Two periods. President WINSTON.

MILITARY SCIENCE.

299. **Drill.**—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours. Required of all classes except Seniors. Commandant and Officers of the Battalion.

300. **Tactics.**—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, and Guard Duty. One period. Required of Juniors. Lieutenant HEATON.

TEXTILE COURSES.

VIII. The Four-year Course in Textile Industry.
VIIIa. The Two-year Course in Textile Industry.
VIIIb. Special Ten-weeks Course in Carding and Spinning.
VIIIc. Special Ten-weeks Course in Weaving and Designing.

THE TEXTILE DEPARTMENT.

The Textile Department is located in a new building recently erected for its use. The instruction given in this department is in the theory and practice of cotton manufacturing. The building, which is a typical cotton mill, is fully equipped with all the necessary machinery for 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 three courses of instruction are offered, the Four-year Course leading to the degree of Bachelor of Engineering, the Two-year Course and the Ten-weeks Winter Course in carding and spinning, weaving, and designing.

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 mature students who cannot spend the time required for the Four-year Course, or who have had considerable practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work. Students twenty years of age or over are admitted to this course without any examination.

Special Ten-weeks Courses.

Special Ten-weeks Courses are offered to practical mill men in carding and spinning, weaving and designing. These courses are given during the winter of each year, beginning with the opening of College in January and lasting until the middle of March. They aim to meet a demand from cotton-mill superintendents, overseers, and practical men for special instruction in the subjects named.

The textile instruction given is of a practical nature and covers the entire ground of cotton manufacturing. Its object is to prepare the student for a useful career in this industry. There is a demand from the mills in this and other States for young men technically trained in the manufacture of cotton goods, especially of the finer grades. That the graduates are meeting with success in this industry is shown by the positions held by them. Among these are president, secretary and treasurer, manager, superintendent, designer, overseer of weaving, mill architect, machinery salesman. In fact, the graduates have gone into almost every branch of cotton manufacturing and have met with success. All have received the same training. The point to which each has advanced has depended upon the ability to deal with the general problems of manufacturing.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus, just beyond the Horticultural Building. It is a two-story brick building 125 x 75 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 classroom 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 11 x 5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9 x 4½-inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7 x 3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6 x 2½-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 240-spindle mule spinning frame, 1½-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 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 72-spindle twister, one-half for wet, one-half for dry twisting, 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; one Northrop-Draper sateen loom; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Two high-speed sheeting looms, made by Kilburn & Lincoln, 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 2 x 1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One Crompton 4 x 1 box gingham loom, one Crompton 4 x 1 box loom with 20-harness dobby, one Crompton single-box loom with 400-hook Jacquard machine, one Knowles Gem loom with 4 x 4 box, one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass. One 2 x 1 box loom with 600-hook Jacquard machine, made by Joseph Battles Manufacturing Co., Lawrenceville, Mass. One 4 x 1 box table cover loom with 624-hook Halton Jacquard machine, made by Crompton-Thayer Loom Co., Worcester, Mass. Ten 4 x 4 box hand looms with 30-harness witches, for narrow fabrics. Two 4 x 4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thos. Halton's Sons, Philadelphia, Pa.

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 70 x 50 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, and alkalies, 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 larger 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:

Wm. J. Matheson & Co., Ltd., N. Y.
Farbenfabriken of Elberfeld Co., N. Y.
H. A. Metz & Co., N. Y. (successors to Victor Koechl & Co.).
Berlin Analine Works, N. Y.
A. Klipstein & Co., N. Y.
C. Bischoff & Co., N. Y.
Kuttroff, Pickhardt & Co., N. Y.
New York and Boston Dyewood Co., N. Y.
Schoelkoff, Hartford & Hanna Co., Buffalo, N. Y.
F. E. Atteaux & Co., Boston, Mass.
Read, Holliday & Sons, Ltd., N. Y.
Société Anonyne des Matiéres Colorantes, Paris.
O. S. Janney & Co., Philadelphia.
Geisenheimer & Co., N. Y.
Roessler and Hasslacher Chemical Co., N. Y.
Jas. S. and Thos. Elkington, Philadelphia, Pa.
Arabol Mfg. Co., N. Y.
Kalle & Co., N. Y.
Geigy Aniline and Extract Co., N. Y.

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.

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

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

Heating Plant.

Steam Coils and Blowing Fan, made by B. F. Sturtevant Co., Boston, Mass.

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 Ferm.
Free-hand Drawing, 316 †	2	--	--
Mechanical Drawing, 317	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 320	2	2	2
Forge-work, 321	2	2	2
Carding and Spinning, 301	1	1	1
Weaving, 302	1	1	1
Algebra, 336	5	--	--
Geometry, 337	--	5	5
Elementary Physics, 331	2	2	2
English, 341	3	3	3
Mill Calculations, 304	1	1	1
Military Drill, 359	3	2	2

Sophomore Year.

Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Designing, 303	2	2	2
Geometry, 337	5	--	--
Trigonometry, 338	--	5	5
Inorganic Chemistry, 311	3	3	3
Inorganic Chemistry (laboratory), 312	2	2	2
English, 342 and 344	3	3	3
Military Drill, 359	3	2	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 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, 301	4	4	4
Weaving, 302	3	3	3
Textile Designing, 303	2	2	2
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Machine-shop Work, 324	2	2	2
English and History, 347 and 345	2	2	2
Business Law and Civics, 348 and 349	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	2	2

Senior Year.

Carding and Spinning, 301	4	4	4
Weaving, 302	4	4	4
Textile Designing, 303	3	3	3
Dyeing, 306	2	2	2
Boilers, 326	2	--	--
Engines, 227	--	2	--
Valve Gears, 328	--	--	2
English, 345 and 343	2	2	2
Political Economy, 351 and 352	2	2	2
Military Drill, 359	3	2	2

VIIIa. The Two-year Course in Textile Industry.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	2	2
Free-hand Drawing, 316	2	--	--
Mechanical Drawing, 317	--	2	--
Descriptive Geometry, 318	--	--	2
Wood-work, 320	2	2	2
Forge-work, 321	2	2	2
Arithmetic, 334	5	--	--
Algebra, 335	--	5	5
English, 341	3	3	3
Military Drill, 359	3	2	2

Second Year.

Carding and Spinning, 301	8	8	8
Weaving, 302	7	7	7
Textile Designing, 303	5	5	5
Military Drill, 359	3	2	2

Description of Subjects.

301. 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 lappers; card; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers and warpers. 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. Required of Freshmen and

Sophomores, Juniors, and Seniors in the Four-year Course and of first and second-year students in the Two-year Course. Professor WILSON and Mr. STEED.

302. 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; cylinders; 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; values of ingredients; sizing receipts for light, medium, and heavy sizing. Loom-mounting; reels 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 loom; 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 action; construction and fixing of dobby; 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; calendaring; tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Required of Freshmen, Sophomores, Juniors, and Seniors in the Four-year Course and of first and second-year students in the Short Course. Mr. NELSON.

303. Textile Designing.—Lectures and practice in designing; fabric structure and cloth analysis. 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; honey-comb weaves. Bedford cords and combinations with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piqués. 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. Fabric structure; 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. Cloth analysis. 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. Required of Sophomores, Juniors and Seniors in the Four-year Course, and of first and second-year students in the Short Course. Mr. NELSON and Mr. SHUFORD.

304. Mill Calculations.—Calculations for speed of machines and parts. Yarn calculations, draft twist and production on cotton machinery. One period. For Freshmen. Professor WILSON.

306. 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, alkalies, 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 acts of bleaching and dyeing, such as the boiling out and

*See also the Four-year course in Dyeing, page 75.

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 dyes and their application to cotton. After-treatment of direct colors, including diazotising and developing and the topping with basic colors. The application to cotton of basic colors, acid colors, mordant colors, including a study of the various mordants and their fixation with metallic salts. Dyeing with sulphur colors, indigo, natural and artificial, aniline black, turkey red, and other 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, alkalies and reducing agents on several samples taken from the different classes of dyestuffs. The use of hyraldite and other stripping agents.

Fraps' *Principles of Dyeing* is used as a text in connection with a course of lectures which will include the consideration of many difficult problems that arise in the dye-house. Required of Juniors and Seniors in Textile Industry. Mr. SHUFORD.

307. Dyeing Laboratory.—A series of experiments are performed which cover 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 colors. 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 scrap-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 the printing of 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. SHUFORD.

CHEMISTRY.*

311. Inorganic Chemistry.—Remsen's *Introduction to the 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, Mr. BAGLEY, and Mr. HARPER.

312. Inorganic Chemistry.—Laboratory work. Remsen and Randall's *Chemical Experiments.* The student performs, under the eye of the instructor, experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

MECHANICAL ENGINEERING.†

316. Free-hand Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Freshmen and first-year students. Mr. ST. AMANT.

317. Elementary Mechanical Drawing.—Use of instruments; geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Two periods, second term. Required of Freshmen and first-year students. Mr. ST. AMANT.

318. Descriptive Geometry Drawing.—Elementary principles; cylinders, cones, and prisms; intersection development of surfaces, miscellaneous problems. Two periods, third term. Required of Sophomores. Mr. ST. AMANT.

320. 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 and Mr. DEAL.

321. Forge-work.—Exercises in working with iron, welding; uses and care of forge-tools and fires. Two periods. Required of Freshmen. Mr. DEAL.

324. 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 Juniors. Mr. PARK.

*For further information, see course in Chemistry.

†For full information, see course in Mechanical Engineering.

326. Boilers.—Steam generation; types, care and management; fittings and appliances; corrosion and incrustation; combustion of fuel; boiler power. Two periods, first term. Required of Seniors. Professor THOMAS.

327. Steam-engines.—Types—simple and compound and triple expansion, automatic, Corliss, rotary. Care and management. Indicators, indicated and brake horse-power, condensers. Two periods, second term. Required of Seniors. Professor THOMAS.

328. Valve Gears.—Plain slide valve, balanced valves, Corliss and other form valve gears. Link and radial reversing gears. Shaft governors. Bilgram and Zenner valve diagrams. Two periods, third term. Required of Seniors. Professor THOMAS.

PHYSICS.*

331. 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. SPRAGUE.

MATHEMATICS.†

334. Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students. Mr. MANN, Mr. LANG, and Mr. J. A. PARK.

335. Algebra.—Wells' *Higher Algebra*, up to quadratic equations. Five periods, second and third terms. Required of first-year students. Mr. MANN, Mr. LANG, and Mr. J. A. PARK.

336. Advanced Algebra.—Begins at quadratic equations; general theory of equations; solution of higher equations, etc. Wells' *Higher Algebra.* Five periods, first term. Required of Freshmen. Mr. YATES and Mr. J. A. PARK.

337. Geometry.—Plane and solid. Wentworth's *Plane and Solid Geometry.* Five periods, second and third terms. Required of Freshmen. Five periods, first term. Required of Sophomores. Mr. YATES and Mr. J. A. PARK.

338. Trigonometry.—Five periods, second and third terms. Required of Sophomores. Mr. YATES.

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*For full information, see course in Electrical Engineering.

†For full information, see course in Civil Engineering.

ENGLISH.

341. Introductory Composition and Rhetoric.—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. MASON.

342. Rhetoric, Criticisms, Essays.—The student is taught the essentials of good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, second term. Professor HILL, Doctor SUMMEY, and Mr. MASON.

343. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

344. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. MASON.

345. English Literature.—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

347. English History.—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of all Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

348. Business Law.—Parson's *Laws of Business*. This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book: Parson's *Laws of Business*. One period, first half year. Required of Juniors. President WINSTON.

349. Civics.—This course includes instruction in the rights and duties of citizenship, with special reference to the Laws of North Carolina. One period, second half year. Required of Juniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

351. Political Economy.—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. Two periods, first half year. Required of Seniors. President WINSTON.

352. Government.—The Constitutional history of the United States and North Carolina; relations between the State and Federal governments, etc. Lectures and texts. Two periods, second half year. Required of Seniors. President WINSTON.

MILITARY SCIENCE.

359. Drill.—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours first term, two periods second and third terms. Required of all classes except Seniors. Commandant and Officers of the Battalion.

360. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant HEATON.

NORMAL COURSES.

I. For Rural Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) Summer Course.

II. For City Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) Summer Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education is being introduced into our public schools, and the College has a constant demand for well-trained industrial teachers. 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 courses or the Summer Courses, 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 colleges, except in the Summer Courses.

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
Nature Study—Animals	3	3	3
English	3	3	3
Mathematics	5	5	5
Military Drill	3	2	2

Second Year.

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

(*b*) ONE-YEAR COURSE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	3	3
Farm Equipment, Soils, and Crops	4	4	4
Nature Study	3	3	3
Mathematics	4	4	4
English	3	3	3
Military Drill	3	3	3

II. Courses for City Teachers.

(*d*) 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	3

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	4	4	4
Military Drill	3	2	2

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

DONATIONS.

The College makes thankful acknowledgment of the receipt of the following gifts during the year:

To the Textile Department.

Whitin Machine Works, Whitinsville, Mass.—Part value on 24-harness dobby loom; supplies for spinning and weaving machinery; part value on one set combing machinery; one sliver lap machine; one ribbon lap machine; one six-head combing machine.

Wm. Firth Co., Boston, Mass.—Part value on one 240-spindle mule. Asa Lees & Co., makers, Oldham, Eng.

Thomas Halton's Sons, Philadelphia, Pa.—One 400-hook Jacquard machine with harness; one 600-hook Jacquard machine with harness; one 624-hook table cover Jacquard machine with harness.

Crompton-Thayer Loom Co., Worcester, Mass.—Part value on one table-cover loom.

New England Butt Co., Providence, R. I.—Two braiding machines.

Berlin Aniline Works, N. Y.—Samples of dyestuff and color cards.

Continental Color and Chemical Co., N. Y.—Color cards.

H. A. Metz & Co., N. Y.—Samples of dyestuffs and color cards.

Kalle & Co., N. Y.—Five pounds Acme size; samples of dyestuffs; color cards.

Jas. S. and Thos. Elkington, Philadelphia, Pa.—Twenty pounds of bleachers' soap.

C. Bischoff & Co., N. Y.—Samples of dyestuffs and color cards.

Arabol Mfg. Co., N. Y.—Five pounds British gum, three pounds tragacanth, and one pound blood albumen.

A. Klipstein & Co., N. Y.—Samples of dyestuffs and color cards.

Roessler and Hasslacher Chemical Co., N. Y.—Plroride of sodium.

Cassella Color Co.—Samples of dyestuffs and color cards.

Courtesies Extended to Textile Department.

Textile Excelsior, Charlotte, N. C.
Textile Manufacturers' Journal, New York.
Fiber and Fabric, Boston, Mass.
Manufacturers' Record, Baltimore, Md.
Textile World, Boston, Mass.
Textile American, Boston, Mass.
The Manufacturer, Philadelphia, Pa.

The Tradesman, Chattanooga, Tenn.
American Industries, New York City.
Cotton, Atlanta, Ga.
Dixie, Atlanta, Ga.
American Cotton and Wool Reporter, Boston, Mass.
Mill News, Charlotte, N. C.
Dyers' Bulletin, Philadelphia, Pa.
The Dyer and Calico Printer, London, Eng.
The Chemical Trade Review and Dyers' Trade Journal, Phila., Pa.
Garment Dyers' Guide, Philadelphia, Pa.
Cassella Color Company, New York City.
Pilot Cotton Mills, Raleigh, N. C.
Caraleigh Cotton Mills, Raleigh, N. C.
Raleigh Cotton Mills, Raleigh, N. C.

To the Chemistry Department.

The Imperial Brush Company, Newark, N. J.—One scrubbing brush.

R. G. Mewborne, Louisville, Ky.—Sample of pure nicotine, and Bolton's Bibliography of Chemistry, with two supplements.

Sulphur Mining and Railroad Company, Richmond, Va., through J. W. White.—Samples of the different ores from the mine.

CATALOGUE OF STUDENTS.

GRADUATES. 6

Name.	*Post-office.*	*Course.*
OSCAR LUTHER BAGLEY, B. S.,	Bagley,	Chem.
RICHARD HUGH HARPER, B. S.,	Patterson,	Chem.
WILLIAM KERR, B. S.,	Bryson City,	Agr.
JAMES OSCAR MORGAN,	Etowah,	Agr.
JOHN ALSEY PARK,	Raleigh,	C. E.
JAMES CLARENCE TEMPLE, B. S.,	Sanford,	Agr.

SENIOR CLASS. 51

DURANT STEWART ABERNETHY,	Hickory,	C. E.
GEORGE GILDEROY ALLEN,	Hiddenite,	Tex.
GEORGE PAGE ASBURY,	Burkmont,	C. E.
JAMES CLAUDIUS BEAVERS,	Morrisville,	Agr.
NEEDHAM ERIC BELL,	Kinston,	Chem.
KENNETH LEON BLACK,	Mount Mourne,	C. E.
WILLIAM FRANCIS BROCK,	Farmington,	C. E.
WILLIAM ANDREWS BUYS,	Havelock,	C. E.
MARK HOPKINS CHESBRO,	Claremont, Va.,	Agr.
CONNOR CALHOUN CLARDY,	Concord,	E. E.
DAVID MACKENZIE CLARK,	Weldon,	C. E.
JOHN WASHINGTON CLARK,	Raleigh,	M. E.
JAMES DUNCAN CLARKE, JR.,	Tampa, Fla.,	Chem.
SAMUEL HERBERT CLARKE,	Statesville,	C. E.
WILEY THEODORE CLAY,	Hickory,	M. E.
DUNCAN ARCHIBALD COX,	Rowland,	Chem.
ALEXANDER DOANE CROMARTIE,	Garland,	Agr.
LATTA VANDERION EDWARDS,	Merry Oaks,	C. E.
BENJAMIN BALLARD EGERTON,	Ingleside,	C. E.
WELDON THOMPSON ELLIS,	Spencer,	M. E.
ALBERT EDWARD ESCOTT,	Charlotte,	Tex.
WILLIAM CARLYLE ETHERIDGE,	Manteo,	Agr.
JAMES BECKETT EWART,	Hendersonville,	E. E.
SHIRLY WATSON FOSTER,	Nance,	Agr.
ARTHUR WYNN GREGORY,	Halifax,	Chem.
HORACE LESTER HAMILTON,	Biltmore,	E. E.
JOHN FREDERICK HANSELMAN,	Manson,	M. E.
CLARENCE WILSON HEWLETT,	Wilson,	E. E.

Name.	*Post-office.*	*Course.*
JAMES ALLEN HIGGS, JR.,	Raleigh,	C. E.
CYRUS WALKER HODGES,	LaGrange,	M. E.
WILLIAM CLAUDE HUBAND,	Winston,	M. E.
LESTER LAFAYETTE JORDAN,	Raleigh,	C. E.
WILLIAM GRAHAM KNOX,	Charlotte,	Chem.
MARTIN PEARL LIPE,	Mint Hill,	Agr.
JOE POINDEXTER LOVILL,	Pine Ridge,	C. E.
THOMPSON MAYO LYKES,	Tampa, Fla.,	C. E.
HORACE SMITH MCLENDON,	Ansonville,	Agr.
RAYMOND MAXWELL,	Resaca,	C. E.
JAMES EDWIN MOORE,	Williamston,	C. E.
LACY MOORE,	Graham,	C. E.
JOSEPH GRAHAM MORRISON,	Mariposa,	Agr.
JESSE CLARENCE MYRICK,	Littleton,	E. E.
CHARLES FRANKLIN NIVEN,	Morven,	Agr.
LOLA ALEXANDER NIVEN,	Cairo,	Agr.
LEWIS MILTON ODEN,	Hunter's Bridge,	Agr.
THOMAS JEFFERSON OGBURN,	West Lafayette, O.,	M. E.
CLYDE ESTER PARKER,	Raleigh,	Chem.
SAMUEL OSCAR PERKINS,	Muttenz,	Chem.
ANGELO BETTLENA PIVER,	Wilson,	C. E.
WILLIAM CRAWFORD PIVER,	Wilson,	Chem.
DURANT WAITE ROBERTSON,	Washington, D. C.,	Tex.
FREDDIE JACKSON TALTON,	Pikeville,	Agr.
RICHARD HENRY TILLMAN,	Deep Creek,	E. E.
WILLIAM SIDNEY TOMLINSON,	Goldsboro,	C. E.
REID TULL,	Kinston,	C. E.
JACKSON CORPENING TUTTLE,	Lenoir,	E. E.
ROBERT PEEL UZZELL,	Goldsboro,	Agr.
PETER VALAER, JR.,	Winston,	Chem.
LILLIAN LEE VAUGHAN.	Franklin, Va.,	M. E.
JOHN HARLEIGH WILLIAMS,	Rialto,	Tex.
LEWIS TAYLOR WINSTON,	West Raleigh,	Agr.

JUNIOR CLASS.

HERBERT SCANDLIN BATTIE,	Greensboro,	C. E.
JOE PITTMAN BIVENS,	Goodman,	E. E.
CARNEY JOHN BRYAN,	Washington,	E. E.
LINDSAY FERGUSON CARLETON,	Boomer,	E. E.
ROBERT HILL CARTER,	Blackstone,	E. E.

Name.	*Post-office.*	*Course.*
CLAUD COUNCIL DAWSON,	Grifton,	Tex.
JACOB TATUM EATON,	Farmington,	Agr.
SEBA ELDRIDGE,	Dunn,	C. E.
BENJAMIN BRYAN EVERETT,	Palmyra,	Agr.
JOHN LINDSAY FERGUSON,	Kendal,	E. E.
ELIAS VANBUREN FOWLER,	Glenville,	E. E.
CLEMENT LEINSTER GARNER,	Beaufort,	C. E.
LOVIC ROGERS GILBERT,	Potecasi,	Tex.
ROY JOSEPH GILL,	Raleigh,	C. E.
ROBERT STRICKLER GRAVES,	Syria, Va.,	E. E.
JOHN CLARENCE GRIMES,	Lexington,	E. E.
GEORGE ROM HARDESTY,	Wakefield,	E. E.
PHILIP WILLIAM HARDIE,	Brown Summit,	C. E.
JOKTON LAFAYETTE HEMPHILL,	Morganton,	E. E.
LAWRENCE JAMES HERRING,	Clinton,	Agr.
GUY FRANCIS HINSHAW,	Winston-Salem,	C. E.
WILLIAM NORMAN HOLT,	Smithfield,	Tex.
ALBERT CARL JONES,	Trinity,	Agr.
WILLIAM WHITMORE JONES,	Franklin,	E. E.
LAFAYETTE FRANK KOONCE,	Richlands,	Agr.
CHARLES EDWARD LATTA,	Raleigh,	Tex.
LOUIS EDGAR LOUGEE,	Raleigh,	Chem.
JAMES BORDEN LYNCH,	Wilmington,	C. E.
HENRY KREIGER MCCONNELL,	Rabbit Hash, Ky.,	Chem.
OSCAR FRANKLIN MCNAIRY,	Greensboro,	C. E.
EUGENE FRANKLIN MEADOR,	Reidsville,	M. E.
BENNETT TAYLOR MIAL,	Raleigh,	M. E.
FRANK CURTIS MICHAEL,	Gibsonville,	E. E.
JOHN MAPLE MILLS,	Raleigh,	M. E.
HENRY STARBUCK MONTAGUE,	Winston-Salem,	Chem.
JOHN LIGHTFOOT MORSON,	Raleigh,	C. E.
JAMES ELWOOD OVERTON,	Ahoskie,	Agr.
THOMAS FRANK PARKER,	Hillsboro,	Agr.
FRED. MAYNARD PARKS,	Morganton,	E. E.
EDWARD NEWTON PEGRAM,	Gastonia,	C. E.
GUY PINNER,	Elizabeth City,	C. E.
WINSLOW GERALD PITMAN,	Lumberton,	M. E.
JAMES KEMP PLUMMER,	Middleburg,	Chem.
LEON JACOB SCHWAB,	Goldsboro,	C. E.
JOHN OSCAR SHUFORD,	Gastonia,	E. E.
JAMES LAWRENCE SMITH, JR.,	Linden,	C. E.

Name.	*Post-office.*	*Course.*
RALPH HUNTER SMITH,	New Bern,	M. E.
JESSE PAGE SPOON,	Oakdale,	Agr.
WILLIAM CRAWFORD STAPLES,	Reidsville,	Tex.
VANCE SYKES,	Rock Spring,	C. E.
NELSON HALL TATE,	Littleton,	M. E.
LUTHER RUSSELL TILLETT,	Carolla,	C. E.
WILLIAM BROOKS TRUITT,	Greensboro,	M. E.
JOHN ED. TUBLINGTON,	Clinton,	Agr.
LINDSEY MARADE WEAVER,	Lexington,	M. E.
JOHN JACKSON WELLS,	Elm City,	C. E.
DAVID LYNDON WHITE,	Trinity,	Agr.
CECIL BERNARD WHITEHURST,	Beaufort,	E. E.

SOPHOMORE CLASS.

ALBERT EDWIN ABERNETHY,	Hickory,	Agr.
DAVID NEILL ALLSBROOK,	Scotland Neck,	C. E.
WILLIAM PARTEE ASHCRAFT,	Charlotte,	Agr.
FRANK OSCAR BALDWIN,	Raleigh,	Chem.
GEORGE FRANCIS BASON, JR.,	Charlotte,	E. E.
HUBERT BEDDOES,	Charlotte,	E. E.
HARWOOD BEEBE,	Baltimore, Md.,	C. E.
WILLIAM LAMAR BLACK,	Mount Mourne,	M. E.
LEONARD ANDERSON BLACKBURN,	Winston,	E. E.
ASA GRAY BOYNTON,	Biltmore,	C. E.
HOWARD MILLER BROOKS,	Laurinburg,	C. E.
FRANK HAMILTON BROWN,	Cullowhee,	Agr.
NEVILLE TURNER BROWN,	Raleigh,	M. E.
WILLIAM BRYANT BURGESS,	Rocky Mount,	E. E.
GREGG HOLT CALDWELL,	Davidson,	Agr.
ROBERT CALDER CANTWELL,	Wilmington,	C. E.
HERBERT FULLER CARROLL,	Raleigh,	Chem.
ARTHUR GARDNER COFFIN,	Greensboro,	C. E.
LOUIS HILL COUCH,	Lexington,	E. E.
GEORGE THOMAS DUNLAP, JR.,	Norwood,	E. E.
TYLER BENNETT DUNLAP,	Cedar Hill,	E. E.
ALVIN DEANS DUPREE,	Greenville,	C. E.
RAYMOND ROWE EAGLE,	Statesville,	M. E.
MINNIC LUTHER EARGLE,	Leesville,	Agr.
WILLIAM HENRY ESKRIDGE,	Shelby,	C. E.
ISAAC HERBERT FARMER,	Wilson,	E. E.
BENJAMIN TROY FERGUSON,	Kimbolton,	Agr.

Name.	*Post-office.*	*Course.*
WARREN GOSS FERGUSON,	Southern Pines,	E. E.
JUNIUS TALMAGE GARDNER,	Shelby,	C. E.
SETH MANN GIBBS,	Middleton,	C. E.
MOSES HENRY GOLD,	Beaufort,	C. E.
JOHN DAVID GRADY,	Albertson,	Agr.
EDWARD WILLIAM GREGORY,	Elizabeth City,	M. E.
WILLIAM THOMAS GRIMES,	Lexington,	Agr.
THOMAS DELAWARE GRIMSHAWE,	Montvale,	C. E.
DORSEY YATES HAGAN,	Greensboro,	C. E.
MAURICE HENDRICK,	Shelby,	Tex.
MILTON WALKER HUNTER,	Oxford,	E. E.
JOHN MCLAURIN JONES,	Durham,	E. E.
HERBERT WILLIAM KUEFFNER,	Durham,	C. E.
CLAUDE MILTON LAMBE,	Durham,	C. E.
BENJAMIN BUSSEY LATTIMORE,	Shelby,	C. E.
DAVID LINDSAY,	Stoneville,	Tex.
WILL THOMPSON LIPSCOMBE,	Greenville,	Chem.
GEORGE LAFAYETTE LYERLY,	Hickory,	E. E.
JOSEPH EDMUND MAJOR,	Anderson, S. C.,	M. E.
CLARENCE TALMAGE MARSH,	Aulander,	C. E.
DAVID JOHN MIDDLETON,	Warsaw,	Agr.
ROBERT LIVINGSTONE MURPHY,	Morganton,	E. E.
DAVID WHAREY NEWELL,	Newell,	E. E.
JOHN SHAW PESCUD,	Raleigh,	M. E.
PAUL NATHANIEL PITTENGER,	Raleigh,	M. E.
BENJAMIN FRANKLIN PITTMAN,	Tarboro,	E. E.
LAWRENCE LYON PITTMAN,	Whitakers,	C. E.
LOUIS JULIEN POISSON,	Wilmington,	E. E.
ROBERT EDWARD STEWART POPE,	Durham,	E. E.
HARRY ALEXANDER POWELL,	Fairbluff,	Tex.
JAMES ALEXANDER POWELL,	Raleigh,	M. E.
THOMAS MILTON POYNER,	Poplar Branch,	M. E.
WILLIAM THOMAS PRICE,	New Bern,	C. E.
WILLIAM DUDLEY SIMPSON,	Raleigh,	C. E.
EDGAR ENGLISH SMITH,	Greensboro,	C. E.
HENRY LEWIS SMITH,	Dunn,	C. E.
HARRIS INGRAM STANBACK,	Mt. Gilead,	E. E.
CHARLES EDWARD STEWART,	Claremont, Va.,	E. E.
JOHN SNIPES STROUD,	Frosty,	Tex.
ALBERT BENJAMIN SUTTLE, JR.,	Shelby,	Chem.

Name.	*Post-office.*	*Course.*
WILLIAM THADDEUS TEMPLE,	Sanford,	M. E.
JOHN LAWRENCE VON GLAHN,	Wilmington,	C. E.
JOHN PIPER WATTERS,	Charlotte,	E. E.
ROYALL EDWARD WHITE,	Aulander,	C. E.
WILLIAM HENRY WHITLEY,	Albemarle,	C. E.
FRANK GRAHAM WILLIAMS,	Inez,	Agr.
JOHN C. WILLIAMS,	Linden,	C. E.
THOMAS DICKSON WILLIAMS,	Matthews,	E. E.
JOHN KELSO WILSON, JR.,	Baltimore, Md.,	M. E.
ROBERT JOB WYATT,	Raleigh,	M. E.
WOODFIN BRADSHER YARBOROUGH,	Locust Hill,	E. E.
JOHN FRANKLIN ZIGLER,	Winston-Salem,	C. E.

FRESHMAN CLASS.

WILLIAM ANDERSON ALLEN,	Kinston,	C. E.
FRANK FENNING ALLISON,	Concord,	Agr.
JOHN ALLEN AREY,	Elmwood,	Agr.
ARTHUR NORMAN ARMSTRONG,	Creswell,	Tex.
WESLEY MARVIN BAGBY, JR.,	High Point,	Tex.
JOHN WILLIAM BARRETT, JR.,	Rocky Mount,	Agr.
LOUIS DEKEYSER BELDEN,	Wilmington,	M. E.
EUGENE GRAY BLACKBURN,	Winston,	M. E.
HENRY NATHAN BLANCHARD,	Greensboro,	E. E.
THOMAS JOHNSON BREVARD,	Fairview,	C. E.
NATHAN COHN BROOKS,	New Bern,	M. E.
CECIL DEWITT BROTHERS,	Sharpsburg,	M. E.
THOMAS KINCAID BRUNER, JR.,	Raleigh,	Tex.
JAMES WASHINGTON CARTER,	Morganton,	E. E.
CLEVELAND SCALES CHAMBLEE,	Wakefield,	Agr.
THORNE MCKINZIE CLARK,	Raleigh,	M. E.
WALTER MILLER COWLES,	Charlotte,	M. E.
JOHN BENNETT CRAVEN,	Charlotte,	M. E.
KENNETH CRAIG DENNY,	Cromartie,	E. E.
FRED. ATHA DUKE,	Raleigh,	M. E.
WILLIAM HUNT EATON,	Cleveland,	Agr.
RALPH RINGGOLD FAISON,	Goldsboro,	Agr.
FRANK LINDSAY FOARD,	Winston-Salem,	M. E.
ROSCOE LOOMIS FOX,	Waynesboro, Va.,	Tex.
JULIAN GOLDSTON FRAZIER,	Greensboro,	E. E.
LEWIS PRICE GATTIS,	Raleigh,	C. E.

Name.	*Post-office.*	*Course.*
CHARLIE POOL GRAY,	Buxton,	C. E.
MARSHALL E. GRAY,	Kinston,	C. E.
ANDREW HEARTSFIELD GREEN,	Raleigh,	Agr.
JOE JULIUS GRIER,	Matthews,	E. E.
WILLIAM ROY HAMPTON,	Plymouth,	E. E.
JOHN WILLIAM HARRELSON,	Lawndale,	Tex.
GEORGE HARRISON,	Enfield,	E. E.
HERBERT HARRIS HARRISON,	Greensboro,	M. E.
FRANK HAWKS,	Kinston,	M. E.
EDMUND BURKE HAYWOOD,	Raleigh,	E. E.
THOMAS FREDERIC HAYWOOD,	Trenton,	C. E.
LEONARD HENDERSON,	Salisbury,	M. E.
MARTIN ROBERT HERRING,	Winton,	Agr.
BASCOMBE BRITT HIGGINS,	Leicester,	Agr.
DANIEL HARVEY HILL, JR.,	West Raleigh,	E. E.
WILLIAM W. A. HORNADAY,	Burlington,	Agr.
JOHN STAMEY HUCKABEE,	Albemarle,	E. E.
SAMUEL ROSS IRELAND,	Faison,	Agr.
ROBERT COWAN JAMES,	Wilmington,	C. E.
FREDERICK JOHN JONES,	New Bern,	C. E.
RALPH LONG,	Graham,	Tex.
SAMUEL MACON MALLISON,	Washington,	Min. E.
WILLIAM ROYDAN MARSHALL,	New Bern,	M. E.
RALPH CECIL MASON,	Edenton,	Agr.
ARTHUR BALLARD MASSEY,	Philadelphia, Pa.,	Agr.
EARL FLEET MAYBERRY,	North Wilkesboro,	E. E.
CHARLES CLARENCE MAYO,	Washington,	Agr.
WALKER MOREHEAD MILLNER,	Leaksville,	C. E.
BENJAMIN FRANKLIN MONTAGUE,	Winston-Salem,	C. E.
CLAYTON MOORE,	Williamston,	E. E.
OWEN MOORE,	Asheville,	E. E.
WILLIAM THOMAS MOORE,	Battleboro,	M. E.
FRANKLIN JACKSON MORGAN,	Washington,	E. E.
HARRY MOTT,	Mooresville,	Agr.
HEBER GARDNER MUMFORD,	Ayden,	Agr.
BENNETT NOOE, JR.,	Pittsboro,	Chem.
HENRY ROTHROCK NOOE,	Pittsboro,	C. E.
JAMES FRANCIS OLIVER,	Mt. Olive,	C. E.
SAMUEL LOFTIN OLIVER,	Mt. Olive,	M. E.
JULIUS MONROE PARKER,	Hunting Creek,	C. E.

Name.	*Post-office.*	*Course.*
JOHN GILBERT PASCHAL,	Goldston,	E. E.
JAMES CARL PATRICK,	Wadesboro,	C. E.
WILLIAM MURDOCH PECK,	Wilmington,	Tex.
ISHAM ROLAND PEIRCE,	Warsaw,	Agr.
PETER PENICK PIERCE,	Reidsville,	E. E.
PAUL MILLER PITTS,	Concord,	M. E.
BEN. POPE, JR.,	Weldon,	E. E.
JOHN MOIR PRICE,	Leaksville,	M. E.
JESSE LINDSAY PRIMROSE,	Raleigh,	C. E.
ROBERT RICHARD REINHARDT,	Stanley Creek,	Agr.
GEORGE BARBER RIDDLE,	Raleigh,	M. E.
ALFRED PRATT RIGGS,	Wanchese,	C. E.
THOMAS WOOD ROBBINS,	Durham,	E. E.
JOSEPH HENRY ROBERTSON,	Burlington,	E. E.
WILLIAM BARRETT ROSE,	Wadesboro,	E. E.
JAMES OLIN SADLER,	Charlotte,	M. E.
JOHN WILLIAM SHELBURN,	Greenville,	E. E.
ROBERT ARNOLD SHOPE,	Farm School,	Tex.
GEORGE GRAY SIMPSON,	Richmond, Va.,	Tex.
WILLIAM NEVILLE SLOAN,	Franklin,	C. E.
GORDON ADRIAN SMITH,	Raleigh,	C. E.
HUGH STUART STEELE,	Yadkin Valley,	Agr.
SAMUEL FATIS STEPHENS,	Norfolk, Va.,	C. E.
HUGH KEMP SULLIVAN,	Lincolnton,	Agr.
HENRY NEWBOLD SUMNER,	Hertford,	E. E.
VICTOR VAN SYKES,	Efland,	M. E.
BENNIE BENTON TATUM,	Greensboro,	C. E.
WADE HAMPTON TEMPLE,	Chapel Hill,	M. E.
JOHN DICK THOMASON,	Hickory,	M. E.
JAMES EDWIN TOOMER,	Wilmington,	Tex.
WILLIS MOORE TROTTER,	Charlotte,	C. E.
EDGAR RAYMOND UNDERWOOD,	Huntersville,	C. E.
GEORGE MILTON WARD,	Washington,	Agr.
THOMAS BODDIE WARD,	Nashville,	Tex.
THOMAS RUFFIN WARREN,	Durham,	Tex.
TOM LYNCH WEAVER,	Thermal City,	Tex.
WILLIAM BELL WEEKS,	Stella,	E. E.
HENRY PUREFOY WHITEHURST,	New Bern,	E. E.
JOSEPH SLAUGHTER WHITEHURST,	Elizabeth City,	C. E.
OLIVER GAINES WHITLEY,	Norwood,	C. E.

Name.	*Post-office.*	*Course.*
ROBERT MARSHALL WHITLEY,	Charlotte,	Agr.
ROBERT BEVERLY WHITTINGTON,	Asheville,	E. E.
WILLIAM CARL WILLIAMS,	Matthews,	C. E.
DAVID ROY WINSTEAD,	Wilson,	Tex.
BEN. WITHERINGTON,	Goldsboro,	M. E.
PAUL ADAMS WITHERSPOON,	Mooresville,	E. E.

Short Course.

FIRST YEAR.

JAMES SAMUEL ABERNETHY,	Charlotte,	Agr.
ALFRED LATHEN ALEXANDER,	Charlotte,	Agr.
CLINTON CRESS ALLISON,	Concord,	Agr.
REUBEN SAUNDERS BAGLEY,	Mildred,	Agr.
SAMUEL ASKEW BATCHELOR,	Nashville,	Agr.
FORREST BEAM,	Lattimore,	M. A.
BURWELL BAXTER BELL,	Shawboro,	M. A.
JOSEPH E. C. BELL, JR.,	Shawboro,	Agr.
JOHN ADAM BERNHARDT,	Salisbury,	M. A.
JAMES YANCEY BLACKWELL,	Quick,	Agr.
WILLIAM CHAFFIN BOONE,	Lumberton,	Agr.
GEORGE WASHINGTON BRADDY,	Westbrook,	M. A.
JOHN BENJAMIN BRAY,	Sligo,	M. A.
WILLIAM S. R. BURWELL,	Kittrell,	M. A.
DACOSTA MOORE CLARKE,	Old Fort,	App. E.
JAMES A. COVINGTON, JR.,	Rockingham,	Agr.
EDWARD CLIFTON CREWS,	Durham,	M. A.
SIDNEY CHARLES CROMIE,	Victory Mills, N. Y.,	M. A.
DEBURNIA MAYNARD DARDEN,	Falling Creek,	App. E.
AARON HEIDE DAVIS,	Rocky Point,	M. A.
HILSMON CLELLAN DAVIS,	Youngsville,	Agr.
JAMES EMIS DAVIS,	Youngsville,	Agr.
GROVER CLEVELAND DENTON,	Enola,	M. A.
EVERETT STUART DURHAM,	Snow Camp,	Agr.
LEWIS CLINTON EASON,	Gatesville,	M. A.
HENRY ROE FIELD,	Leaksville,	M. A.
CURREN EMMETT FIELDS,	Kinston,	M. A.
JULIAN EMMITT FLETCHER,	Durham,	Agr.
ROBERT LEE FOY,	Scott's Hill,	M. A.
HAYWOOD GADDY, JR.,	Ansonville,	Tex.

Name.	*Post-office.*	*Course.*
FRED. LARDNER GIBBON,	Charlotte,	Agr.
FRANCIS MARION GILBERT,	Grifton,	M. A.
FRANK GRIFFITH,	Monroe,	Agr.
JOHN KIRBY GRUBB,	Greensboro,	M. A.
ERNEST ALBERT HAYNES,	Raleigh,	M. A.
ACLAM DUNCAN HERREN,	Waynesville,	M. A.
GEORGE DELAMATER HERRING,	Delway,	Agr.
JOSEPH OSCAR HERRING,	Newton Grove,	Agr.
HARRY MEAD HODGES,	LaGrange,	M. A.
WILLIAM MOORE HOLLINGSWORTH,	Mt. Airy,	M. A.
MURPHY MCNEILL HOLLOWAY,	Cardenas,	M. A.
JESSE GLENN HOLT,	Greensboro,	M. A.
JOSEPH HENRY HOWARD,	Hobgood,	Agr.
PAUL L. HOWELL,	Waynesville,	Agr.
RALPH CLEVELAND HUNTER,	East Laporte,	Agr.
WILEON OISA HUNTLEY,	Wadesboro,	Agr.
LEONARD CLAYTON IRVIN,	Mt. Airy,	M. A.
JOHN WILLIAM IVEY,	Seven Springs,	M. A.
EDWARD TURNER JORDAN,	Siler City,	App. E.
WALTER MERRITT KENLY,	Wilmington,	Agr.
GEORGE SHIRLEY KILPATRICK,	Kinston,	M. A.
JAMES FRANK LAROQUE,	Kinston,	App. E.
JAMES EDWARD LATHAM,	Washington,	Agr.
BASCOM CAMPBELL LIVINGSTON,	Tryon,	M. A.
ROBERT ATWATER LORD,	Montreat,	M. A.
DANIEL MADISON MCBRAYER,	Rutherfordton,	App. E.
OSCAR W. MCCAULEY,	Union Ridge,	M. A.
GUSTAVUS MCCASKILL,	Laurinburg,	M. A.
EDWARD PARRISH MCCOY,	Asheville,	App. E.
CLAUDE LENOIR MAST,	Valle Crucis,	Agr.
WILLIAMSON MENEFEE,	Greensboro,	Tex.
WILLIAM MACON MICHAUX,	Worry,	M. A.
GEORGE LEWIS MILLER,	Laurel Springs,	M. A.
ANDREW WEAVER MOODY,	East Laporte,	Agr.
IVAN CHARLES MOORE,	Mt. Airy,	Tex.
WILLIAM FLAND MORRIS,	Ashboro,	M. A.
WILLIAM WORTH MORRISON,	Morven,	Agr.
JAMES HEATH MORROW,	Albemarle,	M. A.
JOHN THOMAS O'BERRY,	Dudley,	Agr.
JULIAN BAXTER PEACOCK,	Lexington,	App. E.

Name.	*Post-office.*	*Course.*
WILLIAM RANSOME PHILLIPS,	Dunn,	App. E.
WILLIAM JESSE PICKETT,	Kenansville,	Agr.
PAUL EDWARDS POWELL,	Fair Bluff,	Agr.
JAMES BRUCE PRICE,	Leaksville,	M. A.
WALTER NEWTON SHINE,	Kenansville,	M. A.
JESSE B. SOUTHERLAND,	Wallace,	Agr.
ALEXANDER STEWART,	Maxton,	Agr.
DUGALD STEWART, JR.,	Laurinburg,	Agr.
ROM DEVAN STURDIVANT,	Garner,	Agr.
HARRY SWINDELL,	Belhaven,	Agr.
AZARIAH GRAVES THOMPSON,	Leasburg,	M. A.
WILLIAM PUTNAM THOMPSON,	Falls,	App. E.
OSCAR ALFRED TURLINGTON,	Clinton,	M. A.
THOMAS RUFFIN WHITTEMORE,	Wentworth,	Agr.
J. W. WILSON,	Oxford,	Agr.
OSCAR FRANKLIN WOLFE,	Albemarle,	M. A.
THOMAS HUNTER WORSHAM,	Locust Hill,	M. A.

Short Course.

SECOND YEAR.

LOYD LACY ALLISON,	Concord,	Agr.
KINCHEN CLYDE COUNCIL,	Wananish,	M. A.
EDGAR WINFIELD ISELEY,	McLeansville,	Agr.
ZEB. VANCE LINKER,	Concord,	Tex.
JOHN HARRY KING MORGAN,	Salisbury,	M. A.
JOSEPH STARK NORMAN,	Plymouth,	M. A.
MALCOLM LEMAY SANDERS,	Smithfield,	Agr.
RUSSELL LEE SATTERTHWAITE,	Plymouth,	M. A.
ALFRED MILTON STALEY,	Staley,	Tex.
DUNCAN STEWART,	Maxton,	Agr.
ROLAND DAVID THIGPEN,	Speed,	Agr.
PAUL VALAER,	Winston-Salem,	M. A.
WALTER CALVIN WARREN,	Gordonton,	Agr.
LOUIS GLENN WINSTEAD,	Elm City,	Agr.

IRREGULAR STUDENTS.

JESSE M. AREY,	Elmwood,	Agr.
AUBREY LELAND BAKER,	Raleigh,	App. E.
WILLIAM WALTERS BAKER,	Wakefield,	C. E.

Name.	*Post-office.*	*Course.*
WM. HERBERT DOUGHTY BANCK,	Wilmington,	C. E.
JAMES LAMAR BEALL,	Linwood,	Agr.
JOSEPH AGIN BOONE, JR.,	Lumberton,	Agr.
JOHN HAWEY BRYAN,	Goldsboro,	M. E.
WARREN RAYMOND CLARDY,	Anderson, S. C.,	C. E.
DANIEL WILLIAM COX,	Rowland,	Agr.
PERCY LEIGH GAINEY,	Sherwood,	Agr.
FRANK DUNCAN GIBSON,	Gibson,	Agr.
JEPTHA NELSON GIBSON,	Gibson,	Agr.
WILLIAM ROY HAMPTON,	Plymouth,	M. E.
GORDON HARRIS,	Raleigh,	E. E.
JAMES HOOVER HENLEY,	Sanford,	Agr.
CHARLES FREDERICK HUTAFF,	Wilmington,	M. E.
LAWRENCE O'TOOLE JONES,	Raleigh,	Agr.
ELMA N. LAWRENCE,	Raleigh,	Agr.
WILLIAM GARLAND MCBRAYER,	Shelby,	C. E.
RODNEY RATHBONE MCCATHRAN,	Washington, D. C.,	E. E.
JOHN BYRON MARTIN,	Mooresboro,	Agr.
LEWIS LARKINS MERRITT,	Wilmington,	M. E.
WALTER BOOKER MOORMAN,	Asheville,	M. E.
JAMES CALEB PARKER,	Elizabeth City,	E. E.
RUBLE POOLE,	Caraway,	C. E.
JOHN ALEXANDER PORTER, JR.,	Biltmore,	M. E.
HARRY ROLAND,	Burnsville,	M. E.
WALTER JEFFERSON SHAW,	Raleigh,	M. E.
BASIL SKINNER SNOWDEN,	Snowden,	Agr.
CECIL ERNEST SPRUILL,	Creswell,	M. E.
FRANK MARTIN THOMPSON,	Raleigh,	Tex.
JAMES FENTON TOWE,	Chapanoke,	E. E.
EDMUND FARRISS WARD,	West Raleigh,	Agr.
WILLIAM WATTERS,	Wilmington,	C. E.
WILLIE SMALLWOOD WHITE,	Belhaven,	Agr.
ARTHUR JOHN WILSON,	Knoxville, Ill.,	Chem.

SPECIAL STUDENTS.

HARRY RESSENT CHARLES,	Mocksville,	M. E.
BLAINE CLINGMAN DELLINGER,	Shelby,	M. E.
J. FRANK HARRIS, JR.,	Shelby,	M. E.
JOB HANSELL KOON,	Asheville,	M. E.

Name.	*Post-office.*	*Course.*
HENDERSON SOLBERRY LEWIS,	Tarboro,	Dairying.
LEONARD THADDEUS ODEN,	Hunter's Bridge,	Dairying.
HUBERT GRAHAM SCARBORO,	Eagle Rock,	Agr.
FRANK V. SCOTT,	Elizabeth City,	Agr.
HERBERT NATHANIEL STEED,	Steeds,	Tex.
DUNN KARL STEELE,	Keystone, W. Va.,	M. E.
LAWRENCE ALFRED THOMPSON,	Haw River,	Tex.
WILLIE JAMES WARD,	Plymouth,	M. E.
JOHN ALLISON WATSON,	Wilson,	M. E.
ROSCOE ROBINSON WEAVER,	Nonah,	M. E.
C. L. WILLIAMS,	Lexington,	Tex.

WINTER-COURSE STUDENTS.

JAMES RUFUS BENNETT,	Ellerbe,	Dairying.
W. L. BLAND.	Faison,	Dairying.
SPOTTSWOOD BURWELL,	Kittrell,	Dairying.
AARON R. CHISHOLM,	Sanford,	Textile.
ROBERT LEE CROOM,	Colly,	Dairying.
THOMAS CONE DEPRIEST,	Lattimore,	Dairying.
EDWARD K. GARRISON,	Pineville,	Dairying.
SAMUEL W. GARNER,	Yadkinville,	Dairying.
WILLIAM STEVENS INGRAM,	Ellerbe,	Dairying.
ROBERT GRAHAM JOHNSTON,	Mooresville,	Dairying.
SAMUEL LUTHER LANEY,	Hope,	Dairying.
JACK PETER MCNEILL,	Jonesboro,	Textile.
GOLDIE ETHEL MEDLIN,	Cary,	Dairying.
WADE HAMPTON MILLAWAY,	McLeansville,	Dairying.
FLOYD ELLSWORTH OSBORNE,	Horse Shoe,	Dairying.
NEEDHAM PITTMAN,	Pinkney,	Dairying.
JAMES ALVA POWELL,	Warsaw,	Dairying.
BULAH POWERS,	Cary,	Dairying.
JOHN PRICE,	Pineville,	Dairying.
GIDEON JONATHAN SAUNDERS,	Belvidere,	Dairying.
LLOYD SMITH,	Fort Mill, S. C.,	Dairying.
SAMUEL HAMPTON SMITH,	West Raleigh,	Textile.
JOHN WILLIAM SMITHSON,	Battleboro,	Dairying.
JOE CHAUNCEY WASHBURN,	Shelby,	Dairying.
DEWITT TALMAGE WATSON,	Cheraw, S. C.,	Dairying.
JOHN LEE WHITE,	Concord,	Dairying.

SIXTEENTH ANNUAL COMMENCEMENT.

May 29, 1905.

Degrees Conferred.

BACHELORS OF AGRICULTURE.

LEROY FRANKLIN ABERNETHY,
ROBERT JAMES AVERY,
JOEL WATKINS BULLOCK,
WILLIAM FRANKLIN KIRKPATRICK,
MALCOLM ROLLAND MCGIRT,
JAMES OSCAR MORGAN,
PLEASANT H. POINDEXTER,
ROBERT WALTER SCOTT, JR.

BACHELORS OF ENGINEERING.

In Civil Engineering.

HENRY BROZIER CARTWRIGHT,
JARVIS BENJAMIN HARDING, B.E.,
JERE ISAAC HERRITAGE,
ARTHUR TEMPLETON KENYON,
STARR NEELY KNOX,
JAMES HERRITAGE KOONCE,
HENRY MARVIN LILLY,
LINDSLEY ALEXANDER MURR,
EDWARD GRIFFITH PORTER, JR.,
GASTON WILDER ROGERS, B.E.,
JONATHAN RHODES SMITH,
JOHN DAVIDSON SPINKS,
ARCHIE CARRAWAY WILKINSON.

In Electrical Engineering.

WILLIAM MILLER CHAMBERS,
LLOYD RAINEY HUNT,
ERVIN BLAKENEY STACK,
SYLVESTER MURRAY VIELE,
WALTER JENNINGS WALKER.

In Mechanical Engineering.

BENJAMIN ALEXANDER BROOM,
WALTER GOSS FINCH,
STERLING GRAYDON,
GEORGE GREEN LYNCH,
JOHN ALSEY PARK,
STEPHEN DOCKERY WALL.

In Textile Industry.

LABAN MILES HOFFMAN, JR.,
WALTER WELLINGTON WATT, JR.

In Mining Engineering.

LIPSCOMB GOODWIN LYKES.

BACHELORS OF SCIENCE.

In Industrial Chemistry.

OSCAR LUTHER BAGLEY,
RICHARD HUGH HARPER,
WALTER HOGE MCINTIRE,
GARLAND PERRY MYATT,
JAMES HICKS PEIRCE.

Announcement of Honors.

HONORS IN SCHOLARSHIP FOR FOUR YEARS.

J. RHODES SMITH.

HONORS IN SCHOLARSHIP FOR 1904-5.

Senior Class.

O. L. BAGLEY,
J. B. HARDING,
J. I. HERRITAGE,
G. W. ROGERS,
J. R. SMITH,
S. D. WALL.

Junior Class.

M. H. CHESBRO,
A. E. ESCOTT,
C. W. HEWLETT,
J. P. LOVILL,
R. MAXWELL.

Sophomore Class.

S. ELDRIDGE,
C. L. GARNER,
L. R. GILBERT,
W. B. TRUITT.

Freshman Class.

W. P. ASHCRAFT,
W. L. BLACK,
R. R. EAGLE,
M. L. EARGLE.

Short-course Class.

P. L. GAINEY,
L. G. WINSTEAD.

HONORS FOR PUNCTUALITY.

S. N. KNOX, '05.
J. H. KOONCE, '05.
J. E. OVERTON, '07.
N. C. BROOKS, '08.
W. B. BURGESS, '08.
H. W. KUEFFNER, '08.