

COURSES OF INSTRUCTION

The College offers courses of instruction in the following subjects:

I. Agriculture.

- a. Four-year course in General Agriculture.
- b. Four-year Specialized Courses in Farm Crops, Animal Husbandry, Horticulture, Vocational Education, Poultry Science, Biology, Veterinary Medicine, and Agricultural Chemistry.
- c. One-year Course in General Agriculture.
- d. Farmers' Course in General Agriculture.

II. Engineering, Mechanic Arts, and Chemistry.

- a. Four-year Course in Chemical Engineering.
- b. Four-year Course in Civil Engineering.
- c. Four-year Course in Electrical Engineering.
- d. Four-year Course in Mechanical Engineering.
- e. Two-year Course in Mechanic Arts.

III. Textile Industry.

- a. Four-year Textile Course.
- b. Four-year Textile Chemistry and Dyeing Course.
- c. Two-year Textile Course.

IV. Summer School.

A six weeks Summer School for Teachers, of subjects of Primary, of Grammar, and of High School grade; for School Officials, and for candidates for admission to College.

V. Graduate Courses.

Extending over one or more years and leading to advanced degrees. These are intended for students who have completed the four-year course and who desire further instruction and training in special subjects.

VI. Degrees.

The four-year courses offer a combination of practice and theoretical work, about half the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, poultry yards, fields, and

mills. They are intended to furnish both technical and liberal education. The degree Bachelor of Science is conferred upon a graduate of the four-year courses in Agriculture, in Chemistry, and in Dyeing; and the degree Bachelor of Engineering is conferred upon a graduate of the four-year Engineering course, or the four-year Textile course.

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

FOUR-YEAR COURSES

I. Agricultural Courses.

- a. Four-year Course in General Agriculture.
- b. Four-year Specialized Courses in Farm Crops, Animal Husbandry, Horticulture, Vocational Education, Poultry Science, Biology, Veterinary Medicine, and Agricultural Chemistry.

AGRICULTURAL COURSES

The Agricultural Courses are organized and arranged so that they will enable students to acquire a correct knowledge of agriculture as an applied science, and at the same time become proficient in the best agricultural practices. The subjects taught in the first two years of the courses are fundamental, broadening and cultural, and give the information and training necessary for the best attainment and utilization of the technical work given as the courses progress. Thus the curricula of all the Agricultural Courses include English, Mathematics, Chemistry, Physics, Botany, Zoology, Geology, Soils, etc. Beginning with the Junior Year all students will be required to take the prescribed basic work in Agriculture, but each may choose his electives in the course in General Agriculture to fit himself better as a general farmer, or in one of the specialized courses: Agronomy, Animal Husbandry, Horticulture, Vocational Education, Poultry Science, Biology, or Agricultural Chemistry—to prepare himself for some professional line of Agriculture. It is felt by the College that increasingly larger numbers of young men taking Agriculture each year will find it wise to prepare themselves better to return to the farm by taking the General Course in Agriculture rather than for professional work by taking one of the specialized courses.

Instruction is given by text-books, lectures, and reference readings, and in laboratories, fields, orchards, gardens, dairy, and poultry yards. Opportunity is given for specialization as the courses progress, that the student may become more proficient in his chosen work.

Young men who have completed one of the Agricultural Courses of instruction with good credit have exceptional opportunities for remunerative employment in many positions. In addition to the preparation given for the successful operation of their own farms, graduates in Agriculture may become farm managers, demonstration agents, teachers of agriculture and science in farm-life and

other rural schools, orchardists, dairymen, poultrymen, and may fill many other responsible positions requiring technical training, such as teachers in colleges, experiment stations and extension workers, various offices with the United States Department of Agriculture, and many other responsible positions.

The four-year course in Agricultural Chemistry is described more fully under the head of Chemical Courses.

FOUR-YEAR COURSES IN AGRICULTURE*

Freshman Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Botany, 101-102	3	4	3	4
Chemistry, 101-102 and 111-112....	3	4	3	4
Agricultural Drawing, Mechanical Engineering, 131	1	3	0	0
Shop Work, Mechanical Engineering, 142	0	0	1	3
English, 101-102	3	3	3	3
Military Art, 101-102.....	4	4	4	4
Mathematics, 121-122	3	3	3	3
Zoology, 101-102	3	4	3	4
Animal Husbandry, 101 or 102.....	2 or 0	3	0 or 2	3
Farm Crops, 101 or 102.....	0 or 2	0	2 or 0	0
Total required	22	28	22	28

Sophomore Year

Dairying, 202	0	0	3	4
Botany, 201	3	4	0	0
Chemistry, 221	3	5	0	0
Chemistry, Organic, 222.....	0	0	4	6
Military Art, 201-202.....	4	4	4	4
English, 201-202	3	3	3	3
Geology, Soils, 202.....	0	0	2	3
Comparative Physiology, Veterinary Medicine, 201	3	4	0	0
Plant Propagation, Horticulture, 201.	3	4	0	0
Agricultural Physics, 231-232.....	3	4	3	4
Farm Crops, 202.....	0	0	3	4
Total required	22	28	22	28

*Work of Freshman and Sophomore years is the same in all Agricultural courses.

GENERAL AGRICULTURE

Junior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Farm Crops, Legumes, 301.....	3	4	0	0
Principles of Feeding, 312.....	0	0	3	4
Soils, 301-302	3	4	2	3
Plant Diseases, 301.....	2	3	0	0
Bacteriology, 302	0	0	3	4
Economic Entomology, 301-302.....	2	2	2	3
Poultry, 301	3	4	0	0
Vegetable Gardening, 302.....	0	0	3	4
<i>Military Art</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>
Total required	<i>18</i>	<i>18</i>	<i>18</i>	<i>18</i>
Electives	<i>8</i>	<i>21</i>	<i>9</i>	<i>21</i>
	22		22	
ELECTIVE LIST:				
Military Art, 301-302*.....	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>
and				
Modern Language, 341-342.....	2	2	2	2

*Students who elect Military Art and Modern Language in the Junior year will be required to elect Military Art in the Senior year. Other electives are to be selected from the following groups.

Senior Year

Farm Management, 442.....	0	0	3	4
Farm Equipment, 431.....	3	4	0	0
Economics, 401	3	4	3	4
Fertilizers, 402	0	0	3	4
Animal Diseases, 402.....	0	0	3	4
Plant Breeding	0	0	0	0
Animal Breeding, 401.....	3	4	0	0
Drainage, 401	3	5	0	0
Total required	12	16	12	16
Electives	10		10	
	22		22	
ELECTIVE LIST:				
Military Art, 401-402*.....	4	4	4	4

*Students who elect Military Art in the Junior year will have to elect Military Art in the Senior year. Other electives are to be selected from the following groups.

Electives for Four-year Course in General Agriculture.

Junior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Fruit-growing, Horticulture, 301....	3	4	0	0
Swine Production, Animal Husbandry, 312	0	0	2	4
Dairy Cattle and Milk Production, Animal Husbandry, 301.....	3	4	0	0
English, 301	3	3	0	0
Grasses and Small Grain, Farm Crops, 312	0	0	3	4
Economics, 312	0	0	3	3
Veterinary Hygiene and Sanitation, 302	0	0	3	4

Senior Year

Rural Sanitation, Zoology, 431-432..	1	1	1	1
Gas Engines, Mechanical Engineering	0	0	3	4
Incubation and Brooding, Poultry...	3	4	0	0
Apiculture, Zoology, 421-422.....	2 or 3	3 or 4	2 or 3	3 or 4
Soils, 411-412 or 422.....	3	4	3	4
Cotton and Tobacco, Farm Crops, 401	3	4	0	0
Hay, Pasture and Silage, Farm Crops, 412	0	0	3	4
Horse and Mule Production, Animal Husbandry, 421	3	4	0	0
Farm Meats and Stock-farm Manage- ment, Animal Husbandry, 412....	0	0	3	4
Farm Forestry, Horticulture, 421...	3	4	0	0

Group Electives for Four-year Course in Agriculture.

FARM CROPS

Junior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Grasses and Small Grain, Farm Crops, 312	0	0	3	4
Crop Improvement, Seed Production and Experiments, Farm Crops, 321-322	3	4	3	4
Chemistry, 321-322	3	4	3	4
Fruit-growing, Horticulture, 301....	3	4	0	0
Systematic Botany, 314.....	3	4	0	0

Senior Year

Rural Sanitation, Zoology, 431-432..	1	1	1	1
Cotton and Tobacco, Farm Crops, 401	3	4	0	0
Hay, Pasture and Silage, Farm Crops, 412, or Soil Survey, 422.....	0	0	3	4
Crop Improvement and Experimentation, Farm Crops, 421-422.....	3	4	3	4
Advanced Soils, 411-412.....	3	4	3	4

ANIMAL HUSBANDRY

Junior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Dairy Cattle and Milk Production, Animal Husbandry, 301	3	4	0	0
Swine Production, Animal Husbandry, 312	2	3	3	3
Sheep Production, Animal Husbandry, 311	3	4	0	0
Fruit-growing, Horticulture, 301....	3	4	0	0
Grasses and Small Grains, Farm Crops, 312	0	0	3	4
Veterinary Hygiene and Sanitation, 302	0	0	3	4

Senior Year

Horse and Mule Production, Animal Husbandry, 421	3	4	0	0
Beef Cattle Production, Animal Hus- bandry, 411	3	4	0	0
Farm Meats and Stock-farm Manage- ment, Animal Husbandry, 412....	0	0	3	4
Advanced Stock Judging, Animal Husbandry, 431	3	4	0	0
Hay, Pasture and Silage, Farm Crops, 412	0	0	3	4
Embryology, Zoology, 402.....	0	0	3	4
Rural Sanitation, Zoology, 431-432..	1	1	1	1

HORTICULTURE

Junior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Practical Pomology, Horticulture, 311	3	4	0	0
Pruning and Spraying, Horticulture, 312	0	0	3	4
Small Fruits, Horticulture, 322.....	0	0	3	4
English, 301	3	4	0	0
Trees and Shrubs, Horticulture, 332.	0	0	3	4
Systematic Botany, 311.....	3	4	0	0

Senior Year

Greenhouse Management, Horticulture, 401	3	4	0	0
Systematic Pomology, Horticulture, 411	3	4	0	0
Landscape Gardening, Horticulture, 422	0	0	3	4
Farm Forestry, Horticulture, 421...	3	4	0	0
Gas Engines, Mechanical Engineering	0	0	3	4
Horticultural Electives, 432.....	0	0	3	4
Rural Sanitation, Zoology, 431-432..	1	1	1	1

POULTRY

Junior Year

Poultry Breeds and Judging, 311....	3	4	0	0
Grasses and Small Grains, Farm Crops, 312	0	0	2	3
Advanced General Poultry, 312.....	0	0	8	*
Fruit-growing, Horticulture, 301....	3	4	34	*5
Veterinary Hygiene and Sanitation, 302	0	0	0	0
Poultry Anatomy, 331.....	32	34	3	4
			0	0

Senior Year

Poultry Diseases, 401.....	3	4	0	0
Specialized Poultry Marketing, 402..	0	0	3	4
Incubation and Brooding, 422.....	0	0	3	4
Embryology, 401-402	3	4	3	4
Rural Sanitation, Zoology, 431-432..	1	1	1	1
Poultry Accountant Course, 411.....	1	1	0	0
Poultry Seminar, 421.....	2	2	0	0

BIOLOGY**Junior Year**

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Comparative Anatomy, Zoology, 321-322	3	4	3	4
Economic Zoology, 331-332.....	3	4	3	4
Advanced Plant Physiology, 312....	3	4	0	0
Systematic Botany, 311.....	0	0	3	4

Senior Year

Apiculture, Zoology, 421-422.....	3	4	3	4
Advanced Bacteriology, 411-412.....	3	4	3	4
Embryology, Zoology, 401-402.....	3	4	3	4
Rural Sanitation, Zoology, 431-432..	1	1	1	1

VOCATIONAL EDUCATION**Junior Year**

Education, 301-302	3	3	3	3
Grasses and Small Grain, Farm Crops, 312	0	0	3	4
Swine Production, Animal Husbandry, 312	3	3	3	4
Fruit-growing, Horticulture, 301....	3	4	0	0
Dairy Cattle, Animal Husbandry, 301	3	4	0	0

NOTE. If students take Military Art, they should elect Education, 301 and 302.

Senior Year

Education, 401-402	3	4	3	4
Education, 411-412	3	4	3	4
Incubation and Brooding, 422.....	0	0	3	4
Rural Sanitation, Zoology, 431-432..	1	1	1	1
Horses and Mules, Animal Husbandry or Farm Crops, 401.....	3	4	0	0

NOTE. If students take Military Art they should elect Education, 401-402 and 411-412.

NOTE. Students taking Vocational Education and Veterinary Science will not be able to take Military Art and qualify for their respective positions as teachers in Agricultural Schools and Veterinarians in the Government Service.

VETERINARY COURSE

Junior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Farm Crops, Legumes.....	3	4	0	0
Anatomy, Veterinary Medicine, 321-322	4	6	4	6
Bacteriology, Botany, 302.....	0	0	3	4
Chemistry (Quantitative), 321.....	3	4	0	0
Chemistry (Physiological), 462.....	0	0	3	4
Dairy Cattle and Milk Production, Animal Husbandry, 301.....	3	4	0	0
English, 301	3	3	0	0
Principles of Feeding, Animal Husbandry, 312	0	0	3	4
Swine Production, Animal Husbandry, 312	3	4	3	4
Histology, Veterinary Medicine, 311-312	3	4	3	4
Materia Medica, Veterinary Medicine, 332	0	0	3	4
Poultry, 301	3	4	0	0
Totals.....	22	29	22	30

Senior Year

Animal Breeding, Animal Husbandry, 401	3	4	0	0
Stock Judging, Animal Husbandry, 431	0	0	3	4
Anatomy, Veterinary Medicine, 411-412	4	6	4	6
Diagnosis, Veterinary Medicine, 432.....	0	0	3	4
Embryology, Zoology, 302.....	0	0	3	4
Pathology, Veterinary Medicine, 441-442	3	4	3	4
Pharmacy, Veterinary Medicine, 431.....	3	4	0	0
Physiology, Veterinary Medicine, 421-422	3	3	3	3
Farm Management, 442.....	0	0	3	4
Farm Equipment, 431.....	3	4	0	0
Economics, 401.....	3	3	0	0
Totals.....	22	28	22	29

CHEMICAL COURSES

- a. **Four-year Course in Agricultural Chemistry.**
- b. **Four-year Course in Chemical Engineering.**
- c. **Four-year Course in Textile Chemistry and Dyeing.**

The great war has been designated by some as a chemical war because of the important part which chemistry has played in it. Those who consider this statement extravagant cannot deny that the war has served to impress upon the world the importance of chemistry as a factor in the affairs of men. Explosives, noxious gases, and gas masks could not have been possible without the skill of the chemist. The success with which the American chemist has met the emergency along these lines has served to stimulate and encourage our nation. Chemical skill will be called into use to a greater extent than ever before in connection with our agricultural and industrial development. Plants for making nitrates and other nitrogen compounds from the air are springing up from place to place. There is a rapid growth in the manufacture of dyestuffs, medicines, and the heavy chemicals. Glass and porcelain for the laboratory and for use elsewhere, are made here in rapidly increasing quantities. Steel, gas, cement, and industrial alcohol are demanded by our industries, and their production requires chemical supervision. We shall not be satisfied any longer with the production of crude materials only, but must develop a higher skill in chemical manufacturing.

The North Carolina State College of Agriculture and Engineering at West Raleigh has planned to meet the needs of such young men by offering three separate courses in Chemistry, each of which leads to a degree. So far as the work of the lower classes is concerned, the chemical instruction is practically the same. But with the higher classes, there is more and more differentiation in instruction in Chemistry and other subjects.

All chemical students have Inorganic, Organic, Analytical, Physical, Historical, and Industrial Chemistry. They also have the same studies in English and Foreign Languages.

The student in Textile Chemistry and Dyeing learns how to make dyestuffs, and to apply them to the various fabrics in the dye-house, as well as the chemistry involved in these processes. He is also given instruction in some elementary textile subjects. This course is described more fully by the Textile Department.

The Agricultural Chemist receives instruction in Botany, Bacteriology, Physiology, and some elementary agricultural subjects.

The student in Chemical Engineering receives instruction in Physics, Electrical Engineering, Shop Work, Drawing, and other engineering subjects.

All three of these courses afford opportunities for some range in the choice of studies.

Provision is made also for graduate students in courses of study leading to the degree of Master of Science. These courses are arranged along the special lines in which the student is most interested. Our graduate and advanced undergraduate courses will specially appeal to college graduates who have become interested in Chemistry, and wish to pursue the subject further. Some of the subjects offered this year for graduate study are inorganic chemistry, physical chemistry, quantitative analysis, micro-chemical analysis, organic chemistry, physiological chemistry, and nitrification.

There are several chemical plants in the city which are open to our students through the courtesy of the owners. The chemical laboratories of the North Carolina Department of Agriculture and of the several divisions of the Agricultural Experiment Station, afford students an opportunity to keep in touch with the interesting work of these institutions.

The State Museum contains a splendid collection of minerals, ores, and building stones, and affords students an opportunity for the study of the natural resources of the State.

The Chemical Department occupies the whole of the second floor of Winston Hall. There are two classrooms, one for about thirty students and one for ninety students. The classrooms are well lighted, have very convenient lecture tables, and settees with arm rests for taking notes.

The laboratory for inorganic chemistry can accommodate three hundred and thirty-six students, the laboratory for qualitative analysis about ninety-six, and for organic chemistry and quantitative analysis about twenty each. A small laboratory has been set aside for special work. The laboratories are fitted up with conveniently arranged desks and hoods, each of which has the necessary water and gas connections. The balance room is located near the quantitative laboratory. Special equipment has been provided for micro-chemical analysis and physical chemistry.

The department has also a dark room for photographic work, fire-proof rooms for combustion, ample stock-rooms, and a preparation room.

The Chemical Library, containing an excellent collection of reference books and complete sets of some of the leading chemical journals, occupies a room convenient to the laboratories for the upper classmen.

The members of the instructing staff have offices adjacent to the laboratories.

The opportunities for employment of chemists were excellent before the war, but more recently have greatly increased.

Our chemical graduates have proven their ability and skill by the high salaries they are receiving in the industries, colleges, universities, and experiment stations of our country, by the leading part they are taking in the technical societies, and by their contributions to chemical literature.

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

Freshman Year

SUBJECTS	Agricultural Chemistry*				Chemical Engineering†				Textile Chemistry and Dyeing‡			
	First Term		Second Term		First Term		Second Term		First Term		Second Term	
	Periods	Hours	Periods	Hours	Periods	Hours	Periods	Hours	Periods	Hours	Periods	Hours
Chemistry, 101-102.....	2	2	2	2	3	3	3	3	3	3	3	3
Chemistry, Laboratory, 111-112....	1	2	1	2	1	3	1	3	1	3	1	3
Algebra, 101.....	0	0	0	0	5	5	0	0	5	5	0	0
Algebra, 112.....	0	0	0	0	0	0	1	1	0	0	1	1
Geometry, 102.....	0	0	0	0	0	0	4	4	0	0	4	4
English, 101-102.....	3	3	3	3	3	3	3	3	3	3	3	3
Drawing, 131 or 111-112.....	1	3	0	0	2	4	2	4	2	4	2	4
Engineering Lectures, 101-102.....	0	0	0	0	1	1	1	1	1	1	1	1
Physics, 101-102.....	0	0	0	0	2	2	2	2	0	0	0	0
Physics, Laboratory, 111-112.....	0	0	0	0	1	2	1	2	0	0	0	0
Wood Shop, 132 or 121-122.....	0	0	1	3	1	3	1	3	0	0	0	0
Military Art, 101-102.....	4	4	4	4	4	4	4	4	4	4	4	4
Algebra, 121.....	3	3	0	0	0	0	0	0	0	0	0	0
Botany, 101-102.....	3	4	3	4	0	0	0	0	0	0	0	0
Field Crops, 101.....	2	3	0	0	0	0	0	0	0	0	0	0
Geometry and Trigonometry, 122 .	0	0	3	3	0	0	0	0	0	0	0	0
Animal Husbandry, 102.....	0	0	2	3	0	0	0	0	0	0	0	0
Zoology, 101-102.....	3	4	3	4	0	0	0	0	0	0	0	0
Carding and Spinning, 101-102.....	0	0	0	0	0	0	0	0	1	2	1	2
Weaving, 111-112.....	0	0	0	0	0	0	0	0	2	3	2	3

*Same as for Freshman in Agriculture.

†Same as for Freshman in Civil, Electrical and Mechanical Engineering.

‡Same as for Freshman in Textile Engineering.

Sophomore Year

SUBJECTS	Agricultural Chemistry*				Chemical Engineering				Textile Chemistry and Dyeing†			
	First Term		Second Term		First Term		Second Term		First Term		Second Term	
	Periods	Hours	Periods	Hours	Periods	Hours	Periods	Hours	Periods	Hours	Periods	Hours
Chemistry, Analytical, 211-212.....	3	6	3	6	3	6	3	6	2	4	4	8
English, 201-202.....	3	3	3	3	3	3	3	3	3	3	3	3
Physics, 201-202.....	2	2	2	2	4	4	4	4	2	2	2	2
Physics, Laboratory, 211-212.....	1	2	1	2	1	3	1	3	1	2	1	2
Trigonometry, 201.....	0	0	0	0	5	5	0	0	5	5	0	0
Geometry, 202.....	0	0	0	0	0	0	5	5	0	0	0	0
Modern Language, 201-202.....	0	0	0	0	2	2	2	2	0	0	0	0
Military Art, 201-202.....	4	4	4	4	4	4	4	4	4	4	4	4
Botany, 201.....	3	4	0	0	0	0	0	0	0	0	0	0
Chemistry, 202.....	0	0	1	1	0	0	0	0	0	0	0	0
Dairy, 202.....	0	0	3	4	0	0	0	0	0	0	0	0
Farm Crops, 202.....	0	0	3	4	0	0	0	0	0	0	0	0
Geology, 202.....	0	0	2	3	0	0	0	0	0	0	0	0
Plant Propagation, 201.....	3	4	0	0	0	0	0	0	0	0	0	0
Physiology, 201.....	3	4	0	0	0	0	0	0	0	0	0	0
Carding and Spinning, 201-202.....	0	0	0	0	0	0	0	0	1	3	2	4
Cloth Analysis, 232.....	0	0	0	0	0	0	0	0	0	0	1	2
Designing, 221-222.....	0	0	0	0	0	0	0	0	3	4	2	3
Weaving, 211-212.....	0	0	0	0	0	0	0	0	1	3	3	4

*Same as for Sophomore in Agriculture, substituting Analytical Chemistry and Inorganic Chemistry 2d term for Agricultural Organic Chemistry.

†Same as for Sophomores in Textile Engineering.

Junior Year

Chemistry, Organic, 301-302.....	3	3	3	3	3	3	3	3	3	3	3	3
Chemistry, Organic, Laboratory, 311-312.....	1	3	1	3	1	3	1	3	1	3	1	3
Chemistry, Quantitative Analysis, 321-322.....	3	6	3	6	3	6	3	6	3	6	3	6
English, 301.....	3	3	3	3	3	3	3	3	3	3	3	3
Modern Language, 311-312.....	2	2	2	2	3	3	3	3	2	2	2	2
Electrical Machines, 311-312.....	0	0	0	0	2	2	2	2	0	0	0	0
Heat Engines, 301-302.....	0	0	0	0	3	3	3	3	0	0	0	0
Military Art, 301-302.....	4	4	4	4	4	4	4	4	4	4	4	4
Farm Crops, Legumes, 301.....	3	4	0	0	0	0	0	0	0	0	0	0
Soils, 301-302.....	3	4	3	4	0	0	0	0	0	0	0	0
Bacteriology, 302.....	0	0	3	4	0	0	0	0	0	0	0	0
Dyeing, 351-352.....	0	0	0	0	0	0	0	0	3	3	3	3
Dyeing, Laboratory, 361-362.....	0	0	0	0	0	0	0	0	3	6	3	6
	22	29	22	29	22	27	22	27	22	30	22	30

Senior Year

SUBJECTS	Agricultural Chemistry				Chemical Engineering				Textile Chemistry and Dyeing			
	First Term		Second Term		First Term		Second Term		First Term		Second Term	
	Periods	Hours	Periods	Hours	Periods	Hours	Periods	Hours	Periods	Hours	Periods	Hours
Chemistry, Historical, 401.....	2	2	0	0	2	2	0	0	2	2	0	0
Chemistry, Industrial, 402.....	0	0	2	2	0	0	2	2	0	0	2	2
Chemistry, Inorganic, 412.....	0	0	2	2	0	0	2	2	0	0	0	0
Chemistry, Micro-Analysis, 411.....	2	2	0	0	2	2	0	0	0	0	0	0
Chemistry, Physical, 421-422.....	3	3	3	3	3	3	3	3	3	3	3	3
Chemistry, Physical, Laboratory, 431-432.....	1	3	1	3	1	3	1	3	1	3	1	3
Chemistry, Quantitative Analysis, 441-442.....	6	12	6	12	6	12	6	12	6	12	6	12
Military Art, 401-402.....	4	4	4	4	4	4	4	4	4	4	4	4
Elective Subjects.....	4	4	4	4	3	3	3	3	0	0	0	0
Dyeing, 451-452.....	0	0	0	0	0	0	0	0	2	2	2	2
Dyeing, Laboratory, 461-462.....	0	0	0	0	0	0	0	0	4	8	4	8
	22	30	22	30	21	29	21	29	22	34	22	34

Elective Subjects for Seniors

Chemistry, Organic, Laboratory, 451-452.....	2	4	2	4	2	4	2	4	0	0	0	0
Chemistry, Physiological, 461-462.....	3	4	3	4	3	4	3	4	0	0	0	0
Economics, 401.....	3	3	3	3	3	3	3	3	0	0	0	0
English, 401-402.....	3	3	3	3	3	3	3	3	0	0	0	0
Feeds, 312.....	0	0	3	4	0	0	3	4	0	0	0	0
Fertilizers, 402.....	0	0	3	4	0	0	3	4	0	0	0	0
Modern Language, 421-422.....	3	3	3	3	3	3	3	3	0	0	0	0

Other subjects if approved by the Professor of Chemistry.

II. ENGINEERING COURSES

- a. Four-year Course in Chemical Engineering.
- b. Four-year Course in Civil Engineering.
- c. Four-year Course in Electrical Engineering.
- d. Four-year Course in Mechanical Engineering.

The Engineering Courses give a thorough grounding in such fundamental sciences as Mathematics, Physics, and Chemistry, and thorough drill in the application of the principles thus learned to engineering problems. The student is given practice in the use of engineering instruments and methods, and is encouraged to rely upon his own resources in the solution of problems. Though the courses are primarily technical and practical, they include subjects of general culture throughout all four years.

The Freshman years of all the Engineering Courses are identical and include a great deal of practice. The student in the different shops learns the use of tools and the handling and manipulation of materials of construction. Instruction is given in working wood and iron. In the Sophomore year this work is continued in the pattern-making shop and in the foundry. Also in the Physical laboratory much attention is paid to the practical value of such instruction. Here the student is taught the science of measurement and is trained to observe and work accurately. During these two years he is also given a thorough training in Mechanical Drafting, skill in which is essential in all lines of engineering work.

Differentiation of the different engineering courses begins in the Sophomore year. The practical work here, in the shop, in the field or in the laboratory, directs the student's attention to the specific phases of that branch of the profession he is to follow. In the Junior year the study of engineering methods is begun and is continued more fully in the Senior year.

Upon the satisfactory completion of these courses the degree Bachelor of Engineering is conferred. The advanced degrees Civil Engineer, Electrical Engineer, and Mechanical Engineer may also be conferred upon graduates of three years standing who have had responsible charge of important work, upon complying with the College requirements.

More detailed descriptions of the different courses follow.

Four Year Course in Civil Engineering leading to the degree of Bachelor of Engineering.

Freshman Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Algebra, Mathematics, 101.....	5	5	..	..
Geometry, Mathematics, 102.....	..	..	4	4
Advanced Algebra, Mathematics, 112	..	..	1	1
Composition and Rhetoric, English, 101-102	3	3	3	3
Elementary Physics, 101-102.....	2	2	2	2
Physical Laboratory, 111-112.....	1	2	1	2
Civil Engineering Lectures, 101-102.	1	1	1	1
Wood Work, Mechanical Engineering, 121-122	1	3	1	3
Mechanical Drawing, Mechanical En- gineering, 111-112	2	4	2	4
General Chemistry, 101-102.....	3	3	3	3
Chemical Laboratory, 121-122.....	1	3	1	3
Military Art, 101-102.....	4	4	4	4
Totals.....	23	30	23	30

Sophomore Year

Architectural Engineering, Civil En- gineering, 201.....	1	1	..	..
Architectural History, Civil Engineer- ing, 211	1	1	..	..
Architectural Drawing, Civil Engi- neering, 221	1	3	..	..
Architectural Design, Civil Engineer- ing, 222 .....	..	..	2	4
Descriptive Geometry, Civil Engineer- ing, 231-232	1	3	1	3
Trigonometry, Mathematics, 201.....	5	5	..	..
Analytical Geometry, Mathematics, 202 .....	..	..	5	5
Physics, 201-202	4	4	4	4
Physical Laboratory, 211-212.....	1	3	1	3
Surveying (Field Work), Civil Engi- neering, 242 .....	..	..	1	3
English, 201-202	3	3	..	..
Public Speaking, English, 212.....	..	..	3	3
Military Art, 201-202.....	4	4	4	4
Totals.....	21	27	21	29

Junior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Surveying, Civil Engineering, 301...	2	2	..	..
Railroad Engineering (Theo.), Civil Engineering, 312 .....	..	..	2	2
Surveying (Field Work), Civil Engineering, 321	1	3	..	..
Topographical Surveying (Field), Civil Engineering, 322.....	..	..	1	3
Topographical Drawing, Civil Engineering, 332 .....	..	..	1	3
Masonry Construction, Civil Engineering, 341	2	2	..	..
Highway Engineering, Civil Engineering, 351-2	1	2	1	2
Graphic Statics, Civil Engineering, 362 .....	..	..	1	3
Mechanics, Civil Engineering, 371-372	3	3	3	3
Modern Language, 301-302.....	2	2	2	2
Calculus, Mathematics, 301-302.....	4	4	4	4
English, 301-302	3	3	3	3
ELECTIVE :				
Military Art, 301-302.....	4	5	4	5
or two subjects from the following list:				
Industrial Engineering, Mechanical Engineering, 351-352	3	3	3	3
Economics, 301-302	3	3	3	3
or subjects in other departments which can be scheduled and approved by the heads of the departments.				
Totals.....	22	26	22	30
	or	or	or	or
	24	27	24	31

Senior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Roofs and Bridges, Civil Engineering, 401	3	3	..	..
Bridge Design, Civil Engineering, 402 .....	..	..	3	6
Municipal Engineering, Civil Engineering, 412 .....	..	..	2	2
Railroad Surveying, Civil Engineering, 421	2	4	..	..
Mechanics of Materials, Civil Engineering, 431	3	3	..	..
Reinforced Concrete, Civil Engineering, 432 .....	..	..	3	3
Hydraulics, Civil Engineering, 441..	3	3	..	..
Railroad Engineering, Civil Engineering, 451	3	3	..	..
Railroad Economics, Civil Engineering, 452 .....	..	..	2	2
Water Supply, Civil Engineering, 462 .....	..	..	2	2
Mechanics, Civil Engineering, 471...	2	2	..	..
Astronomy, Civil Engineering, 482..	..	..	2	2
Laboratory, Civil Engineering, 492..	..	..	2	4
Heat Engines, Mechanical Engineering, 351-2	2	2	2	2
ELECTIVES :				
Students who elect Military Art in the Junior year shall elect Military Art in the Senior year.				
Military Art, 401-402.....	4	5	4	5
Students who do not elect Military Art in the Senior year shall elect two subjects from the following list:				
Classics, English, 401.....	3	3	..	..
Journals, English, 402.....	..	..	3	3
Economics, 421-422	3	3	3	3
Industrial Engineering, Mechanical Engineering, 413-414	3	3	3	3
Modern Language, 411-412.....	3	3	3	3
Totals.....	22	25	22	28
	or	or	or	or
	24	26	24	29

FOUR-YEAR COURSE IN ELECTRICAL ENGINEERING

The four-year course in Electrical Engineering is planned for those who wish that thorough practical preparation in the fundamental laws and principles of electricity and magnetism necessary as a preparation for this branch of engineering in which the art is advancing so rapidly. This training is given by a careful study of text-books and coordinated work in the various laboratories. The department, as will be seen from the equipment described elsewhere, is well supplied with dynamos, motors, transformers, and other electrical machines, and with testing instruments and apparatus of all descriptions.

The Four Year Course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Algebra, Mathematics, 101.....	5	5	..	..
Geometry, Mathematics, 102.....	..	..	4	4
Advanced Algebra, Mathematics, 112.	..	..	1	1
Composition and Rhetoric, English, 101-102	3	3	3	3
Elementary Physics, 102-102.....	2	2	2	2
Physical Laboratory, 111-112.....	1	2	1	2
Electrical Engineering Lectures, 101.	1	1	1	1
Wood Work, Mechanical Engineering, 121-122	1	3	1	3
Mechanical Drawing, Mechanical En- gineering, 111-112	2	4	2	4
General Chemistry, 101-102.....	3	3	3	3
Chemical Laboratory, 121-122.....	1	3	1	3
Military Art, 101-102.....	4	4	4	4
Totals.....	23	30	23	30

Sophomore Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Trigonometry, Mathematics, 201.....	5	5	..	..
Analytical Geometry, Mathematics, 202 .....	..	..	5	5
English, 201-202	3	3	..	..
Public Speaking, English, 212.....	..	..	3	3
Physics, 201-202	4	4	4	4
Physical Laboratory, 211-212.....	1	3	1	3
Descriptive Geometry, Mechanical Engineering, 202	1	3	1	3
Pattern-making, Mechanical Engineer- ing, 211	1	3	..	..
Foundry, Mechanical Engineering, 201	1	3	..	..
Electrical Engineering Lectures, 201- 202	1	1	..	..
Mechanical Drawing, Mechanical En- gineering, 212 .....	..	..	2	4
Forge, Mechanical Engineering, 232.	..	..	1	3
Military Art, 401-402.....	4	4	4	4
Totals.....	21	29	21	29

Junior Year

Direct Currents, Electrical Engineer- ing, 301-302	3	3	3	3
Direct Current, Laboratory, 321-322.	2	4	2	4
Mechanics, Mechanical Engineering, 311-312	2	2	2	2
Calculus, Mathematics, 301-302.....	4	4	4	4
English, 301-302	3	3	3	3
Modern Language, 331-332.....	2	2	2	2
ELECTIVE:				
Military Art, 301-302.....	4	5	4	5
Two subjects from the following list:				
Industrial Engineering, Mechanical Engineering, 351-352	3	3	3	3
Economics, 301-302	3	3	3	3
Subjects in other departments which can be scheduled and approved by the heads of the departments con- cerned.				
Totals.....	22	27	22	27
	or	or	or	or
	24	28	24	28

Senior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Alternating Currents, Electrical Engineering, 401-402	3	3	3	3
Electrical Transmission, Electrical Engineering, 421-422	2	2	2	2
Electrical Applications, Electrical Engineering, 411-412	2	2	2	2
Electrical Design, Electrical Engineering, 441-442	1	2	1	2
Alternating Current Laboratory, Electrical Engineering, 431-432.....	3	6	3	6
Mechanics, Mechanical Engineering, 421	3	3	2	2
Heat Engines, Mechanical Engineering, 301-302	3	3	3	3
Plane Surveying, Civil Engineering, 321	1	3	..	..
Hydraulics, Civil Engineering, 442..	..	..	2	2
ELECTIVES :				
Students who elect Military Art in the Junior year shall elect Military Art in the Senior year.				
Military Art, 401-402.....	4	5	4	5
Students who do not elect Military Art in the Senior year shall elect two subjects from the following list :				
Classics, English, 401.....	3	3	..	..
Journals, English, 402.....	..	..	3	3
Economics, 401-402	3	3	3	3
Industrial Engineering, Mechanical Engineering, 413-414	3	3	3	3
Modern Languages, 431-432.....	3	3	3	3
Totals.....	22	29	22	27
	or	or	or	or
	24	30	24	28

FOUR-YEAR COURSE IN MECHANICAL ENGINEERING

The regular four-year course in Mechanical Engineering offers a training in the fundamental principles of design, construction, manufacture, and operation of all classes of standard and special machinery, and their economic application to railroads, steamships, mills, shops, factories, and power plants, as well as in the technical and executive management of the manufacturing and transportation industries. To this end the course of instruction is as broad as is possible to give in a technical school.

The course begins with a thorough training in mathematics, physics, and chemistry as a foundation for the appropriate technical work which is developed along several parallel lines. Applications of these fundamental sciences to the physical properties of the materials of construction, especially the metals and their practical manipulation, lead through the courses in mechanics, resistance of materials, shop processes, the materials-testing laboratory, drafting and kinematics, to the principles of design, which are fixed by application to the design of machinery for the execution of any kind of process in which machinery is either absolutely essential or more economical than corresponding hand execution of the same process. The principles underlying the performance of machinery are developed by courses in thermodynamics, mechanics, and hydraulics, with experimental laboratory demonstrations. The instruction in the performance, design, and manufacture of machine and power units in the classroom and laboratory, supplemented by visits to power plants and factories, is the basis of the work on the design of plants and mills.

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

For descriptions of Short Courses in Mechanic Arts and Automobiles see pages 150a, 150b, 150c, and 150d.

The Four Year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Elementary Physics, 101-102.....	2	2	2	2
Physical Laboratory, 111-112.....	1	2	1	2
Mechanical Drawing, Mechanical Engineering, 111-112	2	4	2	4
Wood Work, Mechanical Engineering, 121-122	1	3	1	3
Mechanical Engineering Lectures, 101-102	1	1	1	1
Algebra, Mathematics, 101.....	5	5	..	..
Advanced Algebra, Mathematics, 112.	..	..	1	1
Geometry, Mathematics, 102.....	..	..	4	4
Composition and Rhetoric, English, 101-102	3	3	3	3
General Chemistry, 101-102.....	3	3	3	3
General Chemistry, Laboratory, 111-112	1	3	1	3
Military Art, 101-102.....	4	4	4	4
Totals.....	23	30	23	30

Sophomore Year

Physics, 201-202	4	4	4	4
Physical Laboratory, 211-212.....	1	3	1	3
Descriptive Geometry, Mechanical Engineering, 201-202	1	3	1	3
Mechanical Drawing, Mechanical Engineering, 212 .....	..	..	2	4
Trigonometry, Mathematics, 201.....	5	5	..	..
Analytical Geometry, Mathematics, 202 .....	..	..	5	5
Foundry, Mechanical Engineering, 221	1	3	..	..
Pattern-making, Mechanical Engineering, 211	1	3	..	..
Forge Shop, Mechanical Engineering, 232 .....	..	..	1	3
English, 201-202	3	3	..	..
Public Speaking, English, 212.....	..	..	3	3
Engineering Lectures, 231.....	1	1	..	..
Military Art, 201-202.....	4	4	4	4
Totals.....	21	29	21	29

Junior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Heat Engines, Mechanical Engineering, 301-302	3	3	3	3
Mechanics, Civil Engineering, 371-372	2	2	2	2
Calculus, Mathematics, 301-302.....	4	4	4	4
Design, Mechanical Engineering, 321-322	2	4	2	4
Machine Shop, Mechanical Engineering, 331-332	1	2	1	2
Laboratory, Mechanical Engineering, 341-342	1	2	1	2
English, 301-302	3	3	3	3
Modern Languages, 331-332.....	2	2	2	2
ELECTIVE:				
Military Art, 301-302, or.....	4	4	3	3
Industrial Engineering, Mechanical Engineering, 343-344, and.....	3	3	3	3
Economics, 301-302, or.....	3	3	3	3
Subjects in other departments which can be scheduled.				
Totals.....	22	26	22	26

Senior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Power Plants, 401-402	3	3	3	3
Gas Engines, 411	3	3	..	..
Mechanics, Mechanical Engineering, 421	3	3	..	..
Mechanics of Materials, 422 .....	..	..	2	2
Heating, Ventilation and Refrigeration, 432 .....	..	..	2	2
Design, Mechanical Engineering, 441, 442, or 452, 482, or 492	3	6	3	6
Laboratory, Mechanical Engineering, 471-472	{ 1	1	1	1
	1	3	1	3
Machine Shop Work, 461-462	2	4	2	4
Electrical Engineering, 311-312	2	2	2	2
Hydraulics, Civil Engineering, 442 ..	..	..	2	2
Those students who elected Military Art in the Junior year may elect Military Art, 401-402, in the Senior year.				
Military Art, 401-402	4	4	4	4
Those who do not elect Military Art in the Junior year will elect two subjects from the following list:				
Modern Languages, 411-412	3	3	3	3
Journals, Classics, English, 401-402.	3	3	3	3
Industrial Engineering, Mechanical Engineering, 413-414	3	3	3	3
Economics	3	3	3	3
Totals	22	29	22	29

III. TEXTILE COURSES

III (a). The Four-year Course in Textile Industry

THE TEXTILE DEPARTMENT

The Textile Department, which is a fully equipped Textile School, contains all the necessary machinery for instruction in manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of 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, and cotton fabrics of different kinds, from his own designs and choice of colors.

TEXTILE INSTRUCTION

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

Four-year Course

The four-year course offers complete facilities for full instruction in all branches of cotton manufacturing. 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.

III (a). The Four-year Course in Textile Industry, leading to the degree Bachelor of Engineering.

Freshman Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Carding and Spinning, Textile Industry, 101-102	1	2	1	2
Weaving, Textile Industry, 111-112..	2	3	2	3
Mechanical Drawing, Mechanical Engineering, 111-112	2	4	2	4
Shop Lectures, Mechanical Drawing, 101-102	1	1	1	1
Algebra, Mathematics, 101.....	5	5	0	0
Geometry, Mathematics, 102.....	0	0	4	4
Advanced Algebra, Mathematics, 112.	0	0	1	1
Inorganic Chemistry, 101-102.....	3	3	3	3
Inorganic Chemistry, Laboratory, 121-122	1	3	1	3
Composition and Rhetoric, English, 101-102	3	3	3	3
Drill	4	4	4	4
Totals.....	22	28	22	28

Sophomore Year

Carding and Spinning, Textile Industry, 201-202	1	3	2	4
Weaving, Textile Industry, 211-212..	1	3	3	4
Designing, Textile Industry, 221-222.	3	4	2	2
Cloth Analysis, Textile Industry, 232.	0	0	1	2
Physics, 221-222	2	2	2	2
Physics, Laboratory, 211-212.....	1	2	0	0
Analytical Chemistry, 211-212.....	2	4	2	4
Drawing, Mechanical Engineering, 212	0	0	2	4
Trigonometry, Mathematics, 201....	5	5	0	0
English, 201-202	3	3	0	0
Public Speaking, English, 212.....	0	0	3	3
Forge	0	0	1	2
Drill	4	4	4	4
Totals.....	22	26	22	27

Junior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Carding and Spinning, Textile Industry, 301-302	3	5	3	5
Weaving, Textile Industry, 311-312..	3	5	3	5
Designing, Textile Industry, 321-322	3	4	2	2
Cloth Analysis, Textile Industry, 332	0	0	1	2
Dyeing, Textile Industry, 351-352...	1	1	1	1
Dyeing, Laboratory, Textile Industry, 361-362	1	3	1	3
Spanish, Modern Language, 301-302.	2	2	2	2
English, 301-302	3	3	3	3
Motors, Electrical Engineering, 341-342	2	2	2	2
ELECTIVES :				
Military Art, 301-302, or.....	4	4	4	4
Industrial Engineering, Mechanical Engineering, 351-352	3	3	3	3
Economics, 301-302	3	3	3	3
or subjects in other departments which can be scheduled.				
Totals.....	28	28	28	23

Senior Year

Carding and Spinning, Textile Industry, 401-402	4	6	4	6
Weaving, Textile Industry, 411-412..	4	6	4	6
Designing, Textile Industry, 421-422.	3	3	3	3
Cloth Analysis, Textile Industry, 431-432	1	2	1	2
Dyeing, Textile Industry, 451-452...	2	2	2	2
Dyeing, Laboratory, Textile Industry, 461-462	2	4	2	4
Heat Engines, Mechanical Engineering, 301-302	2	2	2	2
Totals.....	18	25	18	25

TWO-YEAR SHORT COURSE IN TEXTILES

First Year

SUBJECT	FIRST TERM		SECOND TERM	
	Credits	Hours	Credits	Hours
Carding and Spinning.....	1	3	1	3
Weaving	2	5	2	5
Designing	2	4	1	2
Cloth Analysis .....	..	..	1	2
Drawing	2	4	2	4
Shop Lectures	1	1	1	1
Algebra	5	5	..	..
Geometry .....	..	..	5	5
English	3	3	3	3
Totals	16	25	16	25
Military Art	4		4	

Second Year

Carding and Spinning.....	3	6	3	6
Weaving	3	6	3	6
Designing	3	4	2	2
Cloth Analysis .....	..	..	1	2
Dyeing Laboratory	3	5	3	5
Machine Shop	1	3	1	3
English	3	3	3	3
Totals	16	27	16	27
Military Art	4		4	

Elective Subjects

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Those students who elect Military Art in the Junior year will elect Military Art, 401-402, in the Senior year.				
Military Art, 401-402.....	4	4	..	..
Those students who do not elect Military Art in the Junior year will elect two subjects from the following list:				
Modern Languages, 411-412.....	3	3	3	3
Economics	3	3	3	3
English, 401-402	3	3	3	3
Industrial Engineering, Mechanical Engineering, 413-414	3	3	3	3

TEXTILE CHEMISTRY AND DYEING COURSE

This course is especially for those who wish to engage in any branch of Textile Chemistry, Dyeing, Bleaching, Finishing, or in the manufacture or sale of dyestuffs and chemicals used in the textile industry, and is designed to give a scientific technical education to those who desire to embrace these branches of industrial technology.

Dyeing as an art has long been practiced, but with the introduction of scientific methods it is rapidly developing and assuming a position in the front rank of applied sciences.

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 dyestuffs, 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 such general studies as English, Mathematics, Physics, and General Chemistry, which are required in all four-year courses.

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

Freshman Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Carding and Spinning, Textile Industry, 101-102	1	2	1	2
Weaving, Textile Industry, 111-112	2	3	2	3
Mechanical Drawing, Mechanical Engineering, 111-112	2	4	2	4
Shop Lectures, Mechanical Drawing, 101-102	1	1	1	1
Algebra, Mathematics, 101	5	5	0	0
Geometry, Mathematics, 102	0	0	4	4
Advanced Algebra, Mathematics, 112	0	0	1	1
Inorganic Chemistry, 101-102	3	3	3	3
Inorganic Chemistry, Laboratory, 121-122	1	3	1	3
Composition and Rhetoric, English, 101-102	3	3	3	3
Drill	4	4	4	4
Totals	22	28	22	28

Sophomore Year

Carding and Spinning, Textile Industry, 201-202	1	3	2	4
Weaving, Textile Industry, 211-212	1	3	3	4
Designing, Textile Industry, 221-222	3	4	2	2
Cloth Analysis, Textile Industry, 232	0	0	1	2
Physics, 221-222	2	2	2	2
Physics, Laboratory, 211-212	1	2	0	0
Analytical Chemistry, 211-212	2	4	2	4
Drawing, Mechanical Engineering, 212	0	0	2	4
Trigonometry, Mathematics, 201	5	5	0	0
English, 201-202	3	3	0	0
Public Speaking, English, 202	0	0	3	3
Forge, Mechanical Engineering, 232	0	0	1	2
Drill	4	4	4	4
Totals	22	26	22	27

Junior Year

SUBJECTS	FIRST TERM		SECOND TERM	
	Periods	Hours	Periods	Hours
Chemistry, Organic, 301-302.....	3	3	3	3
Chemistry, Organic, Laboratory, 311-312	1	3	1	3
Chemistry (Quantitative Analysis), 321-322	3	6	3	6
Dyeing, Textile Industry, 351-352....	2	2	2	2
Dyeing, Laboratory, Textile Industry, 361-362	4	8	4	8
English, 301-302	3	3	3	3
Modern Language, 201-202.....	2	2	2	2
ELECTIVE				
Military Art, 301-302, or.....	4	4	4	4
Economics, 301-302, and.....	3	3	3	3
One Textile subject.....	3	3	3	3
Totals.....	22	31	22	31

Senior Year

Chemistry, Historical, 401.....	2	2	0	0
Chemistry, Industrial, 402.....	0	0	2	2
Chemistry, Physical, 421-422.....	3	3	3	3
Chemistry, Physical, Laboratory, 431-432	1	3	1	3
Chemistry (Quantitative Analysis) 441-442	6	12	6	12
Dyeing, 451-452	2	2	2	2
Dyeing, Laboratory, 461-462.....	4	8	4	8

Elect two periods from the following:

Modern Language	3	3	3	3
English	3	3	3	4
Economics	3	3	0	0
Textile subject	3	3	0	0

NOTE. Students electing Military Art during the Junior year must take Military Art during the Senior year, and students who do not elect Military Art during the Junior year will not be permitted to take Military Art during the Senior year.

SHORT COURSES

I. SHORT COURSES IN AGRICULTURE

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

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

ONE-YEAR COURSE IN AGRICULTURE

This course offers, in addition to the purely agricultural branches, introductory and cultural subjects, and thus enables the student to secure work in Physiography, Physics, English, and Mathematics, in addition, and all the better prepares young men to become farmers, farm managers, and teachers of agriculture and allied branches in the public schools.

One-year Course

SUBJECTS	PERIODS A WEEK	
	1st Term	2d Term
Carpentry, Mechanical Engineering, 13.....	3	--
Drill, 101-102	4	4
English, 11-12	5	5
Mathematics, 11-12	5	5
Physics, 11-12	2	3
Forge Shop, 32.....	2	--
Physiography, Soils, 22.....	--	3
Physiology and Hygiene, Veterinary Science, 11....	3	--
Plant Culture, Horticulture, 42.....	--	3
Totals.....	24	23

II. THE FARMERS' SIXTEEN WEEKS COURSE IN AGRICULTURE

This Short Course in Agriculture is open to all who are either engaged in or interested in farming. It does not prepare for any other course offered by the College. It is designed to aid any who wish to become more modern and more businesslike in the pursuit of farming, and it gives an opportunity for the busy man to spend two or four months at the College studying the branches of farming he is interested in. He is brought in close association with the specialists in College, Experiment Station, and Extension Work, and is given an opportunity of becoming acquainted with the service done by the various departments of the College. The object of the course is to better fit men for the lives they are to live by aiding them to secure a broader view of agriculture and a better skill and higher efficiency in their chosen fields of endeavor.

This Short Course offers eighteen periods per week of required work in the several departments giving instruction in agriculture, and permits the student to elect six periods per week either in Agronomy, in Animal Husbandry and Dairying, in Horticulture, or in Poultry, making a total of twenty-four periods per week.

The Fall Term begins October 28, 1919, and continues for eight weeks. The Spring Term begins January 9, 1920, and continues for eight weeks. While the course is continuous through two terms, students may enter at the beginning either of the Fall Term or of the Spring Term.

Farmers' Sixteen Weeks Course in Agriculture

SUBJECTS	PERIODS A WEEK	
	1st Term	2d Term
REQUIRED WORK		
Plant Life, Botany, 11.....	3	--
Entomology, Zoology, 12.....	--	3
Farm Equipment, Agronomy, 11.....	3	--
Grains, Agronomy, 12.....	--	3
Dairying, Animal Husbandry, 11.....	3	--
Breeds and Judging, Animal Husbandry, 12.....	--	3
Plant Propagation, Horticulture, 11.....	3	--
Pruning and Spraying, Horticulture, 12.....	--	3
Sanitation and Diseases, Poultry, 11.....	3	--
Poultry House Construction and Feeding, Poultry, 12.....	--	3
Soil Geology and Soil Physics, Soils, 11.....	3	--
Fertilizers and Manures, Soils, 12.....	--	3
OPTIONAL WORK		
Agronomy Group—		
Forage Crops, Agronomy, 21.....	3	--
Cotton, Agronomy, 22.....	--	3
Corn, Agronomy, 31.....	3	--
Tobacco, Agronomy, 32.....	--	3
Animal Husbandry and Dairying Group—		
Swine Production, Animal Husbandry, 21.....	3	--
Beef Cattle Production, Animal Husbandry, 22.....	--	3
Milk Production, Animal Husbandry, 31.....	3	--
Farm Curing of Meat, Animal Husbandry, 32.....	--	3
Horticulture Group—		
Fruit Growing, Horticulture, 21.....	3	--
Vegetable Gardening, Horticulture, 22.....	--	3
Improvement of Home Grounds, Horticulture, 31.....	3	--
Marketing Horticultural Products, Horticulture, 32.....	--	3
Poultry Group—		
Incubation and Brooding, Poultry, 21.....	3	--
Selection and Breeding, Poultry, 22.....	--	3
Breeds and Judging, Poultry, 31.....	3	--
Marketing Farm Poultry, Poultry, 32.....	--	3
Totals.....	24	24

III. THREE WEEKS FARMERS' WINTER COURSE IN AGRICULTURE

This course will be short and will deal in an intensely practical way with field and garden crops, soils, fertilizers, orcharding, poultry, livestock, diseases and insect enemies of crops and domestic animals, and farm management and equipment, including farm tractors and gas engines.

The instruction offered will be of the kind the energetic and ambitious farmer is seeking. The course will begin on January 9, 1920, and will continue for three weeks.

Three Weeks Farmers' Course in Agriculture

SUBJECTS	HOURS A WEEK
Field Crops -----	6
Fruit and Vegetable Growing-----	4
Farm Dairying and Types-----	6
Farm Insects -----	3
Diseases of Crops and Their Control-----	3
Soils and Fertilizers-----	4
Diseases of Livestock-----	3
Poultry -----	3
Gas Engines -----	3
Farm Tractors -----	9
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Total-----	44