

STATE COLLEGE RECORD

VOL. 29

MARCH, 1930

No. 3

Summer School

JUNE 16—JULY 25, 1930

Announcement of Courses



North Carolina State College
of
Agriculture and Engineering

STATE COLLEGE STATION
RALEIGH, N. C.

PUBLISHED MONTHLY BY THE NORTH CAROLINA STATE COLLEGE
OF AGRICULTURE AND ENGINEERING

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Raleigh, N. C., under the Act of August 24, 1912.

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Address official communications to
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SUMMER SESSION, 1930

The seventeenth Summer Session of the North Carolina State College of Agriculture and Engineering, which begins Monday, June 16th, and closes Friday, July 25th, has broadened considerably its instruction, particularly by offering additional courses in the Liberal Arts field. In the courses given, the work will be directed primarily to the needs of teachers in secondary education. The usual technical courses will also be offered, as well as courses for teachers of Industrial Arts who hold a certificate of Grammar Grade C or higher.

In addition to the subject-matter courses open to all students who have graduated from high school and particularly suitable for those persons preparing to teach in the secondary schools, there will be courses in the methods of teaching the various high school subjects. There will be offered advanced courses in the field of education, dealing with Philosophy, History of Education and Psychology. The purpose of these is to build upon the several courses in Education that have been given heretofore and which will be repeated in 1930.

The State College Summer School is desirous of using its faculty and laboratories, which are particularly well prepared and equipped in the scientific and technical fields, to meet the rapidly developing needs of the State. The Summer School is, however, making ample provision for those persons who want training in the advanced academic subjects, and is providing the best of instruction in the Liberal Arts studies.

HIGH SCHOOL PRINCIPALS AND SCIENCE TEACHERS

There will be offered for principals and teachers of high schools, both professional and subject-matter courses. Special courses in methods of teaching high school science, together with courses in the various physical sciences, will occupy a large place in the Summer School. This is made necessary by the demand throughout the State for professionally trained teachers of science in the secondary schools. Emphasis will be placed upon training teachers of third year science in the high school, and subject-matter courses in Geography will be given in addition to a course in Methods of Teaching Geography.

Dr. J. Henry Highsmith, State Supervisor of High Schools, will have charge of the general courses for high school principals and teachers. Professor Merle F. Showalter will offer the courses in the teaching of science, and will give the course in Methods of Teaching Geography. An effort will be made to help the teachers in the planning of laboratories for high school science and in the proper use of laboratory equipment. Teachers planning to take the science courses are requested to bring their high school texts.

AGRICULTURE

A six-weeks course in professional and technical subjects will be given for the teachers of agriculture. It is designed for both the teachers already in service, and for prospective teachers of agriculture in the vocational schools. The courses serve to keep teachers informed of new developments as well as to count toward advanced degrees.

COTTON CLASSING

The courses in Cotton Classing are arranged to instruct the producer in grading staple, to induce him, in consequence, to try to grow cotton of better staple, and to aid him in selling his product to better advantage. They are

open also to buyers of cotton. The courses are arranged for young and middle-aged men, and are not intended for boys, nor for men who lack earnestness of purpose. There are no entrance requirements for the Cotton Classing courses except that the applicant should have a good English education.

INDUSTRIAL ARTS

During the Summer School emphasis will be given to the preparation of teachers of industrial arts for the various communities of North Carolina. The rapid growth of industrial education in our State is creating a demand for supervisors and teachers who are competent to develop it in the right direction. Courses will be given in shop practice, mechanical drawing, methods of teaching, subject-matter, and administration.

Supervisors and teachers are needed for the work in the junior and senior high schools, part-time and continuation schools, and evening schools. The need is for those who are familiar with both general and vocational education and are capable of placing the proper emphasis on the courses to be outlined for a particular locality.

Industrial arts education depends largely upon the soundness of the philosophy of the type of training which underlies the introduction of industrial studies. For this reason those professionally minded teachers with vision will welcome courses giving them a better basis for their work in the classroom.

Courses in Textiles designed for men who are employed in the manufacturing plants, as well as courses for teachers who are employed in the textile communities, will be given. These courses will be arranged on a unit basis in order to meet the needs of the various groups who may wish to come to the College for different periods.

INDUSTRIAL ARTS FOR ELEMENTARY TEACHERS

The purpose of the courses in Industrial Arts for the Elementary School is to create interest in these problems using them to motivate the Elementary School subjects and to prepare teachers and supervisors who will become leaders in introducing this work in their school systems. Credit for these courses may be used either in raising or renewing certificates. The courses will be open only to those who hold a Primary or Grammar Grade C Certificate or one of higher grade.

Teachers desiring to raise or renew their certificates will take the first two of the courses in the list following, and one course selected from the remainder of the list.

- Ed. s353. The Theory of Industrial Arts in the Elementary School.** Five hours a week; three credits.
- Ed. s354. Practical Arts Problems.** Ten hours a week; three credits.
- Tex. s115. Courses for Teachers.** Four hours a week; two credits.
- Ed. s201a. Educational Psychology.** Five hours a week; three credits.
- Ed. s327. Standard Testing and Measuring.** Five hours a week; three credits.
- Ed. s328. Tests, Examinations, and Grading.** Five hours a week; three credits.
- Ed. s320. Vocational Guidance.** Five hours a week; three credits.
- Ed. s355. Art Studies in the Elementary School.** Ten hours a week; 1½ or 3 credits.

NOTE.—The above courses are described elsewhere in this bulletin.

PHYSICAL EDUCATION AND COACHING

The Summer School will offer opportunity for coaches and teachers of physical training to take specialized courses in the Department of Physical Education. The courses in athletic coaching and physical training are arranged especially for instructors already engaged in teaching during the regular school year and for others who wish to supplement the preparation they may have received in college. The courses take up the more important problems of coaching, and are designed for the purpose of fitting men more completely to take charge of athletics and physical training in schools and colleges throughout the country, and for fitting women to coach basketball, and direct physical training programs.

Leaders in education now recognize the fundamental need of athletics as an important part of any broad educational program. The demand for competent teachers, supervisors, and directors far exceeds the supply. This is especially true in case of men qualified both in coaching and in conducting classes in physical training. Our schools are seeking men who are college trained to take charge of their athletics; men who are versed in all phases of athletic coaching and administration. Approximately thirty states in the Union now have adopted legislation making physical education a prescribed part of the elementary and secondary school program.

RECREATION

There will be supervised recreation, consisting of tennis tournaments, baseball, volleyball, basketball and handball. Instruction in swimming will be provided for both men and women. The new swimming pool, lockers and showers, and other gymnasium facilities will be available to all students.

GRADUATE STUDIES

Practically all of the departments of instruction at the College that are offering undergraduate work during the Summer School will also offer graduate work. Persons who have completed their undergraduate work and desire to continue toward an advanced degree may do one-half term's work by pursuing graduate studies during the six-weeks Summer School. Special provision will be made to pursue *in absentia* graduate work started at the College during the Summer School. Credit will be given for this work done away from the College, provided it is arranged and registered for. In special cases, a student may continue work at the College or in the field for the whole summer and receive a full quarter's credit.

COLLEGE CREDIT

Beginning with 1924-1925, the regular session of State College was divided into three terms; consequently "credit," as used throughout this bulletin, refers to term credit, or twelve weeks work, unless otherwise designated. Therefore, in order for the college-credit courses to count for a full term's work, they will be given, if for five credits, ten periods a week; if for three credits, five periods a week. Since, however, no student will be allowed to take more than eighteen hours of work per week without special permission, this restriction will prevent a student's taking more than one ten-period course.

Thirty days of work during the six weeks will be accepted for a term's work if all the requirements of the course are met. This includes one day for registration and one day for examination.

The courses for college credit are open to graduates of standard high schools, and to others of equal qualifications. These courses give college students the opportunity to remove conditions, so that they may enter their

classes in the fall in full standing. They will also make it possible to secure advanced credit. The college-credit courses are also open to teachers who hold standard State certificates.

All professional courses offered will have value both for teachers' certificates and for college credit. The subject-matter courses may be counted by teachers for academic credit towards securing or raising their certificates.

PROVISION FOR BOTH MEN AND WOMEN

All courses are open to both men and women. Special accommodations in the dormitories are provided for the women, and special attention will be given to their comfort and welfare.

ACCOMMODATIONS FOR WOMEN

The fifth and sixth dormitories will be set apart for women in attendance upon the Summer School and will be under the supervision of a capable and experienced matron, one for each building, with Mrs. R. R. Smithwick acting as Dean of Women.

The variety of courses offered during the State College Summer School should appeal not only to those women in the teaching profession, but to those who are interested in taking advantage of these courses in preparation for other vocations and leading toward a college degree. Young women living in Raleigh who are working for a college degree should take advantage of this opportunity.

ENTERTAINMENTS AND SOCIAL FEATURES

Arrangements are being made for several high-grade entertainments during the session. A reception for students and faculty, followed by other social and recreational events such as week-end picnics and excursions, serve to foster a congenial spirit in the student body as well as to keep students physically and mentally fit for efficient study.

FEEES AND EXPENSES FOR SIX-WEEKS STUDENTS

All fees and other charges are payable in advance or upon registration, and all checks should be payable to N. C. State College.

Registration	\$12.50
*Tuition (except for teachers)	10.00
Classroom and Laboratory Maintenance Fee	5.00
Room Rent, each person (two or more in room)	7.50
	\$35.00

All students occupying a room alone will be charged \$10.00.

Students taking in excess of the normal load of 3 courses will be charged a fee of \$5.00 for each additional course. Double courses will be counted as two courses.

The college dining room will not be kept open during Summer School. The cafeteria, which is in the same building with the dining room, will be run for the benefit of the Summer School students and faculty.

*FREE TUITION FOR TEACHERS

Exemption from the payment of the \$10.00 tuition fee is provided by legislative enactment for teachers now in service in the schools of North Carolina, and for residents of the State who are preparing to teach during the school year 1930-31.

Teachers now in service and students preparing to teach, who are residents of the State, will be required to sign the usual teacher's agreement to teach in North Carolina for at least six months, or to pay the tuition within one year from date of registration in case they do not teach.

A great many members of the faculty and regular college students eat in the cafeteria and find it very satisfactory, and about as cheap as the dining room, with the addition of greater variety from which to select, and longer periods in which to eat. The cafeteria charges are reasonable.

The registration fee is not returnable after June 5. There will be no refund of room rent or tuition after June 21.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned.

BOARD AND LODGING

Students will be assigned to rooms upon their arrival at the College. Those who prefer to have their rooms reserved can send in their registration fee of \$12.50 and be assigned to rooms in advance. Applicants who find that they will not be able to occupy the rooms assigned to them are required to give notice to the Director five days in advance of the date fixed for occupancy or to forfeit to the Summer School the payment advanced for registration. Those who give notice in time that they cannot attend will have their payments returned.

In case it is desired to change the room assignments, permission to do so must first be obtained from the Superintendent of Buildings. In no case may a room be taken until it has been regularly assigned.

WHAT STUDENTS NEED FOR THEIR ROOMS

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

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a. m., on June 16th. Students are expected to report in person on Monday, June 16th, so that they may begin class work on the morning of Tuesday, June 17th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses.

HOURS OF WORK

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session. Additional credits may be taken by students if they have points to justify, and by teachers on approval of the Director. Each student will be allowed to audit a class five times, if agreeable to instructor.

The Summer School authorities reserve the right to cancel any course for which the registration is less than eight.

THE ATTRACTIONS OF RALEIGH

Being the capital of one of the original thirteen states, Raleigh is unusually rich in historical collections, fine public buildings, and interesting places and memorials. It is interesting, also, for its churches, its schools, its hotels, and its office buildings, and its growing commercial and industrial activity. Opportunities will be given the students to visit the places of interest.

The various churches welcome all Summer School students to Sunday school and church services, and their pastors have taken a very friendly interest in the morning services at the College auditorium. Raleigh will be found in all respects a delightful place of residence.

THE SOCIAL CENTER

The Y. M. C. A. building will be the social center of the school. This building contains a reading room, an auditorium, several reception rooms, telephone booths, and other conveniences for the promotion of the social life of the students.

THE D. H. HILL LIBRARY

The D. H. Hill Library, one of the most beautiful libraries in the South, will be open for the use of Summer School students. Its spacious reading and periodical rooms afford an opportunity for research and study under the most pleasing conditions. The consolidation of the various departmental libraries into the central library, together with the new volumes purchased during the year, have greatly increased the library facilities. The library maintains a competent staff adequate to render every possible library service.

The Olivia Rancy Library and the State Library will also be open to Summer School students for reference work.

FRANK THOMPSON GYMNASIUM

The Frank Thompson Gymnasium is without doubt the finest and best equipped gymnasium in the South. The main floor is 130 by 110 feet, with an intercollegiate basketball court of maximum size, and seating capacity for 2,500 spectators without using the gallery. Two maximum sized cross courts make it possible to run off class and tournament games. The auxiliary gymnasium or exercise room is 110 by 40 feet. Both of these rooms are equipped with full gymnasium apparatus and handball courts. The basement is fitted up with 1,000 private steel combination lockers. Team training rooms, equipped with private showers and lockers, a towel service room, an equipment room, and a wrestling and boxing room compose one-half of the basement. The other half is given over to the Armory.

The swimming pool is located in an annex amply lighted both by windows and skylights, and finished with white tile. The pool is 75 by 30 feet, with room sufficient to accommodate several hundred spectators.

RELIGIOUS ACTIVITY

The churches of the city extend to the students of the Summer School a warm welcome and many of their Sunday Schools have special classes for them. A program of visiting will be arranged for those who wish to see the most successful Sunday School classes of the city in operation.

SHORT COURSE FOR FARMERS, FARM WOMEN AND BOYS' AND GIRLS' CLUB MEMBERS

FARM AND HOME WEEK—JULY 29, 30, 31, August 1, 2

This week, in addition to the usual Farmers' and Farm Women's Convention, there will be short courses in Poultry, Livestock, Field Crops and Marketing; Food Selection and Preparation, Clothing and Room Improvement, for those farmers and farm women who are interested in these subjects.

4-H CLUB SHORT COURSE

A course for 4-H Club members, Local Leaders and Extension workers will be held August 4 to August 9. This course is designed to meet the needs of the 4-H Club boys and girls who wish to come to the college for a week of instruction in subjects relating to Agriculture, Home Making and Leadership Training.

This course will be conducted by the N. C. Agricultural Extension Service. Additional information may be had from County Farm or Home Agent, or by writing to L. R. Harrill, State Club Leader, State College Station, Raleigh, North Carolina.

COURSES TO BE OFFERED IN THE SUMMER SCHOOL

ABBREVIATIONS FOR BUILDINGS

G.—Gymnasium	Pt.—Patterson
H.—Holladay	R.—Ricks
P.—Page	T.—Textile
P. & E.—Physics and Electrical Engineering Building	Pl.—Pullen Hall
Pe.—Peelo Hall	W.—Winston
Pk.—Poik Hall	Z.—Zoology Building

AGRONOMY

Agron. s1. Cotton Classing. Twenty hours a week for six weeks. No college credit. Mr. Darst, Mr. Cotner. 9-1 M. T. W. T. F. Pt. 45.

The Summer School of Cotton Classing is designed to prepare men to enter the cotton business and to enable producers to become familiar with grades, so that they may handle their cotton more efficiently from the time it opens in the field until it is baled.

Inefficient handling at the present time is causing the State a loss of millions of dollars annually. The business side of cotton transactions as well as the practical grading and stapling will be included in the course.

Experience will not be necessary for taking the course, as the class will work in groups according to previous training. Students may qualify as competent cotton classers at the expiration of this course.

The course will consist of lectures and daily practice in grading and stapling cotton samples, according to the Universal Cotton Standards, including the descriptive grades as well as the official.

The course will be given each day, with the exception of Saturday, for four hours a day.

The first period of each day will be devoted to lectures and discussions, and the remaining time will be used in the actual practice of grading and stapling of cotton. An expert from the United States Department of Agriculture will assist in this course.

The Cotton Classing course is designed for a special group, and does not carry college credit. There is a flat charge of \$27.50 for the whole course in Cotton Classing. Persons registered for fifty per cent or less of the course will be charged \$15.00. All fees paid on or before registration.

Agron. s201. Cereal Crops. Prerequisite: General Field Crops. Five hours a week; three credits. Mr. Darst, Mr. Cotner. 11 M. W. F.; 11-1 T. Th. Pt. 26.

Lectures and recitations in history, production, cultivation, improvement, harvesting, storage, and marketing. Laboratory consists of structural studies, seed judging, variety identification, and commercial grading. Special problems in cereal production.

Agron. s210. Cotton Production, or s215. Tobacco Production. Five hours a week; three credits. Mr. Cotner. 8 M. T. W. T. F. Pt. 45.

Lectures and recitations on history, production, adaptation, types and varieties, including cultivation, harvesting, grading, and marketing, will be given. Laboratory consists of variety studies, the classing of cotton, and the grading of tobacco.

Agron. s330. Advanced Seed Judging and Grading. 12 M. W. F. 2-4
T. Th. Prerequisite: Cereals, Five hours a week; three credits. Mr.
Darst, Mr. Cotner. Pt. 26.

Lectures and practice in planning, arranging and judging field crops exhibits. Study of the Federal grain and hay standards. A course planned to develop experts in the judging of field crop seeds and in the grading of grain and hays. A course designed for agricultural extension workers and vocational teachers.

Agron. s351. Advanced Study of Crops Research. Undergraduate credits, 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates. Mr. Darst, Mr. Cotner. By arrangement. Pt. 26.

A field study of the research work and demonstration work in crops. This course will be based directly upon experimental work in progress.

The crop or crops for study will be agreed upon by the class.

SOILS COURSES

Agron. s315. Soils of the Southern States. Five hours a week; three credits. Mr. Cobb. 9 M. T. W. T. F. Pt. 16.

A study of the origin, characteristics, distribution and natural productiveness of the soils of the Southern States. Emphasis is placed on the agricultural adaptation and fertilizer needs of the more important types. The majority of southern soils are represented in North Carolina and samples of other soils are available for laboratory study. Field trips form an important part of the course.

Agron. s321. Soil Technology 1. Four or eight hours a week; two or four credits. Mr. Cobb. By arrangement. Pt. 16.

A laboratory and library study of technical methods used in the investigation of soils.

Agron. s324. Fertilizer Problems. Five hours a week; three credits. Mr. Cobb. By arrangement. Pt. 16.

Designed especially for agricultural teachers and specialists.

A course dealing with fertilizer problems which the agricultural teacher or specialist may meet with in connection with his work. It includes a consideration of methods of carrying out fertilizer demonstrations, a study of the results of fertilizer experiments, the modification of ready mixed fertilizers, the proper use of the new concentrated fertilizers, etc. A trip is made to the Coastal Plain Test Farm for the purpose of studying the fertilizer experimental plots.

Agron. s350. Soil Problems. One credit. Mr. Cobb. By arrangement. Pt. 16.

A seminar course for advanced undergraduates in agriculture.

Agron. s410-A. Seminar. One credit. Mr. Cobb. By arrangement. Pt. 16.

A graduate seminar in soils.

Agron. s430. Soil Research. Five or ten hours a week; three or six credits. Mr. Cobb. By arrangement. Pt. 16.

A study of the methods and results of research in the various branches of soil science.

ANIMAL HUSBANDRY AND DAIRYING

- A. H. s102. Animal Nutrition.** Ten hours a week; five credits. Mr. Haig. 8-10 M. T. W. T. F. Pk. 110.

A study of the principles of Animal Nutrition, including the physiology of the digestion of feeds, the uses of nutrients in the body, feeding standards as adapted to different classes of farm animals.

- A. H. 103. Dairying.** Four hours lecture; four hours laboratory; three credits. 11 M. T. W. T. F. Pk. 110. Mr. Haig.

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

- A. H. s203. Advanced Stock Judging.** Five hours a week; three credits. Mr. Haig. 8 T. T.; 8-10 M. W. F. Pk. 110.

Consideration is given to animal conformation, quality, and condition, with reference to market and show-yard requirements; to the selection of horses and mules, beef cattle, dairy cattle, sheep, and swine for the feed lot, the market, and exhibition, and to judging at livestock shows. A textbook is used, supplemented by lectures, laboratory, and field work. The course is designed to give the student a more thorough knowledge and greater appreciation of good livestock.

- A. H. s211. Advanced Nutrition.** Eight hours a week; four credits. Mr. Haig. 2-4 M. T. W. T. Pk. 110.

A study of recent scientific publications on the chemistry and physiology of the nutrition of animals, and the chemical and physical changes and processes involved in the activities of animal life. Animals are used to demonstrate the effects of the various nutrients and rations.

- A. H. s304. Herd Improvement.** Prerequisite: A. H. 101, 102, 103. Four hours a week lecture; four hours laboratory; three credits. Mr. Haig. 12 M. T. W. T.; 2-6 F. Pk. 110.

This course is designed for training students as Supervisors of Cow-Testing Associations in North Carolina. Rules and requirements for Advanced Registry Testing are studied in detail. Lectures are supplemented with laboratory work and the student is required to do practical work in keeping feed costs, milk weights, butterfat tests necessary in the efficient management of Dairy Associations.

BOTANY

- Botany s101. General Botany.** Nature of the Higher (Crop) Plants. Two lectures; two recitations; eight hours laboratory; four credits. Equivalent to Freshman and Sophomore courses given the first quarter of the regular college year. Mr. Shunk, Mr. Whitford. 8 M. T. W. T.; 2-4 M. T. W. T. Pt. 47.

This course is offered to meet the needs of the following groups of students:

- (1) Teachers of Biology who desire to enhance their knowledge of the higher plants, especially the crop plants.
- (2) Agricultural workers who desire a thorough review of the fundamental structure and functions of the crop plants.

(3) College students who, having failed this course in past years, desire to change their record in regard to it.

In the course the fundamental structural and functional facts concerning the crop plant are taken up. Beginning with the flower, the work proceeds to the problems of fruits, seeds and germination of seeds. Then some fundamental biology is given relating to cells and tissues. Following this, the structural and functional data concerning roots, stems, buds, and leaves are presented. Numerous excellent microscope slides are used to present the minute structural aspects, while the functional aspects are given with the aid of a number of striking demonstration experiments. Fresh crop plant material is used throughout the course for illustrative purposes. The course closes with a thorough review and summary of the whole field studied.

Botany s202. General Bacteriology. Four recitations; eight hours laboratory; four credits. Prerequisite Bot. 102 or equivalent. Mr. Shunk. 11 M. T. W. T.; 2-4 M. T. W. T. Pt. 47.

This course, which is basic for all other work in the subject, gives an introduction to the principles of bacteriology. All of the various fundamental phases of bacteriology are taken up. Through laboratory work the student learns modern cultural methods of handling and studying bacteria. Toward the latter part of the term opportunity will be offered students to do special laboratory work on water, milk, and disease-producing bacteria, if they so desire.

Botany s203. Systematic Botany. Two lectures; eight or sixteen hours of laboratory; five credits. Equivalent to Junior and Senior courses given in third quarter of the regular college year. Prerequisite: Elementary Botany. Mr. Shunk, Mr. Whitford. 9 T. Th.; 2-5 M. T. W. T. F. Pt. 47.

This course is presented for all students who desire a more intimate outdoor acquaintance with plants, both cultivated and wild. Teachers of biology, agricultural students, and all others interested in natural history will find this course especially desirable.

The basis of the course consists of practice in identification of plants with the aid of the plant manual. Material collected on the field excursions is brought into the laboratory and studied with the aid of binocular microscopes. In the lectures, the fundamental characters of the natural plant families are pointed out and the voluntary relationships of these families are discussed. On the frequent field excursions the class will visit the floristically rich areas about Raleigh. On these excursions a few lectures will be given, dealing with the relation of plants to their environment. By the time the course closes, the student should personally be acquainted with the commoner trees, shrubs, wild flowers, and weeds of the State.

Botany s400. This graduate course will be arranged to suit the students and the Department.

CHEMISTRY

Chem. s101a. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Williams, Mr. Jordan. 8 M. T. W. T. F.; 11-1 M. F. W. 114.

Composition and properties of air and water. First principles of Chemistry, such as atomic theory, laws of chemical combination, valence, chemical

formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon and nitrogen, together with their simpler compounds.

Chem. s101b. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Williams, Mr. Jordan. 9 M. T. W. T. F.; 11-1 T. Th. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulfur, flourine, bromine, and their compounds. Study of such common substances as salt, lye, soda, carbon disulfide, prussic acid, petroleum, coal tar, acetylene; ammonia and its more interesting uses such as in ice machines; sulfur dioxide in household refrigerators and as a bleaching and germicidal agent; compounds of nitrogen in warfare and agriculture. Introduction to acids, bases, salts, ionization, hydrolysis, equilibrium, the periodic law and the new theories of the structure of the atom.

Chem. s101c. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Williams, Mr. Jordan. 1 M. T. W. T. F. Laboratory by arrangement. W. 114.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water, alloys, paints, storage batteries, photography, flames and explosions. Compounds and properties of phosphorous, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, iron, tin, lead, nickel, copper, mercury, silver, gold, platinum and other less common elements. Thermochemistry, colloids and radioactivity.

Chem. s111. Qualitative Analysis. Two hours lecture with four laboratory periods of three hours each, per week. Equivalent to one term of college work. Four hours credit. Prerequisite: General Chemistry. Mr. Williams, Mr. Jordan. 11 T. Th.; 8-11 M. T. W. T. F.

A systematic study and separation of the metallic ions and non-metallic ions into their respective groups, their identification and the chemical reactions involved. The last two weeks will be given over to the complete analysis of mixed salts, compounds, and alloys.

Chem. s112. Quantitative Analysis. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Four hours credit. Prerequisite: Qualitative Analysis. Mr. Williams. 10 M. W.; 2-5 M. T. W. T. F. W. 102.

This work will deal with the theory and practice of making up and standardizing acids, bases, di-chromate and permanganate solutions, also the determination of the strength of unknown acids and bases, the analysis for the per cent purity of iron ores, oxalates, sulphates, magnesium phosphate rock, etc.

Chem. s141. Organic and Biological Chemistry. Five hours a week; three credits. Prerequisite: General Chemistry. Mr. Jordan. By arrangement. W. 114.

A systematic study of the compounds of carbon with emphasis on those substances of particular importance in the life of man. Such common substances as alcohol, ether, chloroform, glycerin, quinine, carbolic acid, Rochelle salt, saccharin, aspirin and benzoate of soda. Such frequently mentioned compounds as caffeine, nicotine, wood alcohol, mustard gas, nitroglycerine, citric

acid, cream of tartar, acetanilide, menthol, salvarsan, mercurochrome, formaldehyde. Such materials as gasoline, kerosene, rubber, collodion, celluloid, rayon, duco, turpentine, soap, glue, linseed oil, ethyl gasoline and such processes as decay, fermentation, rancidity, hardening of oils, tanning of leathers. Particular attention is given to carbohydrates, fats and proteins and their fate in digestion and metabolism.

Chem. s221. Organic Chemistry. Seven hours lecture with eight hours laboratory. Six credits. Prerequisite: General Chemistry. Mr. Williams. By arrangement. W. 102.

Chem. s231. Physical Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Prerequisite: Chem. 113. Mr. Jordan. By arrangement. W. 114.

Fundamental principles of physical chemistry, careful consideration of the laws and theories, with reference to various branches of chemistry, and their application to industrial processes.

Chem. s344. Food, Nutrition and Diet. Five hours a week, three credits. Prerequisite: General Chemistry. Mr. Williams. By arrangement. W. 102.

The influence of vitamins, minerals, proteins, amino acids, carbohydrates, fat, fiber, flavor, color, enzymes, preservatives and stimulants on the body. Chemical and physical nature of carbohydrates, fats and proteins. Digestion and metabolism. Study of the proper diet. Flesh-forming and flesh-producing diets. Diet in disease. Sour milk therapy.

While human feeding is emphasized in this course, principles here discussed are applicable to the feeding of animals as well.

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week; three credits. Mr. Moen. 9 M. T. W. T. F. Pe. 109.

This course is the regular college one-term course required of all students in Engineering and is designed for those students who do not feel able to devote more than one term to the study of Economics, and also for teachers preparing to teach Economics in High Schools.

This is an elementary course in Economics. It treats of the business aspects and economic organization of society. It includes a study of the great fundamental economic laws which apply to all professions and occupations; a study of the production, distribution and value of economic goods, and a study of the institutions, agencies, and ideals which dominate, operate and control the manner, means, and methods of making a living.

Econ. s103. General Economics. Five hours a week; three credits. Mr. Forster. 8 M. T. W. T. F. R. 208.

This is the first term of the regular college course in General Economics. An introduction to the general field of Economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

Sections for F. W. S.

Econ. s112. Accounting for Engineers. Five hours a week; three credits. Mr. Shulenberger. 8 M. T. W. T. F. Pe. 3.

Required of students in the School of Engineering. Not open to students in Business Administration.

A survey of accounting and financial statements and records; their construction, their use and interpretation.

Courses for Advanced Undergraduates

Econ. s201. Accounting I. Five hours a week; three credits. Mr. Shulenberg. 9 M. T. W. T. F. Pe. 3.

Required of all sophomores in Business Administration and Industrial Management.

A course in the theory and practice of accounting, covering the essential principles of accounting as applied to the several types of business organizations, giving interpretations of the structure, form, and uses of formal business statements such as Balance Sheets, Statements of Profit and Loss, etc. Sections for F. W. S.

Econ. s210. Business Organization. Five hours a week; three credits. Mr. Shulenberg. 12 M. T. W. T. F. Pe. 3.

Required of seniors in Chemical and Highway Engineering.

Prerequisite: Econ. 102 or 103.

Forms of business enterprises, single enterprises, partnership, joint-stock company, corporation, and principles of business management.

Econ. s211. Business Law. Five hours a week; three credits. Prerequisite: Econ. 102 or 103. Mr. Moen. 10 M. T. W. T. F. Pe. 109.

Required of seniors in Business Administration, and in Ceramic, Chemical, Civil, Architectural, Electrical, and Mechanical Engineering, and teachers of commercial subjects. Elective for other students.

A general survey of the sources of law, fields of law, contracts, agency, sales, law of partnerships and corporation, negotiable instruments, bailments and carriers, personal property, suretyship and guaranty, bankruptcy, crimes in business.

Econ. s212. Statistical Method. Five hours a week; three credits. Elective Prerequisite: Economics 102. Mr. Forster. 10 M. T. W. T. F. R. 208.

A study of the elements of statistical methods, statistical types, collection and analysis of statistical data.

Econ. s217. Advertising. Five hours a week; three credits. Mr. Moen. 8 M. T. W. T. F. Pe. 109.

Principles and practice of advertising and its relation to the distribution and sales program.

Econ. s218. Sales Management. Five hours a week; three credits. Mr. Moen. 12 M. T. W. T. F. Pe. 109.

Sales methods, planning and research. Administrative policy and organization of the sales force from the viewpoint of sales control.

Econ. s265. Farm Marketing. Five hours a week; three credits. Prerequisite: Economics 102. Mr. Forster. 9 M. T. W. T. F. R. 208.

A study of the economic principles underlying successful marketing of farm products, market organization and control, price-making forces, and critical examination of the present system of marketing farm products.

Econ. s269. Farm Accounting. Five hours a week; three credits. Mr. Forster. 11 M. T. W. T. F. R. 208.

This course deals with the practical aspects of farm accounting, such as preparation of inventories of farm property, simple financial statements,

method of keeping farm records, analysis of farm records, and the interpretation of results obtained from farm business transactions. Attention will also be given to methods of obtaining information on the business aspects of farming.

Econ. s361. Farm Organization and Management. Five hours a week; three credits. Mr. Forster. 12 M. T. W. T. F. R. 208.

In this course special consideration is given to the application of economic principles and statistical methods to the solution of farm management problems. For this purpose actual farm records on farms from various parts of the State are available. The course is primarily intended for those who have had General Economics and Statistics.

Econ. s366. Marketing Methods and Problems. Five hours a week; three credits. Mr. Forster. By arrangement.

This course will consist of a study of the major problems in the field of agricultural marketing. The problems related to prices and the marketing mechanism will be given special consideration. The course is designed primarily for those students who have had General Economics and the first course in Farm Marketing.

EDUCATION

Courses for Undergraduates

Ed. s101. Introduction to Psychology. Five hours a week; three credits. Mr. Garrison. 10 M. T. W. T. F. H. 3.

The human receiving, connecting, and reacting nervous mechanisms; human behavior; instinctive tendencies, reflexes, instincts, and capacities; emotional behavior; habit and habit formation; the learning process; memory; thought; individual psychology.

Ed. s201a. Educational Psychology. Five hours a week; three credits. Mr. Garrison. 9 M. T. W. T. F. H. 3.

This course will deal with psychological facts and theory and their application to educational practices. A study will be made of the human receiving, connecting, and reacting nervous mechanisms, the original equipment of man, reflexes, instincts, and capacities; emotional behavior; laws and nature of learning and of habit formation; economy in learning; transfer of training; work and fatigue; individual differences and intelligence.

Ed. s205. Introduction to Education. Five hours a week; three credits. Mr. Mayer. 11 M. T. W. T. F. Pu. 7.

This course is intended to introduce the college student to the problems of education. Some of the problems for consideration are: General and vocational education, the relation of the teacher, the school, and the community, materials and practices, the individuality in school children, educational systems at work, and measuring the outcome of teaching and learning.

Ed. s308. Problems of the High School Teacher. Five hours a week; three credits. Mr. Highsmith. Prerequisite: Twelve credits in Education. 9 M. T. W. T. F. Pe. 206.

This course will cover the State requirement with reference to supervision for a high school teacher. Topics and problems discussed will include: The aims of secondary education; the high school teacher, and the high school

pupil; discipline; classroom technique; training in habits of study; the curriculum; student rating; salaries; professional duties and responsibilities; school morale, and extra-curricular activities.

Textbooks, lectures, readings, and reports.

Ed. s305. Methods of Study. Five hours a week; three credits. Mr. Cook. Prerequisite: Twelve credits in Education. 11 M. T. W. T. F. Pe. 201.

A course for teachers in the methods of study and the technique of supervising study. Considers the factors of study, the chief difficulties, the general principles for improving study, and special devices. Teachers will have the opportunity of making special studies and reports on study procedures related to the subjects which they teach.

Ed. s315. Methods of Teaching Modern Languages. Five hours a week; three credits. Mr. Hinkle. Prerequisite: Eighteen credits in Modern Language, Educational Psychology, and Principles of Teaching. 10 M. T. W. T. F. Pe. 212.

The purpose of this course is to present the problems connected with the teaching of Modern Languages in such manner as to be of the maximum benefit to all Modern Language teachers as well as to language students who are preparing to teach. It includes discussions of the various methods and theories of language teaching; the aims in Modern Language instruction; organization of material; the subject-matter and apparatus of teaching, including such topics as textbooks, pronunciation, grammar, reading, literature, composition, vocabulary building, dictation, oral drill, examinations, tests, and extra-class activities.

Ed. s316. Teaching of Literature in Secondary Schools. Five hours a week; three credits. Mr. Owens. Prerequisite: Eighteen credits in English, Educational Psychology, and Principles of Teaching. 8 M. T. W. T. F. Pu. 101.

The purpose of this course is to discuss various methods of teaching English and American literature in high schools: assigning of lessons, conduct of recitations, reports on outside readings, consideration of literary productions recommended for study by high school students, survey of textbooks. Special consideration will be given to the books in literature which are listed in the North Carolina manual for secondary schools. Textbook assignments, reports, discussions, collateral readings, practice teaching.

Ed. s318. Teaching of Composition in Secondary Schools. Five hours a week; three credits. Mr. Owens. Prerequisite: Eighteen credits in English, Educational Psychology, and Principles of Teaching. 10 M. T. W. T. F. Pu. 101.

The purpose of this course is to discuss various methods of teaching composition and grammar in high schools: lesson assignments, class discussions and recitation, written exercises, grading of papers. A thorough examination will be made of the requirements in composition and grammar for the several years of the high school course. Textbook assignments, reports, discussions, practice teaching.

Ed. s320. Vocational Guidance. Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 9 M. T. W. T. F. Pe. 12.

Treats of the problems of directing pupils in the study of occupations for the purpose of selecting satisfactory life work. It includes studies of the history

of occupational guidance and personnel administration, principles and practices in guidance and employment, compulsory school laws, child labor legislation, and forms and records essential for school use.

Ed. s321. Vocational Education. Five hours a week; three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 12 M. T. W. T. F. Pe. 12.

This course is organized especially for administrators, supervisors, principals, and teachers who have not had opportunity of working out the relationships governing vocational and general education. It will treat of the needs and place of vocational education in the public school system; practices in organization of vocational education and vocational guidance in trades and industries, home economics, and agriculture, including continuation schools, part-time and evening classes; and the problems related to administration of the Smith-Hughes Act.

Ed. s323. Study of Occupations. Five hours a week; three credits. Mr. Boshart. 10 M. T. W. T. F. Pe. 12.

Given especially for principals and school counselors who are aiding pupils in the selection of a life work, this course will be a study of the essential elements found in various occupations. Interviews with men and women in different lines of endeavor and visits to plants and offices will form a goodly part of the work which will be written up in form to present to students of high school or college grade. Readings, reports, discussions, and lectures by class members will include the following: importance in society, the kinds of work involved, advantages and disadvantages, what preparation is necessary, individual qualifications, together with matters of income and general environment.

Ed. s327. Standard Testing and Measuring. Five hours a week; three credits. Prerequisite: Twelve credits in Education or Senior Standing. Mr. Mayer. 8 M. T. W. T. F. Pu. 7.

This course will give the teacher an insight into the more common achievement, diagnostic, and mentality tests, and their use and interpretation from the standpoint of the teacher, supervisor, and administrator.

Ed. s328. Tests, Examinations, and Grading. Five hours a week; three credits. Prerequisite: Twelve credits in Education or Senior Standing. Mr. Mayer. 12 M. T. W. T. F. Pu. 7.

This course will deal with the principles and practices of building up and using classroom tests, and the principles underlying grading. (Teachers contemplating taking this course should bring textbooks that they are using in their High School Teaching.)

Ed. s335. Public School Administration. Five hours a week; three credits. This course is intended primarily for superintendents and principals. Prerequisite: Twelve credits in Education. Mr. Lockhart. 8 M. T. W. T. F. Pe. 203.

The following problems will receive consideration:

The powers and duties of the board of education; the powers and duties of the superintendent; the county-wide plan; consolidation of schools; transportation of pupils; school buildings and equipment; operation and maintenance of plant; janitor service; selection, purchase and distribution of supplies; school reports; problems pertaining to the teacher, pupil and home; educational problems of a county school system.

Textbooks, lectures, readings and reports.

Ed. s334. School Finance. Five hours a week; three credits. A practical course for superintendents and principals. Mr. Lockhart. 9 M. T. W. T. F. Pe. 208.

The topics treated will include:

Sources and distribution of school funds; budget making; school costs; bonds and the financing of capital outlays; accounting; financial statements and reports; business practice.

Prerequisite: General Economics and Public Finance. Six hours, twelve credits in Education. Textbooks, lectures, readings and reports.

Ed. s336. Problems in Secondary Education. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Highsmith. 11 M. T. W. T. F. Pe. 206.

The purpose of this course is to give as practical assistance as possible to those men and women who wish to become high school principals in North Carolina. Frequent reference will be made to conditions in the State. The following problems will be discussed:

Aims of secondary education; the curriculum (with special reference to the North Carolina course of study and High School reorganization); standards for high schools; classification of pupils; control of pupils and discipline; regulation of attendance; guidance of pupils; classroom standards; examination; marking system; interpretation of intelligence scores; supervision of study; class schedule making; duties of the principals; supervision of instruction; selection of teachers; teaching load, salaries; professional ethics.

Textbooks, lectures, readings, and reports.

Ed. s338. Materials and Methods in Teaching High School Science. Prerequisites: Twenty credits in Science, Educational Psychology and Principles of High School Teaching, or Adequate Teaching Experience. Mr. Showalter. Pe. 204.

The first half of the work will be devoted to a detailed study of the content of one division of High School Science and the development of a unified concept of the entire Natural Science field.

During the second half the history of science and science teaching will be considered, a critical analysis of desirable objectives will be made, lesson planning, use of textbooks, sources and use of illustrative and other supplementary materials, collection and preservation of biological materials, laboratory plans, equipment, supplies, and techniques, use of materials and equipment available in home and community, construction and use of written examinations, notebooks, and professional helps will be studied.

Students may register for only one part, or may take both parts.

Ed. s338a. First Half—Three credits. 10 M. T. W. T. F.

Ed. s338b. Second Half—Three credits. 11 M. T. W. T. F.

Ed. s339. Materials and Methods in Teaching High School Geography. Five hours a week; three credits. Prerequisites: Educational Psychology and Principles of High School Teaching, or Adequate Teaching Experience. Mr. Showalter. 9 M. T. W. T. F. Pe. 204.

The work will begin with a detailed study of the subject-matter of High School Geography. A thorough analysis will be made of desirable objectives and the procedures, including both class and laboratory techniques, by means of which the learner may best attain these objectives. The use of atlases and

textbooks, the securing and use of suitable illustrative and other supplementary materials, and the use of the local environment and home-made apparatus will be given major emphasis.

Ed. s343. Methods of Teaching Mathematics. Five hours a week; three credits. Prerequisite: Twenty hours in Mathematics. Mr. Mock. 10 M. T. W. T. F. P. 203.

This course deals with the most modern techniques in teaching high school mathematics. It will partake largely of the nature of a professionalized subject-matter course.

Ed. s353. Theory of Industrial Arts in the Elementary School. Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Boshart. 8 M. T. W. T. F. Pe. 12.

A study of the value and place of Industrial Arts in the elementary school. The correlation of Industrial Arts with other school subjects; the methods of teaching and supervision, and the study of industries, with the view of selecting suitable projects for classroom use. Primarily for teachers and supervisors of the elementary schools.

Ed. s354. Practical Arts Problems. Ten hours a week; three credits. Prerequisite: Twelve credits in Education. Mrs. Leggette. 9-11 M. T. W. T. F. or 11-1 M. T. W. T. F. Pe. 11.

Treats of the selection and organization of suitable projects in Industrial Arts and the working out in detail of such as will meet the needs of the class. The meaning of Industrial Arts and the methods of making it a part of the regular work of the school will be discussed. For teachers in the elementary schools who have had teaching experience and who have not had special work in Industrial Arts.

Ed. s355. Art Studies in the Elementary School. Five or ten hours a week; one and one-half or three credits. Prerequisite: Twelve credits in Education. Mrs. Leggette. 9-11 M. T. W. T. F. Pe. 11.

A study of art work in the elementary school designed especially to aid teachers in making concrete applications in their classrooms.

Ed. s356. Clay Modeling for Public School Teachers. Five double periods; three credits. Additional work and credit if desired. Mr. Paulson. 9-11 M. T. W. T. F. P. & E. 208.

Work will consist of modeling, moulding, casting, glazing, and firing. Problems will be selected for use in elementary and secondary schools with varying degrees of equipment.

Ed. s357. Fine Arts for Teachers. Five double periods; three credits. Additional work and credit if desired. Mr. Paulson. 11-1 M. T. W. T. F. P. & E. 208.

Drawing in pencil, charcoal, crayon and water color from casts and from nature. Perspective theory and outdoor sketching. Lettering and poster design. Lectures in appreciation of art. Also individual instruction to advanced students.

Note: Students may, if they desire, divide their time between Practical Arts Problems, Ed. s354, and Clay Modeling for Public School Teachers, Ed. s356. The demand for more advanced work in the above mentioned courses will be satisfied when possible.

Ed. s360. Special Problems in Teaching Agriculture. Five hours a week; three credits. Prerequisite: Twelve credits in Education, including Special Methods of Teaching Agriculture. Mr. Cook. 9 M. T. W. T. F. Pe. 201.

This course is for graduates of the Department of Agricultural Education. It will consist of special individual problems and preparation of plans for the next year's work, involving a survey of the school and community in which they are to work the coming year. From this information each student will prepare a program of agricultural education especially adapted to his school and community. It will include classroom arrangements and fixtures, library equipment, gathering specimens and illustrative materials, and the organization of courses of study.

Ed. s371. Child Psychology. Five hours a week; three credits. Prerequisite: Twelve credits in education, six of which must be in Psychology. Mr. Garrison. 11 M. T. W. T. F. H. 3.

This course will consider the results of scientific studies of mental and physical growth from infancy to adolescence. It will emphasize the bearing of instinctive tendencies and social environment on development, the emotional life of children and special problems of behavior, with their application to the training of children in the home as well as in school.

Ed. s364. History of Education. Five times a week; three credits. Mrs. Wallace. 11 M. T. W. T. F. Pu. 8.

This course will include a brief study of European Education and its influence upon the American Public School, the early development of the elementary and high schools of America, and the present tendencies of our educational system. The period from 1890 to the present will be given special consideration.

Ed. s406. Philosophy of Education. Five hours a week; three credits. Prerequisite: Eighteen credits in Education, six of which must be in Psychology. Mr. Garrison. 8 M. T. W. T. F. H. 3.

This course is intended to follow a thorough course in The History of Education. The aim of this course is to develop the principles upon which a broad philosophy of education can be based. Historical reviews of philosophies in their bearing on education, from the time of Plato and Aristotle through the scientific movement of Spencer and others, will be made. The influences of these philosophies on the present day systems of education, its aim, scope, and organization, will be considered as they relate to each other and to the scheme of life.

Ed. s408. Supervision—The Improvement of Instruction. Five hours a week; three credits. Prerequisite: Eighteen hours in Education. Open to college graduates only. Mr. Highsmith. 10 M. T. W. T. F. Pe. 206.

For principals of High Schools, Heads of Departments, Supervisors and Teachers.

This course is offered to meet a growing demand for supervision of High School instruction. The purpose of Supervision is the improvement of instruction.

The problems involved in the supervision of teachers; the planning and organization of supervision; the functions of supervision; rating of principals, supervisors and teachers; classroom visitation and conferences; the improvement of teachers in the service.

Textbooks, lectures, readings, and reports.

Ed. s418. Mental and Aptitude Testing. Five hours a week; three credits. Mr. Garrison. 12 M. T. W. T. F. H. 3.

The first part of this course will be concerned with the history of mental and aptitude testing. The purpose of this course is to give the student a more thorough acquaintance with the types of tests used in measuring intelligence, aptitudes, attitudes and character traits. Reports on recent students in these fields are constantly assigned, and a great deal of the discussions are built around these.

Ed. s416. Problems in Agricultural Teaching. Five hours a week; three credits. Prerequisite: Eight credits in Education. Mr. Cook. 12 M. T. W. T. F. Pe. 201.

Investigations, reports, and a critical evaluation of present practices with constructive remedies. The content of the course will vary, according to the problems selected for study.

NOTE: COURSES FOR TEACHERS OF COMMERCIAL SUBJECTS.

Courses especially helpful are listed in the economics section and numbered Ec. 102, Ec. 103, Ec. 112, Ec. 201, Ec. 210, Ec. 211, and Ec. 212.

ENGINEERING

C. E. s105. Mechanics. Five hours a week; three credits. Prerequisite: Trigonometry and Analytics. Mathematics 103 and 104. Mr. Foster. 8 M. T. W. T. F. P. 106.

Statics, including concurrent forces, parallel forces, noncurrent forces; friction, centroids, moment of inertia, rectilinear motion, curvilinear motion, and rotation.

M. E. s102. Engineering Drawing. Ten or twenty hours a week; three or six credits. Required of Engineering Freshmen. Mr. Foster. 9-1 M. T. W. T. F.; 10-12 M. T. W. T. F. P. 106.

Drawing-board work, covering lettering, orthographic projection, auxiliary projection, isometric projection, cabinet projection, intersection and development, working drawings, and blue-printing.

M. E. s103. Descriptive Geometry. Ten hours a week; three credits. Mr. Foster. 10-12 M. T. W. T. F. P. 106.

This work covers the representation of geometrical magnitudes, by means of points, lines, planes, and solids, and the solution of problems relating to them.

M. E. s105. Woodshop. Five or ten hours a week; one or two credits. Mr. Wheeler. 2-4 M. T. W. T. F. Woodshop.

Use of bench tools, reading blue-prints, making cabinet joints, operation and care of wood-working machinery. Correct methods of staining, varnishing, filling and gluing.

M. E. s107. Mechanical Drawing. Four, seven or ten hours per week; one, two or three credits. Mr. Foster. By arrangement. P. 106.

Drawing-board work, covering machine fastenings, pipe fittings, elementary cams, technical sketching, working drawings, tracing and blue-printing.

M. E. s118. Machine Shop I. Ten hours a week; two credits. Mr. Wheeler. 9-11 M. T. W. T. F. Woodshop.

Required of Seniors in Chemical and Juniors in Ceramic and Mining Engineering.

Instruction in the use of hand and machine tools.

M. E. s130. Metal Work. Fifteen hours a week; three credits. Mr. Wheeler. 9-12 M. T. W. T. F. Woodshop.

Instruction will be given in elementary phases of metal work, including filing, chipping, drilling, bending and forming, and problems on the drill press, lathe, and shaper. Intended for teachers of general shops where metal work will be a part of the course offered.

M. E. s132. Woodworking for Teachers. Fifteen hours a week; three credits. Mr. Wheeler. 2-5 M. T. W. T. F. Woodshop.

Instruction will be given in bench-work, the use of wood-working machines, and the construction and finishing of projects suitable for wood-working classes in the junior and senior high schools. Special attention will be given to the problems of selecting suitable equipment and its installation.

M. E. s134. Mechanical Drawing for Industrial Arts and Vocational Teachers. Fifteen hours a week; four credits. Mr. Foster. By arrangement. P. 106.

Drawing-room practice twelve hours per week and recitation three hours per week. Lettering, instrument practice, orthographic projection, drawing from objects, and intersections and developments will be studied. Working drawings of projects that may be used in shop work will be made. Drawing room fee \$1.00.

ENGLISH

Eng. s101. Rhetoric and Composition. Five hours a week; three credits. Mr. Harrison. 10 M. T. W. T. F. Pu. 104.

For credit or to remove condition in first-year college English. A review of grammar in its practical application to writing and to speaking. The study of words: spelling, derivation, and the enlarged vocabulary. The principles of construction of the sentence, the paragraph, and the whole composition. An introduction to the forms of discourse: description, narration, exposition, and argument. Methods and objectives in teaching this subject. Frequent short exercises and one longer paper. Readings in class as drill in accurate interpretation and as models, and some collateral assignments. Individual conferences.

Eng. s130. Technical Writing. Five hours a week; three credits. Prerequisite: English 101. Mr. Harrison. 9 M. T. W. T. F. Pu. 104.

The principles of composition applied to the writing of reports and other engineering papers; illustrative readings; practice in writing frequent shop papers; a thesis as model of the paper to be presented for advanced degree, read before a scientific society, or published in a technical journal. Conferences.

Eng. s202. Advanced English Grammar. Five hours a week; three credits. Mr. Owen. 12 M. T. W. T. F. Pu. 101.

This course is designed to meet the needs of teachers who desire to get a more comprehensive knowledge of grammar than that furnished in the usual high school and college courses in grammar and composition. Teachers who feel that their preparation for teaching grammar and composition is inadequate should find in this course the means of learning purely technical grammar and in gaining a confidence in their own knowledge of the subject.

Methods of teaching the grammatical requirements in the high school English course of study will be stressed. Textbook assignments, written work, discussions, drills, and lectures.

Eng. s208. The Essay. Five hours a week; three credits. Prerequisite: English 101. Mr. Harrison. 11 M. T. W. T. F. Pu. 104.

Planned as a course in advanced composition and in appreciation of this important form of writing. Style and content of the literary, non-technical essay; various types of formal and informal essays to be read as models of structure, mechanics, and material; frequent brief practice papers and one longer essay. Conferences.

Eng. s235. Victorian Poetry. Five hours a week; three credits. Mr. Clark. 11 M. T. W. T. F. Pu. 105.

A study of the principal poets of the Victorian era. Emphasis will be placed on the works of Tennyson and Browning.

Eng. s237. The Development of the Drama. Five hours a week; three credits. Prerequisite: English 101. Mr. Clark. 8 M. T. W. T. F. Pu. 105.

In this study there will be a discussion of the origin, progress, and influence of the English and American drama, with particular attention to plot, characterization, and interpretation of certain readings which represent the various types of the drama.

Eng. s330. Shakespeare. Five hours a week; three credits. Prerequisite: Eng. 101 and three additional credits in English. Mr. Clark. 12 M. T. W. T. F. Pu. 105.

An analysis, as regards technique and interpretation, of the following dramas: Macbeth, Othello, The Winter's Tale, Twelfth Night, and King Henry the Fifth. Reports on parallel readings will be discussed in open forum sessions.

Eng. s332. The Romantic Period. Five hours a week; three credits. Prerequisite: Eng 101 and three additional credits in English. Mr. Clark. 9 M. T. W. T. F. Pu. 105.

A study of the representative poems of Gray, Blake, Burns, Wordsworth, Coleridge, Scott, Southey, Byron, Shelley, and Keats. These writers will be considered with the view of noting, as to content, their sympathy with nature and their interest in man and the affairs of human life; as to style, their departure from the conventional forms and devices of the Classical School.

Eng. s260. Public Speaking. Five hours a week; three credits. Mr. Owens. 9 M. T. W. T. F. Pu. 101.

A practical course for beginning students in extemporaneous speaking and for those who desire to learn how to judge intelligently the effectiveness of a public speech. The fundamentals aimed at are; thought conception, power of analysis, orderly arrangement of ideas, self-control before an audience, and an apt and forceful extempore presentation. Exercises and speeches are prepared and delivered by the students, a textbook is studied, and lectures and personal suggestions and criticisms are given by the instructor. Some attention is paid to the development of the effective speaking voice.

Eng. s271. See Education s316.

Eng. s273. See Education s318.

Eng. s337. Contemporary Literature. Five hours a week; three credits. Mr. Harrison. 8 M. T. W. T. F. Pu. 104.

An introduction to present-day writers of England and America. An effort to understand and to interpret the literature of the period as reflecting its intellectual and spiritual life. Poetry, prose fiction, biography, essays.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week; three credits. Mr. Stuckey. 9 M. T. W. T. F. W. 104.

Open to both college students and teachers who are interested in a better understanding of the world about them.

An introductory course in general geology dealing with the changes which have taken place in the earth and the physical and life processes which have brought about these changes. The first half of the course deals with the processes of physical and dynamical forces while the second half deals with the historical development of the earth as it has been affected by those forces and by life processes.

Geol. s105. Physical Geography. Three lectures; four hours laboratory and field work; three credits. Equivalent to the regular course in physical geography given in the third term of the college year. Mr. Stuckey. 10 M. T. W. T. F. W. 104.

The course is intended to give those interested in general science and in teaching a better appreciation of physical geography. It will include an account of the earth as a planet; the atmosphere; the development of winds and rain; changes in the earth's crust; and the development of relief features and physiographic provinces.

The work of running water, ground water, wind, snow and ice, and forces within the earth as they affect the relief features will be taken up in some detail.

The course will also include a brief consideration of the physical geography of North Carolina.

Geol. s120. Physical Geology. Three lectures; four hours laboratory work; three credits. Mr. Stuckey. 11 W. T. F.; 2-4 M. W. W. 104.

An introductory course in dynamic and structural geology. The course treats of the forces which are acting in and on the earth, and the materials of the earth's crust.

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory; three credits. Mr. Stuckey. 12 M. W. F. Laboratory by arrangement. W. 104.

Elective for students in the Schools of Engineering and Science and Business who have had Geol. 101 or 120.

Also open to teachers who are interested in the geology of North Carolina and who may be interested in helping students to collect and assemble groups of the common rocks and minerals from different sections of the State.

The course will cover the physical geography, general geology, common rocks and minerals, and mine and quarry products of the State.

HISTORY

Hist. s101a. American Economic History. Five hours a week; three credits. Mr. Barnhardt. 10 M. T. W. T. F. Pu. 6.

Discovery, colonization, economic background of the Revolution, government foundations, wars, presidential administrations, public lands, public finance, agriculture and industry.

Hist. s101c. Commercial Geography (Commercial and Industrial.) Eight hours a week; four credits. Mr. Moen. 11 M. T. W. T. F. Pe. 109.

This course is designed to prepare teachers of geography in the high schools as provided for in the plan of High School Reorganization as well as for students in the School of Science and Business. Geographical conditions affecting industries production and commerce of the world; development and relations of commercial areas to location and availability of resources; markets and transportation routes.

Hist. s201b. Modern European History. Five hours a week; three credits Mr. Barnhardt. 9 M. T. W. T. F. Pu. 6.

The political and social history of Europe from 1789 to 1870. A survey of the French Revolution and Napoleon; the era of Metternich; democratic reforms and revolution; the Industrial revolution; and the growth of nationalism to 1870.

Hist. s302. Recent U. S. History. Five hours a week three credits. Prerequisite: History 101. Mr. Barnhardt. 8 M. T. W. T. F. Pu. 6.

The Civil War, reconstruction, development of West and South, transportation, rise of big business and organized labor, political parties, movements for reform, the free silver movement, war with Spain, American expansion, rise of the Progressive Party, Roosevelt, Taft and Wilson; the World War and problems of Reconstruction, the Harding-Coolidge administration.

Hist. s303. History of North Carolina. Five hours a week; three credits. Prerequisite: History 101. Mr. Barnhardt. 12 M. T. W. T. F. Pu. 6.

The purpose of this course is to give the teachers of North Carolina and others a general view of the political, economic, and social development of North Carolina from colonial beginnings to the present day. A brief survey will be made of the settlement of North Carolina, the various racial groups which colonized agriculture, industry, and commerce in the colonial era, and the relations of the province to England. A more detailed study will be made of North Carolina between the Revolution and the Civil War, emphasis being given to North Carolina and states' rights, social conditions, slavery and the free negro, agriculture and industry, and the beginnings of public school education. Particular emphasis will be placed on the recent development of the state, the rise of textile, tobacco, and other industries, the development of agriculture, public schools and higher education, good roads, and other factors in recent North Carolina progress.

MATHEMATICS

Math. s101. Algebra. Ten hours a week; five credits. Prerequisite: Algebra to Quadratics and Plane Geometry. Mr. Mumford. 11-1 M. T. W. T. F. P. 101 B.

This course includes the progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, the general theory of equations, the solution of higher equations, etc.

Math. s102. Solid Geometry. Ten hours a week; five credits. Prerequisite: Plane Geometry. Mr. Mock. 11-1 M. T. W. T. F. P. 203.

The three books of Solid Geometry, including numerous original exercises, are covered in this course.

Math. s103. Plane Trigonometry. Ten hours a week; five credits. Prerequisite: Algebra through Quadratics and Plane Geometry. Mr. Fisher. 8-10 M. T. W. T. F. P. 209.

Definitions of the trigonometric functions, derivation of formulæ, solutions of plane triangles, solutions of many practical problems, etc.

Math. s104. Analytical Geometry. Ten hours a week; five credits. Prerequisite: Mathematics 101, 103. Mr. Mumford. 8-10 M. T. W. T. F. P. 101 B.

Locl of equations, the straight line, circle, parabola, ellipse, hyperbole, and the general equation of the second degree.

Math. s201. Differential Calculus. Ten hours a week. Five credits. Prerequisite: Mathematics 104. Mr. Mock. 8-10 M. T. W. T. F. P. 203.

An elementary course on the fundamental principles of the Calculus, including the development of the formulæ for differentiation with their applications to problems in rates, maxima and minima, etc.

Math. s202. Integral Calculus. Ten hours a week; five credits. Prerequisite: Mathematics 201. Mr. Fisher. 11-1 M. T. W. T. F. P. 209.

Development of formulæ for integration and their application to definite integrals, areas under curves, lengths of curves, volumes of solids, centers of gravity, centers of pressure, and moments of inertia.

Math. s343. Teaching of Mathematics. See Education s343. 10 M. T. W. T. F. P. 209.

*MODERN LANGUAGES

French

Mod. L. s101. Elementary French. Five hours a week; three credits. Mr. Ballenger. 8 M. T. W. T. F. Pe. 211.

This course is intended for students who have had little or no previous knowledge of French. It consists of reading and translations with the elements of grammar. Practices in the pronunciation and understanding of French is given by means of dictation and oral practice. Text: Olmstead's First Course in French.

Mod. L. s104. French Prose. Five hours a week; three credits. Mr. Hinkle, Mr. Ballenger. 9 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon selections from Malot, Hugo, Dumas, Daudet, and De Maupassant. Rapid reading and sight translation are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of French literature.

Mod. L. s208. Conversational French. Five hours a week; three credits. Mr. Ballenger. 11 M. T. W. T. F. Pe. 211.

This course is essentially a practice course in French Pronunciation. Much attention is given to use of idiomatic construction and to training the ear to understand the spoken language. Its aim is to acquaint the student with the ordinary usages of the language.

* Courses in this department may be taken for double credit with the consent of the teacher concerned and the approval of the Director of the Summer School.

Mod. L. s303. Scientific French. Five hours a week; three credits. Mr. Hinkle. 12 M. T. W. T. F. Pe. 212.

This is an intensive reading course in general scientific literature. A study of scientific terminology is made and attention is given to the acquisition of a scientific vocabulary.

Mod. L. s310. French Civilization. Five hours a week; three credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 212.

This course is primarily a reading course on topics dealing with the development of French civilization and literature. The reading material in the texts used is supplemented by lectures on French manners and customs. The work is conducted in such a way as to increase facility in the use of narrative French and at the same time develop an accurate concept of the nature of present-day France.

German

Mod. L. s102. Elementary German. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in German as well as those who may wish to review the elements of German grammar and pronunciation. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and understanding of German is given by means of dictation and oral practice. Text: Bacon's German Grammar.

Mod. L. s105. German Prose. Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon representative German authors. Reading and sight translations are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of German literature.

Mod. L. s304. Scientific German. Five hours a week; three credits. Mr. Hinkle. 11 M. T. W. T. F. Pe. 212.

This is a reading translation course in scientific German literature. A great deal of attention is given to the study and analysis of German scientific constructions, and a basis is laid for the development of a scientific vocabulary. Open to students who have had two years high school German or one year of college German. Text: To be selected.

Spanish

Mod. L. s103. Elementary Spanish. Five hours a week; three credits. Mr. Hinkle. 12 M. T. W. T. F. Pe. 212.

This course is intended for students who have had little or no previous training in Spanish. It consists of reading and translation with the elements of grammar. Practice in the pronunciation and the understanding of Spanish is given by means of dictations and oral practice. Text: Olmstead's *First Course in Spanish*.

Mod. L. s106. Spanish Prose. Five hours a week; three credits. Mr. Hinkle or Mr. Ballenger. 9 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon representative Spanish authors. Reading and sight translations are stressed. The class work is supplemented by lectures and reports in such a way as to give a general survey of Spanish literature.

Mod. L. s209. Conversational Spanish. Five hours a week; three credits.
Mr. Hinkle. 1 M. T. W. T. F. Pe. 212.

This course is essentially a practice course in Spanish pronunciation. Much attention is given to the use of idiomatic construction and to training the ear to understand the spoken language. Its aim is to acquaint the student with the ordinary usages of the language.

Mod. L. s215. (See Education s315.)

Mod. L. s311. Spanish Civilization. Five hours a week; three credits.
Mr. Hinkle. 9 M. T. W. T. F. Pe. 212.

This course is primarily a reading course on topics dealing with the development of Spanish civilization and culture. The reading material in the texts used is supplemented by lectures on Spanish manners and customs. The work is conducted in such a way as to increase facility in the use of narrative Spanish and at the same time develop an accurate concept of present-day Spain.

NOTE.—Students registering for this course with the intention of teaching French are advised to register also for Conversational French and French Prose or French Civilization. Students registering for this course with the intention of teaching Spanish are advised to register also for Conversational Spanish and Spanish Prose, or Spanish Civilization.

PHYSICS

Physics s110. General Physics. Four or eight credits. Five hours class work, one 2½ hours laboratory each week for four credits. Double this for eight credits. Mr. Dixon. 9 M. T. W. T. F.; 11-1 Tu. 9-11 M. T. W. T. F.; 11-1 T. T. P. & E. 212.

Since Physics has become a required subject in the high school curriculum there have not been found enough teachers who can teach it and some other science. This course has been designed especially to help supply this demand, giving a teacher a good general survey of the whole field. The course will be given by well demonstrated lectures, textbook study, and laboratory work. Emphasis will be placed on practical elements of the scientific life and activity of today and the general ideas of the nature of things as revealed by recent research. The subject matter of the course is divided into five sections. General machines and force action will be the first section, heat and weather phenomena the second, sound and the physical basis of music the third, light and color the fourth, and electricity and its applications the fifth. One may take the class work without the laboratory, but it is recommended that students register for both.

As the course also carries college credit and some may desire to take only the second half, the first lecture each day will be given to the sections of the subject numbered one to three, as indicated above, while the second lecture each day will be devoted to covering sections four and five. One afternoon laboratory will be given to each half of the subject each week.

Physics s104. Five or ten credits. Mr. Dixon. 8 M. T. W. T. F.; 2-4 M. W.; 8-10 M. T. W. T. F.; 2-4 M. T. W. T. F. P. & E. 212.

An advanced treatment of General Physics. First, second, or third terms work may be taken or any two terms taken simultaneously.

Graduate courses in physics will be given if there is sufficient demand.

Physics s411. Research.

PHYSICAL EDUCATION

NOTE.—Summer School students are very desirous of getting in Coaching Courses but find it difficult to schedule them in addition to other required subjects. The Coaching Courses of the regular term have been combined, to make it possible for students to get instruction in all the major sports if they so desire. These classes meet daily, each sport covering one half the summer term.

P. E. s112. Theory and Practice Football Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual position play, offensive and defensive team play, individual technique, team strategy, training and conditioning.

P. E. s113. Theory and Practice Basketball Coaching. Three hours theory, one hour practice; two credits. Mr. Miller. By arrangement. Gym.

This course will cover the equipment, schedule making, rules, individual technique, offensive systems, defensive systems, training and conditioning.

P. E. s114-115. Theory and Practice Track and Baseball Coaching. Five hours theory, one hour practice; three credits. Mr. Miller. By arrangement. Gym.

Track will be covered the first half of the term. The equipment, rules, individual technique, practice organization, administration of meets will be thoroughly discussed and opportunity given for practical demonstration. Baseball will be covered the last half of the term covering individual technique in all fundamentals of individual play, offensive and defensive baseball.

P. E. s117. Physical Education and Recreational Programs. Three hours theory, one hour practice; two credits. Mr. Miller and Miss Nash. By arrangement. Gym.

This course is designed to aid those teaching in smaller high schools and grades to meet the demand made of them in assisting in the physical education programs of their school. Both the formal work consisting of calisthenic drill, marching, dancing, and apparatus work and the informal work consisting of group games, sports and efficiency tests will be covered. The organization and the administration of the class work will be stressed. Mr. Miller will teach the men's section in this course and Miss Nash will teach the women's section.

POULTRY SCIENCE

Poul. s302. Poultry Nutrition. Six weeks course; three credits. Mr. Dearstyne. 8 M. T. W. T. F. R. 205.

This covers the field of poultry nutrition including poultry physiology of digestion, absorption, metabolism, elimination of waste, requirements of animal and vegetable proteins and of fats and carbohydrates; mineral requirements for the body function and body growth, vital elements, deficiency of feed stuffs, digestibility and nutritive ratio for different feeding purposes, a discussion of grains and mill by-products, animal feeds, green feeds, mineral supplements, feed stuffs that are injurious, spoiled and diseased, rations and methods of feeding laying hens, for growth, fattening, breeding stock, handling layers under artificial lights. Estimate possible production. Feeding turkeys, ducks, geese and pigeons.

Poul. s304. Poultry Diseases. Five hours a week for six weeks; three credits. Mr. Kaupp. 10 M. W. F.; 2-4 M. W. R. 205.

Three one-hour recitations and two two-hour laboratory periods a week. Medical parasitology, poultry plant problems and control. Systematic study of non-contagious and contagious diseases and practical means of control. Serotherapy, vaccination and agglutination tests as applied in poultry disease control work. Autopsies and means of recognition of disease and laboratory technique on the detection of the presence of contagious diseases.

Poul. s315. Laboratory Diagnosis. Six weeks course; three credits. Mr. Dearstyne. 10 M. T. W. T. F. R. 205.

Poultry diseases; autopsies studied in gross pathological changes produced by disease. Identification by laboratory studies of disease producing organisms affecting the domestic fowl; artificial infection for diagnostic practice, including clinical, hematological and respiratory studies. Parasitic diseases and the life cycle of intestinal and other parasites. Study of infection cycles of contagious diseases. Prophylactic principles as applied to prevention of contagious diseases in the domestic fowl.

Poul. s408. Graduate Seminar. Three credits. Mr. Dearstyne.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week; three credits. Mr. Winston. 10 M. T. W. T. F. Pu. 8.

This course offers an inductive introduction to the field of Sociology by taking up a number of social problems which are already somewhat familiar to every one. These problems confronting every community and our general citizenry. The outstanding problems to be considered are: poverty, crime, divorce, immigration, population and race problems. This course, therefore, is a natural introduction to the Sociology Courses, which deal more directly with social theory.

Soc. s103. General Sociology. Five hours a week; three credits. Mr. Winston. 9 M. T. W. T. F. Pe. 108.

Required of sophomores in Business and Agricultural Administration and of juniors in Industrial Management. Elective for others in School of Science and Business.

A general survey of the field of Sociology. The course deals first with the basic principles of sociology, then analyzes general social organization.

Soc. s301. Social Pathology. Five hours a week; three credits. Prerequisite: Soc. 103 and 6 additional term-credits in Sociology. Mr. Winston. 10 M. T. W. T. F. Pe. 108.

This course gives primary attention to the outstanding pathological problems of our social life—laying special emphasis upon poverty, relief work and other social mal-adjustments.

Soc. s302. Sociology of City Life. Five hours a week; three credits. Prerequisite: Soc. 103 and 6 additional term-credits in Sociology. Mr. Winston. 11 M. T. W. T. F. Pe. 108.

The problems arising from the growth of modern town and city life. City planning in regard to social and industrial progress.

Soc. s307. Race Relations. Five hours a week; three credits. Pre-requisite: Soc. 103 and 6 additional term-credits in Sociology. Mr. Winston. 12 M. T. W. T. F. Pe. 108.

The race problem in America and other countries. Social, economic, educational status of racial groups. Racial attitudes. A consideration of the importance of the race problem in our national life.

Soc. s311. Rural Sociology. Five hours a week; three credits. Pre-requisite: Soc. 103 and 9 additional term-credits in Sociology.

Mr. Anderson. 12 M. T. W. T. F. Pe. 108.

Required of juniors in Agricultural Administration. Elective for others.

Rise of rural problems, ideals for rural life, factors aiding or hindering social conditions, improvements.

TEXTILES

Tex. s1. Yarn Manufacture. Special course for Mill Men. Mr. Hilton. By arrangement. Textile Building.

This subject will be divided into picking, carding, and spinning. It has been designed to meet the needs of young men working in cotton mills. The course will consist of lectures and practical work on machines in order that a man may specialize on any one or all the subjects and spend his whole time in the Textile School. Lectures will be given at specified hours, and the remaining time will be spent with practical demonstration.

Tex. s2. Loom Fixing, Designing, Fabric Analysis, and Calculations. Special courses for Mill Men. Mr. Nelson, Mr. Hart. By arrangement. Textile Building.

The subjects taught will be plain, drop box and fancy loom fixing. Elementary designing will be given as well as designing for special fabrics, such as lenos. Starting up warps and fixing looms for fine and fancy fabrics will be demonstrated in connection with the operation of the looms. Lectures will be given to coordinate the theoretical with the practical. Any or all subjects may be studied. A mill man desiring to spend his whole time in the Textile School will be permitted to do so.

Tex. s102. Yarn Manufacture I. Two or four credits. Mr. Hilton. By arrangement. Textile Building.

Mixing of cotton. Openers, Pickers, Cards, Drawing Frames. Description and setting of different parts. Calculations for production, speeds, and drafts. Mechanical and electrical stop motions, and weighing of rolls.

Tex. s103. Power Weaving. Two or four credits. Mr. Nelson, Mr. Hart. By arrangement. Textile Building.

Operation of plain and gingham looms. Construction of auxiliary motions on plain looms. Cams and their construction. Automatic looms, construction and operation. Pattern chain building for gingham looms. Construction and value of pattern multipliers. Timing of drop-box motion, and other studies.

Tex. s115. Textiles for Teachers. Five hours a week; three credits. Mr. Nelson. 8 M. T. W. T. F. Textile Building.

This course is designed to give a fundamental knowledge of fabrics. It will include a study of various fabrics and their selection and adaptability to different uses. Various methods of distinguishing fabrics made from different materials such as cotton and rayon, cotton and wool, wool and silk, and other

combination of yarns will be given and analysis made of the fabrics. In addition, a general survey of the various processes through which cotton passes in its transition from the raw material to the finished product will be studied.

Tex. s201. Yarn Manufacture II. Two, four or six credits. Mr. Hilton. By arrangement. Textile Building.

Construction of silver lapper; ribbon lapper; comber; description and setting of different parts; care of machines; fly frames; builder and differential motions; roll setting; calculations for draft, twist, lay, tension, speed, and production.

Tex. s202. Dobby Weaving. Two, four or six credits. Mr. Nelson, Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving fancy patterns on doobby looms; drawing warps in harness; starting up warps in looms; construction and fixing single and double index doobby, also doobby for weaving border patterns; springs and spring boxes for harness; pattern-chain building; calculations for heddles, weight of fabrics, loom production.

Tex. s203. Fabric Design and Analysis. Two, four or six credits. Mr Hart. By arrangement. Textile Building.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Analyzing samples of fancy fabrics for design, drawing in draft, reed and chain plan. Calculating particulars to reproduce fabric from data obtained from sample.

W. & D. 402. Textile Fabrics: Their qualities and uses. Five hours a week; three credits. Mr. Nelson. By arrangement. Textile Building.

Analysis and illustrations of standard, fancy and novelty fabrics. Determination of fabric content. Construction of fabrics. Determination of quality in fabrics. Common defects in fabrics and their causes. Methods of testing fabrics for strength, elongation and durability.

ZOOLOGY

Zool. s101. General Zoology. Four recitations, eight hours laboratory; four credits. Mr. Snyder. 8 M. T. W. T.; 2-4 M. T. W. T. Z. 9.

An elementary study of animals, with special reference to the vertebrates and the more important economic groups, is given by textbook, laboratory, and field work, with supplementary lectures. This course is designed to give the student a general knowledge of the animal kingdom.

Zool. s103. Ornithology. (Bird Study). Four recitations, eight hours laboratory; four credits. Prerequisite: Zool. 101. Mr. Snyder. 9 M. T. W. T.; 2-4 M. T. W. Z. 9.

This course consists of lectures, laboratory and extensive field work, devoted to the identification and economic study of North Carolina bird life.

Zool. s400. Graduate courses will be given if requested.

APPLICATION FOR ADMISSION
TO
STATE COLLEGE SUMMER SCHOOL

Name in full-----

Home Address: P. O.-----

County -----

State-----

R. F. D.-----

Courses desired-----

Are you a high school graduate?-----; Have you attended any other college?-----

Name -----

In case of sickness notify-----

Do you expect to occupy a dormitory room?-----

Church preference -----

Date of application-----

(As soon as you decide to attend State College Summer School, please fill out above blank and mail to the Director.)