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OF
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OF THE
UNIVERSITY OF NORTH CAROLINA

STATE COLLEGE STATION

RALEIGH

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OF AGRICULTURE AND ENGINEERING

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SUMMER SESSION, 1936

In accordance with the plans that are being carried out in the consolidation of the Greater University of North Carolina, the summer sessions of the University at Chapel Hill, of the State College of Agriculture and Engineering at Raleigh, and the Woman's College at Greensboro have been united into one organization. The summer terms are conducted as an integral part of the regular college year under the guidance of the regular administrative staffs.

The work of the three divisions will be arranged according to function. Elementary Education will be the distinctive field of work at Greensboro; Agricultural, Vocational, and Technological training at State College; and Secondary Education and Graduate work the distinctive field at Chapel Hill.

There will be a single session of six weeks at all three of the institutions, with a second term of six weeks at Chapel Hill only. The work of the three institutions is being correlated and coördinated in such a way that the students and teachers of the State may be better served than hitherto.

The twenty-third Summer Session of the North Carolina State College of Agriculture and Engineering of the University of North Carolina begins Wednesday, June 10th, and closes Tuesday, July 21st.

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 students taking more than one ten-period course.

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 upon approval. In no case will a student be allowed more than twelve credits of work.

AUDITORS

Students not carrying a full load, and others who receive permission, may audit classes by paying a $5.00 fee for each class attended. This does not permit the individual to receive credit for the course, and he is not permitted to take part in class discussions or receive any individual assistance from the teacher.

ADMISSION OF WOMEN

A recent ruling of the Board of Trustees does not allow this institution to accept women students until they have completed a minimum of forty-eight semester hours at some other college. It will therefore be necessary for women students to present credentials on or before registration day indicating they have the required amount of advance standing.

DEGREES IN EDUCATION

No degrees in Education will be awarded after July, 1938, except in Agricultural Education and Industrial Arts Education. Teachers planning to receive their degrees at this institution in other fields of Education should arrange to complete their work by that time.

TEACHING CERTIFICATES

We have received the following information from the Division of Certification of the State Department of Public Instruction which will be of interest to all teachers attending summer school to raise their certificates:

"As of July 1, 1939, and thereafter, the Class A Certificate built up from a lower grade certificate will be based upon a satisfactory completion of the requirements for a degree from a standard college, along with, or in addition to, the specific certificate requirements. It is suggested that those teachers in service who may not reasonably be expected to qualify for the Class A Certificate prior to July 1, 1939, arrange their program of studies in coöperation with the institution from which they would like to obtain the degree."

FEES AND EXPENSES FOR SIX-WEEKS PERIOD

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

Room Rent (per person)	$ 7.50
Board at College Cafeteria (estimate)	30.00

College Fees

Registration Fee	$ 3.00
Course Fee (for each quarter hour of credit)	3.00

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

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

BOARD

The College maintains an excellent cafeteria where charges are reasonable. Students can purchase meal tickets at a reduced rate, so that board for the six-weeks period will be approximately $30.00.

ROOMS

Students will be assigned to rooms upon their arrival at the College. 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.

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

REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a.m. on June 10th. Students are expected to report in person on Wednesday, June 10th, so that they may begin class work on the morning of Thursday, June 11th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses. The administration reserves the right to cancel any course for which the registration is less than eight.

DIPLOMAS

Students expecting to receive a degree at the end of the summer session should come to the Office of Registration early in the session, to be sure they are meeting all the requirements for graduation.

LIBRARY FACILITIES

In addition to the resources of the D. H. Hill Library, the facilities of the Olivia Raney Library and the State Library will be available to Summer School students for reference work.

SOCIAL AND RECREATIONAL FACILITIES

A reception for students and faculty, followed by other social and recreational events, serve to foster a congenial spirit in the student body. Weekly assembly periods with varied and interesting programs; voluntary student musical organizations; a weekly open forum for the discussion of timely subjects; the social center at the Y. M. C. A.; weekly dances; and supervised recreation, consisting of swimming, tennis, baseball, volleyball, basketball, and handball, provide a wide range of recreational activities.

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, its office buildings, and its growing commercial and industrial activities. 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.

MEETING OF TEACHERS OF AGRICULTURE AND YOUNG TAR HEEL FARMERS

The annual conference of North Carolina teachers of vocational agriculture will be held June 29, 30, and July 1, 1936.

The annual meeting of Young Tar Heel Farmers will be held at N. C. State College July 2 and 3, 1936.

SPECIAL SHORT COURSES

During the summer the College offers several short courses. These courses are designed to be of practical value to people already employed in particular fields of work.

The total cost of any of these short courses, including cost of registration and room rent, will not exceed $3.00. Board is not furnished, but can be secured at the College Cafeteria.

For the summer of 1936 the North Carolina State College is offering the following short courses. Others will be offered in future summer schools whenever there are sufficient demands. These courses do not give college credit.

Short Course for Janitors and Firemen—August 3-10, 1936

The Mechanical Engineering Department of North Carolina State College, as a feature of the summer session, conducts a short course of six days for white janitors and firemen, teaching the fundamental principles

of combustion, how to fire economically, and giving general instructions about heating systems and operation of the plant. The mornings are given to lectures and talks by members of the College faculty and representatives from other State departments, and the afternoons are given over to the practical problems and to inspection trips to different schools. The 1936 school will be held the week of August 3-10. Applications for admission should be sent to Professor L. L. Vaughan, North Carolina State College, Raleigh, North Carolina.

Short Course for Waterworks Operators—July 27-31, 1936

The Chemical Engineering Department of the North Carolina State College conducts a three-day short course for waterworks operators. The chemical background of water treatment will be presented simply, definitely, and comprehensively, with the purpose of making clear to waterworks men the nature of the chemicals used and their reactions, the principles involved in the chemical treatment of water for municipal and for industrial use, and an explanation of the control processes. Each individual will be provided with a short lithoprinted book of complete lessons studied, every lesson accompanied by experimental demonstrations to make the study concrete and practical. The course is designed to present in a clear practical way the fundamental principles of chemical treatment of water so as to give a measure of understanding and assurance in the minds of waterworks men in their waterworks practice. Classes will be held from 8 a.m. to 1 p.m. and from 2 p.m. to 4:30 p.m. Application for admission should be sent to Professor E. E. Randolph, North Carolina State College, Raleigh, North Carolina.

Short Course for Gas Plant Engineers and Operators August 3-7, 1936

The Chemical Engineering Department of the North Carolina State College conducts a three-day short course for gas plant engineers and operators. The course will include a comprehensive study of the fundamental principles of the manufacture of municipal and of industrial gas, the chemical reactions and principles involved, engineering problems, and control methods, together with clear, simple, and practical study of chemical nature of commercial gases, and of associated products; maintenance of uniform quality of product, prevention of losses and operation difficulties, and the chemical background of the various phases of gas production. The course is intended to be of definite help to operating men in gasworks. The class work will be fully illustrated with practical experiments. Classes will be held from 8 a.m. to 1 p.m. and from 2 p.m. to 4:30 p.m. Application for admission should be sent to Professor E. E. Randolph, North Carolina State College, Raleigh, North Carolina.

COLLEGE PREPARATORY MATHEMATICS AND ENGLISH

There are a large number of students applying for admission who are deficient in the mathematics requirement for college entrance. This is particularly true of those students who desire to take engineering.

Tests conducted at this College for several years show conclusively that students poorly prepared in English have difficulty with all their major college studies. The College Preparatory Course in English will improve the student in the three most important aspects of English: reading, writing, and speaking.

Plane geometry is required of all freshmen for college entrance. Since many of the smaller high schools in the State do not offer this subject, it

is given here so that students may enter college without conditions. Students cannot begin their freshman mathematics without this course.

Solid geometry is an entrance requirement for all engineering freshmen. It may be taken as an extra load during the second term of the freshman year. However, securing this training during the summer will be of great assistance to the student in his freshman year.

Many students having passed high school algebra are still poorly prepared for college mathematics. This is due to the short terms in the high school, overloaded teachers, and the fact that two or more years often elapse between taking high school algebra and entering college. A review course in algebra is offered to enable the student to secure a good foundation for his college mathematics.

In an effort to avoid these difficulties and to prepare students more thoroughly for freshman work, the College is offering this special college preparatory instruction in mathematics and English during the summer session. High school students planning to enter college are advised to consider this special instruction for the following reasons:

1. Better preparation means a better college record, which is often the basis of future recommendations and employment.

2. The removal of conditions which eliminate many undesirable irregularities.

3. Gaining experience in activities on a college campus which will aid in making a better start in September.

4. Lessening the possibility of scholastic failure in college.

The cost of this instruction is very reasonable. The estimate of expenses for the six weeks is as follows:

1. Room rent	$ 7.50
2. Board in College Cafeteria (estimate)	30.00
3. Registration fee	3.00

To these items should be added the tuition charge for the courses as listed in the description of courses given below:

Eng. s50. College Preparatory English. Five hours a week. No college credit. Mr. Clark and staff. 11 M. T. W. T. F. Pu. 108. Tuition, $9.00.

A course in the fundamentals of reading, writing, and speaking. Special emphasis will be given to the needs of the individual students; conferences will be held for the purpose of directing the activities of the course.

Math. s1. Plane Geometry. Ten hours a week. No college credit. Staff. 11-1 M. T. W. T. F. P. 100. Tuition, $15.00.

The usual theorems and exercises of plane geometry, as given in the preparatory and high schools.

Math. s2. Solid Geometry. Five hours a week. No college credit. Staff. 10 M. T. W. T. F. P. 100. Tuition, $9.00.

Selected theorems and exercises, emphasizing particularly the practical aspects of the subject, such as the volumes and surfaces of prisms, pyramids, cylinders, cones, the frustums of pyramids and cones, and the sphere.

Math. s3. Elementary Algebra. Ten hours a week. No college credit. Staff. 8-10 M. T. W. T. F. P. 100. Tuition, $15.00.

The usual topics in elementary algebra, including addition, subtraction, multiplication, division, fractions, exponents and surds, graphs, and quadratic equations.

SPECIAL SUMMER INSTRUCTION IN FORESTRY

For Forestry Sophomores—June 8-July 18
For Forestry Juniors—July 20-August 29

All courses listed below will give regular college credit, although most of the instruction will be given at Camp Hofmann, Mayesville, N. C.

The regular summer school registration and credit hour fees will apply to this instruction. Living expenses while at the camp will be taken care of through the Forestry Department.

Registration in these courses is restricted to regularly enrolled students as indicated above. Any special admissions must be approved by the Forestry Department. For additional information write to Dr. J. V. Hofmann, Director of the Forestry Department.

First Session—June 8-July 18

C. E. s101. Surveying and Mapping. Three credits. Required in summer immediately following sophomore year in Forestry. Staff. Prerequisite: C. E. 206, C. E. 207, and C. E. 208.

Boundary; topographical surveys; and calculations of sections of College experimental forestry lands. Finished section maps.

Note: This work will be done from camp located on experimental land and will begin at the close of the first three weeks of the first summer school period.

For. s211. Dendrology. Three credits. Sophomore summer camp. Mr. Slocum and Mr. Miller. Prerequisite: Bot. 207.

Field study and identification of tree species found in Coastal Plain, Piedmont, and Mountain regions of North Carolina.

Second Session—July 20-August 29

For. s203. Mensuration III. Three credits. Junior summer camp. Mr. Slocum and Mr. Miller. Prerequisite: For. 201, 202.

Practical work in use of instruments, collection of data for yield, stand, and volume tables, timber survey, log scaling, stem analysis, and office computations and correlation of data collected.

For. s212. Silviculture. Three credits. Junior summer camp. Mr. Miller and Mr. Slocum. Prerequisite: For. 202, 204.

Classification of forest types. Study of growth and development of forest stands. Establishment and measurement of sample plots. Study of reproduction following different methods of cutting.

Soils s323. Soils for Forestry Students. Three credits. Forestry camp. Second term. Mr. Clevenger. Prerequisite: Soils 115.

A field course in soils dealing with those phases of soil work most applicable to forest soils. Soil mapping is included.

SPECIAL THREE WEEKS' COURSES FOR TEACHERS OF VOCATIONAL AGRICULTURE

June 9 to June 27
July 6 to July 25

In response to requests from teachers of vocational agriculture, the State College Summer session will offer two special terms of three weeks each. The first term will open Tuesday, June 9, and close Saturday, June 27. The second term will open Monday, July 6, and close Saturday, July 25.

The week of June 29 to July 4 will be reserved for the State Conference of Teachers of Vocational Agriculture and the Young Tar Heel Farmers.

Courses will be offered both in the subject matter and professional fields, and will be arranged and scheduled as far as possible to meet the needs and convenience of the teachers.

Unless otherwise specified, these courses will be offered the first three weeks and repeated the second three weeks, provided enrollments are sufficient to warrant.

Most of the courses will carry one and one-half term credits. Three courses with a total of four and one-half term credits would be the normal load for a three weeks' period. In order to secure six semester or nine term credits, required for the renewal of certificates after July 1, 1937, it would be necessary to take two of the three weeks' periods, or one six weeks' session. The present plan provides for a program for the summer of 1937 similar to the one offered in 1936, and thereafter according to the needs of those interested.

The expenses for each three weeks' term will be as follows:

Registration fee	$ 1.50
For each term credit scheduled	3.00
Room rent (each student—two in a room)	4.00
Board (estimate of cafeteria cost)	15.00

Agr. Econ. s250. National Economic Problems Affecting Agriculture. One and one-half credits. Prerequisites: Econ. 102 and Agr. Econ. 260. Mr. Forster.

The discussion of the various farm relief programs which have been proposed to adjust or control production, assist in the marketing of farm products, and supply farmers with various kinds of credit.

Agr. Econ. s251. Marketing Methods and Problems. One and one-half credits. Prerequisites: Econ. 102 and Agr. Econ. 260. Mr. Forster.

Study of the problems and methods used in marketing farm products, with special reference to local and State coöperation in the selling of farm products and buying of farm supplies.

Agr. Econ. s252. Agricultural Finance. One and one-half credits. Prerequisites: Econ. 102 and Agr. Econ. 260. Mr. Forster.

A study of the methods used in financing the production and marketing of agricultural products. Consideration will be given to the recent developments in the supplying of mortgage, intermediate, production, and personal credit to farmers.

Agr. Eng. s217. Teaching Farm Shop Work. One and one-half credits. Both terms. Mr. Giles.

This course is designed for men teaching vocational agriculture in the high schools of this State. Methods of presenting the subject matter, as well as fundamental tool processes in woodworking, forging, soldering, pipe-fitting, and harness repair are studied. Laboratory work will be devoted to the construction of devices and appliances and to repair jobs designed to give proficiency in fundamental tool processes.

Agr. Eng. s370. Rural Electrification. One and one-half credits. Second term only. Mr. Jones. Mr. Giles.

A study of the problems involved in the distribution, uses, and costs of electricity on the farm.

A. H. s225. Animal Health. One and one-half credits. Mr. Grinnells.

A study of the structure and functions of the different systems of the animal body, paying attention to their relation to feeding, breeding, and management.

The definition, occurrence, etiology, natural infection, and economic importance of infectious diseases.

A study of hygiene, sanitation, and disease prevention.

A. H. s226. Feeds and Feeding. One and one-half credits. Mr. Ruffner.

To give information regarding the properties and value of practically all feeding stuffs and livestock feed formulas used in North Carolina. Special emphasis is placed on how the man with a few animals may produce or buy feed advantageously.

A. H. s227. Animal Breeding. One and one-half credits. Mr. Ruffner.

A study of the history and accumulated knowledge of type, characteristics, properties, and adaptability of the various types of animals to local conditions, followed by a study of selecting and mating animals by utilization of breeding data accumulated by the several purebred livestock clubs, associations, and breeders.

A. H. s228. Swine Production. One and one-half credits. Mr. Hostetler.

A study of the present swine situation and its relation to North Carolina. Most of the time will be devoted to lectures and reference material on the breeds, utilization of feeds, grazing crops, and sanitation. However, a few laboratory periods will be used to demonstrate the fundamentals of judging and application of feeding and management.

A. H. s229. Beef Cattle Production. One and one-half credits. Mr. Hostetler.

A study of the early history of beef cattle and the present trend in the industry. The text will be supplemented with lectures concerning the adaptation and treatment of beef cattle in the different sections of North Carolina. Application of feeding, management, and judging will be stressed during the time allocated for laboratory.

Educ. s361a. Trends in Teaching Vocational Agriculture. One and one-half credits. Staff.

Newer methods of instruction, including the planning of units and the problem of the out-of-school farm youth.

Educ. s361b. Trends in Teaching Vocational Agriculture. One and one-half credits. Staff.

Adapting evening class instruction to new conditions with respect both to content and method, programs and procedures essential in realizing the objectives of F. F. A.

Educ. s362a. Course of Study Problems. One and one-half credits. Staff.

Selection and organization of subject matter in the light of changing conditions in agriculture and in education.

Educ. s362b. Courses of Study Problems. One and one-half credits. Staff.

Improvements in supervised practice, including a study of educational values, records, and their use in all-day instruction, planning, and supervision.

Educ. s363a. Guidance and Individualized Instruction. One and one-half credits. Staff.

An evaluation of the different plans for individualizing instruction in agriculture, adapting instruction to the needs of boys having different educational and vocational objectives.

Educ. s363b. Guidance and Individualized Instruction. One and one-half credits. Staff.

Orientation of pupils entering vocational agriculture, occupational adjustment in farming and related fields, and procedures in counseling vocational pupils.

F. C. s205. Legumes and Grasses. First three-week period. Prerequisite: F. C. 101 or equivalent. One and one-half credits. Mr. Darst.

Advanced study of legumes and grasses as to their adaptation and uses. Emphasis is placed on their use in pastures and meadows and for soil conservation.

F. C. s330. Seed Judging. First three-week period. Prerequisite: F. C. 101 or equivalent. One and one-half credits. Mr. Darst.

Advanced study of quality in crops seeds and of standards of seed certification.

F. C. s334. Taxonomy of Field Crops. Second three-week period. Prerequisite: F. C. 101 or equivalent. One and one-half credits. Mr. Darst.

A study of the origin, botanical and agronomic classification, identification, and adaptation of commercially important crops and their varieties.

F. C. s330. Seed Judging. Second three-week period. Prerequisite: F. C. 101 or equivalent. One and one-half credits.

Hort. s207. Principles of Fruit Growing. One and one-half credits. Mr. Gardner.

A short course designed to give the student an understanding of the principles involved in the care and management of tree fruits. Attention will be given to nursery grades, sites, planting systems, planting, fertilization, pruning, spraying, varieties, bearing habits, and pollination problems.

Hort. s229. Home Floriculture. One and one-half credits. Mr. Randall.

A course designed to provide a practical knowledge of the principles and methods of propagating and growing garden flowers and potted plants for the home.

Hort. s213. Vegetable Gardening. One and one-half credits. Mr. Randall.

A course designed to provide a practical knowledge of the principles and methods of growing vegetables for home use and for local market.

L. A. s203. Plant Materials. One credit. Mr. Pillsbury.

Ornamental plants, their characteristics of use in planting design for home, school, and church grounds, and farmstead landscapes.

L. A. s204a. Landscape Gardening. Two credits. Mr. Pillsbury.

Land planning and planting design as applied in the improvement of home, school, church, community grounds, and farmstead groups. Fundamental principles and study of examples of this application to domestic and rural landscapes.

***L. A. s204b. Landscape Gardening.** One credit. Drafting-room work only. Mr. Pillsbury.

Practice in making measured surveys, mapping, and designing improvements in plan, and planting.

Poul. s310. Poultry Diseases. One and one-half credits. Mr. Dearstyne and Mr. Gauger.

An intensive course in the fundamentals of disease prevention; poultry sanitation; common diseases; autopsy methods; actual autopsy work as far as clinical material will allow.

Poul. s311. Poultry Nutrition and Poultry Judging. One and one-half credits. Mr. Williams and Mr. Dearstyne.

An intensive course in the fundamentals of poultry nutrition. Standard and utility judging of popular breeds of poultry. Lecture and laboratory practice in judging.

Soils s315. Soils of North Carolina. One and one-half credits. Mr. Lutz.

The identification, crop adaptation, productivity, fertilizer needs, and other characteristics of North Carolina soil types.

Soils s317. Soil Conservation and Land Use. One and one-half credits. Mr Lutz.

A course dealing with the factors affecting erosion and the methods of erosion control, including a soil conservation and land-use program for North Carolina.

Zool. s217. Insect Pests. One and one-half credits. Staff.

A brief course describing principal injurious insects and methods for their control.

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*Not given 1936, given 1937.

COURSES TO BE OFFERED IN THE SUMMER SESSION

ABBREVIATIONS FOR BUILDINGS

C.—Ceramic
G.—Gymnasium
H.—Holladay
P.—Page.
P. & E.—Physics and Electrical Engineering Building
Pe.—Peele Hall
Pk.—Polk Hall
Pr.—Primrose
Pt.—Patterson
R.—Ricks
T.—Textile
Pu.—Pullen Hall
W.—Winston
Z.—Zoology Building

*The courses appearing hereafter with numbers 100, 200, and the 300 courses, which are starred, may be taken for undergraduate credit only.

AGRICULTURAL ECONOMICS

Agr. Econ. s260. Agricultural Economics. Five hours a week. Three credits. Mr. Forster. 10 M. T. W. T. F. R. 207.

A study of the economics of agricultural production; marketing of farm products; farm credit; land tenure and social economic conditions of the farmer.

Rur. Soc. s302. Rural Sociology. Five hours a week. Three credits. Mr. Hamilton. 11 M. T. W. T. F. R. 207. Prerequisite: Soc. 103 or Econ. 103.

The culture, social organization, and social problems of rural people, with special reference to Southern rural life and proposed programs of development.

AGRICULTURAL ENGINEERING

Agr. Eng. s130. Farm Equipment. Three credits. Mr. Giles. By arrangement. Pt. 4.

A study of modern mechanical equipment for the farm.

Agr. Eng. s135. Terracing and Drainage. Three credits. Mr. Giles. By arrangement. Pt. 4.

A study of the different methods of disposing of surplus water and the prevention of erosion.

ANIMAL HUSBANDRY AND DAIRYING

A. H. s102. Animal Nutrition I. Three credits. Mr. Ruffner. By arrangement.

A study of animal nutrition; physiology of digestion; nutrients; feeding standards; economical and balanced rations. Practical work given.

A. H. s103. Dairying. Three credits. Mr. Haig. By arrangement.

The secretion, composition and properties of milk are studied, with factors influencing quality and quantity of milk and cream. The use of the Babcock tests, butter making on the farm, and operation of cream separators constitute the laboratory work.

A. H. s201. Swine Production. Three credits. Mr. Hostetler. By arrangement.

A study of adaptability of swine, with emphasis on feeding, judging, and management.

A. H. s202. Animal Breeding. Three credits. Mr. Ruffner. By arrangement.

A study of breeding and improvement of our animals; a first-hand study of successful breeding establishments and their problems.

Courses for Graduates Only

A. H. s402. Research Studies in Animal Husbandry. Three credits. Prerequisite: Eighteen credits in A. H. Staff. By arrangement.

An intensive study of experimental data.

BOTANY

Bot. s101. General Botany. Five recitations, four hours laboratory. Four credits. Mr. Shunk. 8 M. T. W. T. F., 2-4 M. W. Pt. 38.

Nature of the higher plant. A course presenting the fundamentals of the structure and function of the typical flowering plant.

Bot. s102. General Botany. Four credits. Mr. Shunk. 9 M. T. W. T. F., 2-4 T. Th. Pt. 38.

Survey of the plant groups. An introduction to the various major kinds of plants through the study of the life histories of types.

Bot. s203. General Bacteriology. Five recitations, four hours laboratory. Four credits. Mr. Shunk. Prerequisite: Botany 102 or equivalent. 11 M. T. W. T. F., 2-4 T. Th. Pt. 38.

An introduction to the principles of bacteriology. Laboratory work on modern cultural methods of handling and studying bacteria.

Courses for Graduates Only

Botany s401. Pathology of Special Crops. Three credits. Prerequisite: Bot. 201 or 203, 301. Mr. Lehman or Mr. Poole. By arrangement.

A comprehensive study of the etiology, symptoms, and control of specific diseases.

Botany s402. Bacteriology: Special Studies. Three credits. Prerequisite: Bot. 203, 302. Mr. Shunk. By arrangement.

Special work on restricted groups of bacteria, such as nitrogen bacteria of the soil, milk organisms, and special groups of bacteria in water.

Botany s406. Research in Botany. Three credits. By arrangement. Prerequisite: 30 hours 100-300 courses in Botany.

CHEMISTRY

Chem. s101. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Jordan. 8 M. T. W. T. F.; 1-5 T. 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. s103. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Jordan. 10 M. T. W. T. F.; 1-5 Th. W. 102.

Particular attention given to chlorine, sodium, nitrogen, sulphur, fluorine, 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; sulphur 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. s105. General Chemistry. Five hours in classroom and four hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Jordan. 11 M. T. W. T. F. Laboratory 1-5 T. 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 phosphorus, 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. s211. Qualitative Analysis. Two hours lecture, with four laboratory periods of three hours each per week. Equivalent to one term of college work. Five hours credit. Prerequisite: General Chemistry. Mr. Williams. 10 T. Th.; laboratory to be arranged. W. 217.

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. s212. Quantitative Analysis, A. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Five hours credit. Prerequisite: Qualitative Analysis. Mr. Williams. Arrange. W. 217.

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. s213 (214). Quantitative Analysis. Five credits. Mr. Williams. Required of sophomores in Chemical Engineering and those majoring in Chemistry. Prerequisite: Chem. 211. By arrangement. W. 217.

A continuation of Chem. 212. Substances of more difficult nature are analyzed—minerals, steel, alloys, limestone, Paris green, etc.

Chem. s241. Introduction to Organic Chemistry. Four hours class and five hours laboratory. Four credits. Staff. Prerequisite: Chem. 101, 103, 105. 8 M. T. W. T., 2-4:30 M. W.

Hydrocarbons, alcohols, aldehydes, ketones, acids, ethers, esters, amino acids, and benzene derivatives; carbohydrates, fats, proteins, and related compounds; vitamins, enzymes, hormones, flavors.

Chem. s321. Organic Chemistry. Four hours class and five hours laboratory for each four hours credit. Hours by arrangement. Staff. (This course has a total of 12 credits and continues through the regular college year.) Prerequisite: Chem. 101, 103, 105.

Aliphatic and aromatic compounds; practical applications; methods of preparation and purification of compounds.

Chem. s340. Food Products and Adulterants. Five hours a week. Three credits. Prerequisite: Chem. 101, 103, 105, and 241. Staff. 9 M. T. W. T. F.

Food principles, cereals, starches, sugars, fats, milk and milk products, the packing house, food preservation, beverages, spices and condiments; food legislation.

†Chem. s341. Vitamins. Five hours a week. Three credits. Prerequisite: Chem. 241 or 321. Staff. 12 M. T. W. T. F.

Application of vitamin hypothesis to animal nutrition; history, nomenclature, properties, distribution, effects of deficiencies, and vitamin values.

Chem. s344. Food and Nutrition. Five hours a week. Three credits. Prerequisite: Chem. 241 or 321. Staff. 10 M. T. W. T. F.

Carbohydrates, fats, proteins, amino acids, minerals, fiber, vitamins, and enzymes; nutritive value of food materials; digestion, food idiosyncrasy; acidosis and alkalosis.

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week. Three credits. Mr. Leager. 8 M. T. W. T. F. Pe. 108.

This course is designed for those students who do not feel able to devote more than one term to the study of economics.

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. s103a. General Economics. Five hours a week. Three credits. Mr. McNatt. 8 M. T. W. T. F. Pe. 206.

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.

† Not offered in 1936.

Econ. s103b. General Economics. Five hours a week. Three credits. Mr. McNatt. 9 M. T. W. T. F. Pe. 206.

This is the second term of the regular college course in General Economics.

Econ. s103c. General Economics. Five hours a week. Three credits. Mr. McNatt. 11 M. T. W. T. F. Pe. 206.

This is the third term of the regular college course in General Economics.

Econ. s112. Accounting for Engineers. Five hours a week. Three credits. Mr. Leager. 10 M. T. W. T. F. Pe. 108.

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.

Econ. s210. Business Organization. Five hours a week. Three credits. Prerequisite: Econ. 102 or 103. Mr. Moen. 8 M. T. W. T. F. Pe. 109.

Forms of business enterprise, single enterprise, 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. 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. s217. Advertising. Five hours a week. Three credits. Mr. Moen. 7 M. T. W. T. F. Pe. 109.

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

Econ. s330. Principles of Insurance. Five hours a week. Three credits. Prerequisite: Econ. 103 or equivalent. Mr. Leager. 11 M. T. W. T. F. Pe. 108.

Risk as an element of all agricultural and industrial activity. Such risks as can be covered by insurance are discussed, with the appropriate form of insurance, e. g., employer's liability, workmen's compensation, fire, life, and other forms.

EDUCATION

Courses for Undergraduates

Ed. s203b. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 5.

This part of educational psychology is concerned with the physical and mental development of high school boys and girls. Social development; character development; emotional development and control; religious and moral development; and mental hygiene are topics given special consideration.

***Ed. s303. Extra-Curricular Activities in the Secondary School.** Five hours a week. Three credits. Prerequisite: Junior standing or teaching experience. Mr. Showalter. 12 M. T. W. T. F. Pe. 208.

The home room; pupil participation in government, the assembly; clubs; publications; recreational activities; athletics; honor societies; social organizations; financial support.

Ed. s307. Methods of Teaching Agriculture. Three credits. Messrs. Cook and Armstrong. 8 M. T. W. T. F. Required of students in Agricultural Education. Prerequisites: Ed. 203, 208, or equivalents, and at least twelve credits in Agriculture.

Organization of subject matter; teaching techniques; supervised practice; textbooks and reference material; Future Farmers of America; room arrangement and equipment.

VOCATIONAL GUIDANCE.—Guidance is recognized as a part of the work of each teacher in the school. Pupils of all ages require assistance in the growth and progress through their school problems. Each stage of school development as elementary, junior high, senior high, and college, requires special attention which the individual teacher may render. In addition to the work done in the classroom, there is that of the school counselor and director of the work whose duty it is to provide materials and programs of work, together with the care of such special cases as require specific aid.

Vocational Guidance, Ed. s320, is a beginning course for advanced undergraduates and graduates, also for teachers in service who wish to help in guidance activities. Occupational Counseling, Ed. s412, is a graduate course for those who have had Ed. s320 and some experience in teaching, and those who have had a wider experience in school and industry. Closely correlated with these courses are those in psychology, sociology, economics, and testing.

Ed. s320. Vocational Guidance. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 8 M. T. W. T. F. H. 16.

The course in Vocational Guidance is intended to give emphasis to the place of guidance in the school program. It will treat of the development of educational and vocational guidance, its relation to personnel work, principles and practices of guidance and employment, child legislation, and forms and records for school use.

Ed. s321. Vocational Education. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Twelve credits in Education. 11 M. T. W. T. F. H. 16.

This course, dealing with the problems of vocational education, is intended to give acquaintance with its underlying philosophy, its place in our education, the laws governing it, and the prevailing practices and administration. It is of particular interest to administrators and teachers who have or expect to have to do with the direction of educational work in agriculture, homemaking, industry, and commerce. It deals with all-day, evening, part-time, and general continuation class work.

***Ed. s330. Visual Instruction.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 11 M. T. W. T. F. Pe. 201.

An advanced course in the psychology, methods, and technique of visual instruction; its place and limits, evaluation and expense of various aids, aids available. Practice in the making and use of practical visual aids.

***Ed. s331. Visual Aids in Social Sciences.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Armstrong. 8 M. T. W. T. F. Pe. 201.

A detailed study of visual materials, devices, and procedures applicable to teaching the social sciences, including geography. Emphasis will be given to motivation, facilitating the learning process, and fixation. Various devices will be used by the class.

***Ed. s336. Problems in Secondary Education.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Showalter. 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 or are now serving as high school principals in North Carolina. The following problems will be discussed:

Aims of secondary education; the curriculum (with special reference to the North Carolina course of study) standards for high schools; classification of pupils; control of pupils; attendance; guidance of pupils; classroom standards; tests and examinations; marking system; directed study; class schedule making; duties of principals; supervision of instruction; selection of teachers; teaching load; salaries; textbooks, lectures, readings, and reports.

***Ed. s345. Curriculum Materials in Physical Science.** Five hours a week. Three credits. Elective. Mr. Showalter. 10 M. T. W. T. F. Pe. 211.

Survey of physical science with emphasis on recent developments and the generalizations that influence beliefs and attitudes.

INDUSTRIAL ARTS.—The summer session will emphasize the preparation of teachers, supervisors, and principals for teaching and directing industrial arts in the various communities of North Carolina. The rapid growth of industrial education in our State is creating a demand for a competent personnel for making this work a definite functioning element in education rather than a type of "busy work," as is so often likely to be the case. Courses will be offered in subject matter, methods of teaching, administration, shop practice, and drawing.

Industrial arts depends largely upon the soundness of the philosophy underlying its introduction into the field of education. For this reason professionally minded teachers and administrators will welcome courses giving them a better basis for their classroom activity.

Principals, supervisors, and teachers are needed to introduce and develop the various phases of industrial education in our junior and senior high schools, part-time and continuation schools, and evening schools. The demand is for those who are familiar with both general and vocational education and at the same time capable of placing the proper emphasis upon the more practical phases of education. Supporting courses are offered in the Engineering and Textile Schools.

The underlying purpose of the courses offered in this field is to acquaint those who are responsible for developing the possibilities of industrial arts and other shop activity in our school system with prevalent practices and to give helpful aids in program construction. The possibilities of creating interest and motivating school subjects are often lost sight of because of the lack of knowing how to utilize the everyday things about us.

For those who are interested in administrating and teaching industrial arts, the following courses will be offered: The Theory of Industrial Arts, Practical Arts Problems, the Development of Vocational Education, and Problems of the General Shop versus Problems of the Unit Shop, all of which are correlated with courses in mechanical drawing, woodwork, metal work, electrical work, textiles, and auto-mechanics. These courses will be taught by instructors of wide experience helpful to teachers of general shop and unit courses.

We have teachers of academic subjects who have had fine experience in working with tools. These teachers, with the aid of summer session classes in the Department of Industrial Arts, could readily prepare themselves to meet the requirements for teaching shop and drawing classes.

Credit for these courses may be used for college credit, raising certificates, or renewing certificates. Teachers desiring to raise or renew their certificates will take the first two courses in the list following, and one course selected from the remainder of the list.

Ed. s353. The Theory of Industrial Arts. Five hours a week. Three credits.

†Ed. s354. Practical Arts Problems. Ten hours a week. Three credits.

Tex. s115. Textiles for Teachers. Four hours a week. Two credits.

Ed. s203b. Educational Psychology. Five hours a week. Three credits.

Ed. s320. Vocational Guidance. Five hours a week. Three credits.

Ed. s321. Vocational Education. Five hours a week. Three credits.

***Ed. s381. Guidance and Discipline of Students.** Five hours a week. Three credits.

Note: The above courses are described elsewhere in this bulletin. Attention is also called to the courses listed under Engineering which are especially designed for teachers of Industrial Arts and Trades and Industries.

†A fee of $1.00 will be charged those taking Ed. s354 to pay for the materials used.

Ed. s352. Theory of Industrial Arts. Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Miss Bell. 11 M. T. W. T. F. H. 15.

A study of the value and place of Industrial Arts in the public school. A study of the industries will be made with the idea of making suitable selection of projects to correlate with other school subjects and to aid in the development of methods and directions for activity work in the early grades. Intended for teachers, supervisors, and principals. Emphasis will be placed upon the use of the Industrial Arts to motivate and sustain effort in the learning process.

Ed. s354. Practical Arts Problems. Five or ten hours a week. One and one-half credits or three credits. Prerequisite: Twelve credits in Education or the consent of the instructor. Miss Bell. 9-11 M. T. W. T. F. H. 15.

Intended for the classroom teacher and supervisor for acquaintance with materials and how to use them. Instruction will be given in the making of posters, block printing, stenciling, work with plastics as clay and plasterine, making of baskets from reeds, raffia, and other materials, paper and cardboard instruction, and in the use of such other materials as are suited to the work in hand. It will be of aid to administrators in the development of the activity program.

Ed. s357. The Problems of the General and Unit Shops. Five hours a week. Three credits. Mr. Boshart. 9 M. T. W. T. F.

Intended for those who are teaching or expect to teach shop work and drawing. Its purpose is to acquaint students with the possibilities of the general shop as compared with those of the unit shop and to aid in setting up procedures for each type of shop under conditions where they can best function. Those taking this course should take parallel courses in shop instruction, unless they have had considerable experience. Problems of organization, equipment, instruction sheets and their uses, and courses of study will be considered.

Ed. s360. Special Problems in Teaching Agriculture. Five hours a week. Three credits. Prerequisite: Twelve credits in Education, including Methods of Teaching Agriculture. Messrs. Cook and Armstrong. 10 M. T. W. T. F. Pe. 201.

This course will consider special problems in agricultural teaching and the preparation of teaching plans, involving the use of survey information. Each student will prepare a program of work for a specified community.

***Ed. s381. Guidance and Discipline of Students.** Five hours a week. Three credits. Prerequisite: Twelve credits in Education. Mr. Cook. 9 M. T. W. T. F. Pe. 201.

A study of the needs for moral guidance and discipline; the responsibility of school teachers and administrators for the moral and civic conduct of their students; the nature of the problem, recent development, difficulties, agencies responsible; materials and procedures.

Ed. s412. Occupational Counseling. Five hours a week. Three credits. Mr. Boshart. Prerequisite: Ed. 320, 332 or equivalent. 12 M. T. W. T. F. H. 16.

This course is intended for teachers of experience and those interested in the problems of guidance in school and life. Attention is given to

group and individual counseling as it may be applied to the junior and senior high schools, colleges, or placement offices, and to the procedures of conducting interviews and conferences. Information concerning occupational material will be organized, evaluated, and applied to type cases. The relation to personnel work will be considered as the functions of school and industry are studied.

Ed. s416. Problems in Agricultural Teaching. Five hours a week. Three credits. Prerequisite: Ed. 203, 307, and at least twelve other credits in Education and Agriculture. Experience in agricultural teaching will be accepted in lieu of Ed. 307. Mr. Cook. By arrangement. Pe. 201.

Investigations, reports, and a critical evaluation of present practices with constructive remedies. The content of the course will depend on the interests and needs of the individual members of the class.

Ed. s420. Agricultural Education Seminar. One credit. Mr. Cook, Mr. Armstrong. By arrangement. Prerequisite: Eighteen credits in Education.

A critical review of current articles and books of interest to students of agricultural education.

Ed. s421. Research in Special Fields of Education. Staff.

ENGINEERING

A. E. s107. Pencil Sketching. Five hours per week. Three credits. Mr. Paulson. 9 M. T. W. Th. F. A. E. 307.

Quick sketching of objects as seen and imagined in perspective. Elementary principles of perspective, especially as an aid to visualization.

A. E. s113. Fine Arts for Teachers. Eight hours per week. Three credits. Mr. Paulson. 11 M. T. W. Th. F., 12 M. W. F. A. E. 307.

Black and white, and color drawing adapted to grade school use. Lettering, illustrating, poster making, etc.

A. E. s214. Art Appreciation for Teachers. Five hours per week. Three credits. Mr. Paulson. 8 M. T. W. Th. F. A. E. 307.

Picture study of the list suggested by the State Board of Education for grade school use, including paintings, architecture, and sculpture.

C. E. s102. Surveying I. Three credits. Staff. Two sections: one section will run for three weeks, six days a week; the second section will run for six weeks, afternoons only. C. E. Building and field.

The use, care, and adjustment of surveying instruments; elementary land surveying, traverse lines, leveling, stadia measurements, topographical surveying, plane table surveying; office work in connection with field surveying.

C. E. s220. Advanced Surveying. Three credits. Staff. Required in the summer immediately following the sophomore year in Civil Engineering. Prerequisite: C. E. 206 and 207.

Plane table practice, special problems in surveying practice; triangulation, railroad and highway spirals; hydrographic surveying with sextant;

plane table problems; the use and rating of current meters; measurement of stream flow; drainage problems. Laying out proposed construction work. Topography, details, special problems.

C. E. s200. Mechanics. Six or twelve hours a week. Three or six credits Mr. ..... Required of Engineering juniors. Prerequisite: Math. 203. P. 102.

Either the first, second, third, or a combination of two, or all three terms may be taken. First term covers statics, concurrent, non-concurrent and parallel forces, friction, centroids, and moment of inertia. Second term covers kinetics, rectilinear and curvilinear, motion and rotation. Third term covers work, power, and energy.

E. E. s101. Electrical Engineering Fundamentals. Twelve hours a week. Six credits. Mr. Fouraker.

This course covers the second and the third terms of the introductory course in Electrical Engineering. Electrical engineering problems, fundamental laws of electric, magnetic, and dielectric circuits.

M. E. s102. Engineering Drawing. Twelve or twenty-four hours a week. Three or six credits. Required of Engineering freshmen. Mr. Briggs. 8-10 or 8-12 M. T. W. T. F. S. 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. Twelve hours a week. Three credits. Mr. Briggs. 8-10 or 10-12 M. T. W. T. F. S. P. 106.

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

M. E. s105. Woodworking. Eight or twelve hours a week. Two or three credits. Required of sophomores in Engineering. Mr. Wheeler.

Deals with elementary joinery, finishing, theory of dry-kilning, wood turning. Lectures, demonstrations, and practice in hand work and machine methods. Typical patterns and core boxes are constructed, such as solid, split, and loose-piece patterns; mounting of patterns on boards and their preparation for use in the foundry.

M. E. s107. Foundry. Eight or twelve hours a week. Two or three credits. Required of sophomores in Engineering. Mr. Wheeler.

Lectures, demonstrations, and practice in molding and core making, furnace operations, melting and casting of ferrous and non-ferrous metals and their alloys. Instruction and practice in the production and malleable castings, and heat treatment of castings.

M. E. s108. Forge. Eight or twelve hours a week. Two or three credits. Required of sophomores in Engineering. Mr. Wheeler.

A study of the principles and practices as applied to the forging of wrought iron and steel. Lectures, demonstrations, and practice in forge welding. Tool making and heat treatment.

M. E. s109. Metallurgy. Four, eight, or twelve hours a week. Two, four, or six credits. Required of sophomores in Mechanical Engineering. Prerequisite: Chem. 101. Mr. ..... P. 102.

Study of ferrous metals and their alloys; mining, smelting, refining, shaping, and heat-treating.

M. E. s110. Mechanical Drawing. Eight or sixteen hours a week. Two or four credits. Mr. Briggs. P. 106.

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

SHOP AND DRAWING COURSES FOR INDUSTRIAL ARTS TEACHERS

E. E. s250. Electrical Shop. Ten hours a week. Three credits. Mr. Keever. 10-12 M. T. W. Th. F. E. E. 303.

Intended for those preparing to teach problems in elementary electricity in junior and senior high school shops. Deals with suitable projects for illustrating the various phases of electrical activity for the general industrial arts shop correlating with general science and physics.

M. E. s210. Mechanical Drawing for Teachers. Ten hours a week. Three credits. Mr. Briggs. 8-10 or 10-12 M. T. W. Th. F. P. 106.

Intended for those teaching or preparing to teach mechanical drawing and shop practice. Consists of lectures and drawing-room practices involving problems for the junior and senior high school mechanical drawing. The elements of lettering, instrument practice, projections, intersections, developments, tracing, blue-printing, and methods of instruction will be considered. (For advanced work in drawing see Architectural and Mechanical Engineering.)

M. E. s220. Metal Work. Ten hours a week. Three credits. Mr. Ferguson. 2-4 M. T. W. Th. F. Shops.

Intended for teachers and prospective teachers of sheet metal in junior and senior high schools. Consideration will be given to courses of study, shop layouts, equipment, and the fundamentals of working with sheet metals, as iron, tin, copper, brass, and pewter. Projects involving soldering, raising, chasing, seaming, etching, and coloring will be used.

M. E. s230. Art Metal Crafts. Ten hours a week. Three credits. Mr. Knight. 2-4 M. T. W. Th. F. Shops.

A course dealing with decorative metal working and involving problems suitable for art classes in high school and college. Deals with designing and transferring of design to metals and working various metals, as copper, brass, pewter, aluminum, and silver. Projects involving cutting, filing, hard and soft soldering, riveting, etching, raising by hammering, spinning, and coloring will be used. Articles will include paper knives, trays, bowls, and simple jewelry.

M. E. s240. Auto Mechanics. Ten hours a week. Three credits. Mr. Bridges. 2-4 M. T. W. Th. F. Shops.

Intended for teachers and prospective teachers of auto mechanics where they may obtain acquaintance and experience in dealing with instruction

units for junior and senior high schools. Consideration will be given to the organization of teaching material, shop layout, shop management, selection of tool equipment, and tool-room operation.

M. E. s250. Woodworking for Teachers. Ten hours a week. Three credits. Mr. Rowland. 2-4 M. T. W. Th. F. Shops.

Stresses practical methods for teaching woodwork in general and in unit shops on the Industrial Arts basis. Problems considered are to be used chiefly for grades seven, eight, and nine, or older pupils when beginning. Deals primarily with hand tools, common woods, and elementary finishes.

M. E. s350. Woodworking for Teachers (Advanced). Ten hours a week. Three credits. Prerequisite or its equivalent and consent of the instructor. Mr. Rowland. By arrangement. Shops.

Emphasis is placed on educationally significant projects adapted to older students where the use and care of both hand and machine tools is an important factor. Opportunity for practice in grinding edged tools, filing and setting of saws, the maintenance of other tools, and the organization and management of tool rooms and supplies.

ENGLISH

Eng. s101. Composition. Five hours a week. Three credits. Mr. Hartley. 11 M. T. W. T. F. Pu. 103.

Illustrative readings; exercises in types of composition; collateral reading. Conferences.

Eng. s202. Advanced English Grammar. Five hours a week. Three credits. Mr. Clark. 9 M. T. W. T. F. Pu. 108.

For teachers of English in high schools or in the grades, and for journalists and other creative writers. The science of grammar and the art of its application. The history of forms, inflections, and idioms where helpful in understanding present usage.

Eng. s227. The Development of the Drama. Five hours a week. Three credits. Mr. Hartley. 9 M. T. W. T. F. Pu. 103.

Origin, progress, and influence; plot, characterization, and interpretation of certain readings.

Eng. s236. Victorian Poetry. Five hours a week. Three credits. Mr. Hartley. 8 M. T. W. T. F. Pu. 103.

Principal poets of the Victorian era; emphasis on Tennyson and Browning.

***Eng. s330. Shakespeare.** Five hours a week. Three credits. Mr. Clark. Prerequisite: Eng. 101 and three additional credits in English. 10 M. T. W. T. F. Pu. 108.

An analysis of principal plays. Report on parallel readings.

***Eng. s332. The Romantic Movement.** Five hours a week. Three credits. Mr. Clark. Prerequisite: English 101 and three additional credits ing English. 12 M. T. W. T. F. Pu. 108.

Representative poems of Gray, Blake, Burns, Wordsworth, Coleridge, Scott, Southey, Byron, Shelley, and Keats.

F. C. 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 offers an intensive course in the grading and stapling of cotton.

The course will consist of lectures and daily practice in grading and stapling cotton samples according to the "Universal Cotton Standards."

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 cotton.

All the instruction in classing will be done by men holding a Federal Cotton Classing license.

The Cotton Classing course is designed for a special group, and does not carry collegiate credit. There is a flat charge of $27.50 for the whole course in Cotton Classing. Persons registered for 50 per cent or less of the course will be charged $15.00. All fees are to be paid on or before registration.

A Cotton Classing certificate will be issued by the College to those satisfactorily completing the six weeks course.

The school has been serving the State and neighboring states for fourteen years. The school has international recognition, as men from the following countries have taken the course: South America, India, China, South Africa, Belgium, and Germany.

Persons expecting to attend this course should notify Dr. J. B. Cotner, State College Station, Raleigh, N. C.

F. C. s206. Seed Certification Problems. Five hours a week. Three credits. Mr. Darst. Prerequisite: F. C. 101. Arranged. Pt. 26.

A study of standards for quality in field crops for certification.

F. C. 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.

F. C. s225. Cotton Classing II. Three or six credits. Mr. Cotner. 9-11 or 11-1.

Required of sophomores in Textile Manufacturing, Chemistry and Dyeing, and Designing.

A study of the universal standards of American upland cotton for grade and staple. Factors that determine grade and their relative value. Practice will consist of classing and stapling three to five thousand samples of cotton.

F. C. s351. Crop Research. Undergraduate credits, 3-9; Graduate credits, 2-6. Elective for graduates and advanced undergraduates. Mr. Darst, Mr. Cotner. By arrangement. Pt. 26.

F. C. s415. Plant Breeding Research. Three credits. Prerequisite: F. C. 345. By arrangement. Mr. Cotner.

Inheritance problems of the plants. Available during any season appropriate to the study of the particular crop.

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week. Three credits. Mr. Stuckey. 9 M. T. W. T. F. Pr.

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. s120. Physical Geology. Three lectures; four hours laboratory and field work. Three credits. Mr. Stuckey. 8 M. W. F. Laboratory by arrangement. Pr.

Physical Geology as related to forces acting on and in the earth, and materials in 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. Pr.

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. Economic History. Five hours a week. Three credits. Mr. Lockmiller. 9 M. T. W. T. F. Pe. 1.

A survey course dealing with the European background of American history; English colonization and government; and colonial agriculture, industry, finance, commerce, and social life. The economic background of the Revolution and the problems confronting the states during and after the War for Independence will also be considered.

Hist. s103. Commercial Geography (Commercial and Industrial). Five hours a week. Three credits. Mr. Barnhardt. 8 M. T. W. T. F. Pe. 5.

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. s201c. Contemporary Europe. Five hours a week. Three credits. Mr. Barnhardt. 9 M. T. W. T. F. Pe. 5.

This course deals with the economic, social, and political developments in Europe from 1870 to the present time. Special emphasis is laid upon

the causes of the World War. The war is studied in outline and attention is given to post-war conditions.

Hist. s200. American National Government. Five hours a week. Three credits. Mr. Lockmiller. 10 M. T. W. T. F. Pe. 1.

This course gives a survey of the historical development, the Constitution, the organization, powers, and the actual operations of our national government. Special emphasis is given to present-day conditions and movements in our government and political life.

***Hist. s303. History of North Carolina.** Five hours a week. Three credits. Prerequisite: History 101. Mr. Barnhardt. 11 M. T. W. T. F. Pe. 5.

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.

Hist. s322. Contemporary United States, 1914-1935. Five hours a week. Three credits. Mr. Lockmiller. 12 M. T. W. T. F. Pe. 1.

The administration of Woodrow Wilson, the World War, post-war problems, and political, social, and economic affairs to the present date, including a study of the New Deal.

HORTICULTURE

Hort. s102. Plant Propagation and Nursery Practice. Three credits. Mr. Randall. By arrangement.

Study of methods and practice in seedage, cuttage, separation and division, budding and grafting. Cultural principles and practices in growing nursery stock.

Hort. s105. Small Fruit Culture. Three credits. Mr. Gardner. By arrangement.

A course in the culture and production of small fruits, including strawberries, dewberries, blackberries, blueberries, raspberries, currants, and grapes.

Hort. s209. Vegetable Production. Three credits. Mr. Randall. By arrangement. Pk. 308.

Location, soil preparation, fertilization, irrigation, and general culture applicable to commercial vegetable production.

Hort. s228. Home Floriculture. Three credits. Mr. Randall. By arrangement. Pk. 308.

Principles and methods of growing garden flowers and house plants, including varieties and their adaptability.

There will be the equivalent of two lectures and one two-hour laboratory for each of the above courses.

LANDSCAPE ARCHITECTURE

L. A. s203. Plant Materials. Two credits. Mr. Weaver. By arrangement.

Ornamental plants, their characteristics of use in planting design for home, school, and church grounds, and farmstead landscapes.

L. A. s217. Annual and Herbaceous Perennial Plants. Two credits. Mr. Weaver. By arrangement.

Herbaceous and annual plants, their height, habits of growth, texture, season, color, and other characteristics determining use in planting design.

MATHEMATICS

Math. s100a. Mathematical Analysis. Five hours a week. Three credits. Prerequisite: Algebra to quadratics and Plane Geometry. Mr. Fisher. 11-12 M. T. W. T. F. Page 209.

Review of elementary topics such as factoring, fractions, simple equations, exponents and radicals. Topics then taken up are: quadratic equations, solution of higher degree equations, simultaneous quadratic equations, logarithms, the binomial theorem, and the elementary theory of probability.

Math. s100b. Mathematical Analysis. Five hours a week. Three credits. Mr. Fisher. 11-12 M. T. W. T. F. Page 209.

The study of trigonometric functions with their applications to the solution of the right and oblique triangles, with numerous problems. Also, a brief study of trigonometric equations and identities, and inverse functions.

Math. s100c. Mathematical Analysis. Five hours a week. Three credits. Mr. Williams. 9-10 M. T. W. T. F. Page 101B.

Simple and compound interest, annuities, sinking funds, and amortization and valuation of bonds, and other applications.

Math. s101. Algebra. Twelve hours a week. Six credits. Mr. Mumford. 11-1 M. T. W. T. F. S. Page 203.

Progressions, binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations and computations, the general theory of equations, and the solution of higher equations.

Math. s102. Trigonometry. Twelve hours a week. Six credits. Mr. Clarkson. 8-10 M. T. W. T. F. S. Page 203.

Definitions of trigonometric functions, derivations of formulæ, solution of plane and spherical triangles, and the solution of many practical problems.

Math. s103. Analytical Geometry. Twelve hours. Six credits. Prerequisite: Mathematics 101 and 102. Mr. Clarkson. 11-1 M. T. W. T. F. Page 101A.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbola, and the general equation of the second degree.

Math. s201. Differential Calculus. Eight hours a week. Four credits. Prerequisite: Mathematics 103. Mr. Williams. 11-1 M. T. W. T. F. Page 101B.

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

Math. s202. Integral Calculus I. Eight hours a week. Four credits. Prerequisite: Mathematics 201. Mr. Williams. 11-1 M. T. W. T. F. Page 101B.

Methods of integration, the study of the definite integral, with applications to problems in areas, volumes, surfaces, and lengths of arcs.

Math. s203. Integral Calculus II. Eight hours a week. Four credits. Prerequisite: Mathematics 202. Mr. Fisher. M. T. W. T. F. Page 209.

Centroids, radii of gyration and moments of inertia, problems in work and liquid pressure, double and triple integrals, infinite series, hyperbolic functions, and differential equations.

***Math. s341. The Teaching of High School Mathematics.** Ten hours a week. Five credits. Prerequisite: Ed. 101, 203, 212, 213, and 20 credits in Mathematics. Mr. Mumford. 11-1 M. T. W. T. F. P. 203.

A comprehensive view of the materials of high school mathematics will be accompanied by a discussion of the selection and use of textbooks and supplementary helps. Practice will be given in the construction and use of written examinations, and the comparative merits of standard tests will be considered. Attention will be given to adapting both the content and the methods of procedure to the needs of various groups.

MODERN LANGUAGES

German

M. L. s108. Elementary German Prose. Five hours a week. Three credits. Mr. Ballenger. 10 M. T. W. T. F. Pe. 211-212.

This course consists of reading and translation of very simple German, along with lectures on the structure of the German language and word composition. The work is conducted in such a manner that the student's choice in reading material is a matter of individual need. Daily reports and conferences are required.

M. L. s203. Intermediate Scientific German. Five or ten hours a week. Three or six credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 211-212.

This course consists of a study of relatively simple scientific German literature. It is conducted by means of lectures and reports in such manner that the student's choice of reading material is a matter of individual need. Daily reports and conferences are required.

French

M. L. s107. Elementary French Prose. Five hours a week. Three credits Mr. Hinkle. 9 M. T. W. T. F. Pe. 211-212.

This course consists of reading and translation of easy French, along with lectures on the structure of the French language, diction, and pronunciation. The work is conducted in such manner that the student's choice in reading material is a matter of individual need. Daily reports and conferences are required.

M. L. s211. Introductory Scientific French. Five or ten hours a week. Three or six credits. Mr. Ballenger. 9 M. T. W. T. F. Pe. 211-212.

This course consists of a study of simple scientific French literature. It is conducted by means of lectures and reports in such manner that the student's choice of reading material is a matter of individual need. Daily reports and conferences are required.

M. L. s313. French Prose Masterpieces. Five hours a week. Three credits. Mr. Hinkle. 11 M. T. W. T. F. Pe. 211-212.

This course consists of a study of outstanding masterpieces in French literature. It is conducted by lectures and reports in such manner as to give a brief outline of French literary development. Daily conferences and reports are required.

Spanish

M. L. s111. Elementary Spanish Prose. Five hours a week. Three credits. Mr. Hinkle or Mr. Ballenger. 8 M. T. W. T. F. Pe. 211-212.

This course consists of reading and translation of easy Spanish, along with lectures on the structure of the Spanish language, diction, and pronunciation. The work is conducted in such manner that the student's choice in reading material is a matter of individual need. Daily reports and conferences are required.

PHYSICAL EDUCATION

P. E. s101. Fundamental Activities. Four hours practice. One credit. Mr. Miller. By arrangement. Gym.

Freshman requirement. Individual health and physical efficiency of each student, based on standard athletic, gymnastic, and efficiency tests.

P. E. s102. Sports Activities. Four hours practice. One credit. Mr. Miller. By arrangement. Gym.

Sophomore requirement. Election permitted in the popular sports for healthful exercise and a fair degree of skill in them.

P. E. s111. Games and Organized Play. Three hours theory, two hours practice. Two credits. Mr. Miller. By arrangement. Gym.

The organization and administration of playgrounds. Games suitable for the playground, elementary and secondary schools, ranging from the simplest primary school games to semi-organized sports and dancing.

This course is open to women.

P. E. s114. Football—Theory and Practice. Five hours a week, three hours practice. Three credits. Mr. Miller. By arrangement. Gym.

This course will cover the organization of the theory and practice of football coaching.

P. E. s115. Basketball—Theory and Practice. Five hours theory, three hours practice. Three credits. Mr. Miller. By arrangement. Gym.

This course will cover the organization of the theory and practice of basketball coaching.

PHYSICS

Physics s110. General Physics. Four or eight credits. Five hours class work, two two-hour laboratory periods each week for four credits. Double this for eight credits. Staff. 9 M. T. W. T. F.; 2-4 M. W.; 9-11 M. T. W. T. F.; 2-4 M. T. W. T. P. & E. 113.

A course covering the whole field in condensed form. It is especially designed for high school teachers, containing method as well as subject matter. The materials discussed give a broad background of additional subject matter with which to supplement a like course given in high school. It is given in halves taken simultaneously. At nine, force and machines, heat and weather, sound and the physics of music are given. At ten, light and the general field of electricity and the electrical nature of matter are given. Either half may be taken and four college credits earned, substituting for the corresponding term of Physics 101 or 103. Two afternoons of laboratory accompany each half.

Physics s104. Physics for Engineers. Four or eight credits. Staff. 8 M. T. W. T. F.; 2-4 M. W.; 8-10 M. T. W. T. F.; 2-4 M. W. P. & E. 212.

An advanced treatment of General Physics. Second- or third-term work may be taken or the two terms taken simultaneously.

Physics s107. Descriptive Astronomy. Five hours a week. Three credits. Mr. Heck. 12 M. T. W. T. F. P. & E. 212.

A descriptive course covering the most interesting elements in the study of the sun and planets and the stars. The modern interpretation of the universe as a whole given in this course makes it valuable as a background to a student or teacher of any subject. Observation periods, using the telescope on top of the physics building, will be substituted at times for class lectures.

***Physics s212. Photography.** Four hours class work and two laboratory periods each week. Three credits. Mr. Meares. 7 M. T. W. T. Laboratory by arrangement.

A general course in photography covering cameras and lenses, principles of exposure, development and printing; lantern slides, micro-photography, projection printing, and color photography.

Physics s411. Research.

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

POULTRY SCIENCE

Poul. s305. Poultry Diseases. Three credits. Mr. Gauger or Mr. Dearstyne. By arrangement. R. 208.

Common diseases of poultry as found in North Carolina; seasonal anticipation of diseases; autopsy methods and practice; poultry sanitation.

Poul. s310. Advanced Poultry Production. Three credits. Mr. Dearstyne or Mr. Williams. By arrangement.

Course especially adaptable to vocational teachers in agriculture. Includes poultry judging, nutrition, and commercial plant management.

Poul. s407. Poultry Research. Three credits. Staff. By arrangement. R. 208.

Problems in poultry nutrition, diseases, marketing, and breeding may be undertaken. Such problems shall be conducted on a definitely outlined basis acceptable to the department and the results shall be summarized in the form of an acceptable basis.

PSYCHOLOGY

Psychol. s101. Introduction to Psychology. Five hours a week. Three credits. Mr. Garrison. 11 M. T. W. T. F. H. 5.

A study of the structure, function, and laws of human behavior, with applications of psychology to everyday life.

Psychol. s203b. Educational Psychology. Five hours a week. Three credits. Required of students in Education; elective for others. Mr. Garrison. 10 M. T. W. T. F. H. 5.

(For a description of course, see Ed. 203b.)

Psychol. s376. Psychology of Adolescence. Five hours a week. Three credits. Mr. Garrison. 9 M. T. W. T. F. H. 5.

A study of the nature, growth, social development, and interests of adolescent boys and girls. Especially designed for those concerned with the organization and direction of group activities for boys and girls in rural and industrial centers.

RELIGION

Rel. s103. Social Ethics. Five hours a week. Three credits. Mr. Hicks. 10 M. T. W. T. F. Pe. 204.

Historical and psychological study of moral nature and moral progress; origin and development of the social conscience; and changing ethics in certain aspects of social life.

Rel. s201. Comparative Religion. Five hours a week. Three credits. Mr. Hicks. 12 M. T. W. T. F. Pe. 204.

History, general characteristics, and social significance of the great ethnic religions of the world, characteristics of the living religions.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week. Three credits. Mr. Hicks. 11 M. T. W. T. F. Pe. 204.

This course offers an inductive introduction to the field of sociology by taking up a number of social problems which confront every community. 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. (First term.) Five hours a week. Three credits. Mr. Winston. 10 M. T. W. T. F. Pe. 207.

The course deals with the basic principles of sociology, then analyzes the various environments that affect man and his behavior.

Soc. s300. Criminology. Five hours a week. Three credits. Mr. Winston. 9 M. T. W. T. F. Pe. 207.

This course will take up the causes and conditions leading to crime and study the methods of handling criminals. It will discuss the influence of various factors in producing criminal behavior, emphasis being placed on prevention rather than cure.

Soc. s306. The American Family. Five hours a week. Three credits. Prerequisite: Soc. 103 and three additional term credits in Sociology. Mr. Winston. 8 M. T. W. T. F. Pe. 207.

A study of family relationships, of the relationship between husband and wife, parents and children, with particular emphasis on the development of personality. The effect of present-day social changes upon the family, and the changes in family life as a result will be studied. Discussion of various efforts to stabilize the family. The part habits play in successful and non-successful marriages will also be discussed.

SOILS

Soils s310. Fertilizers. Four hours of class and one laboratory period a week. Three credits. Mr. Clevenger. 10 M. T. W. T. Laboratory to be arranged. Pt. 16.

A study of the sources, characteristics, and utilization of fertilizers.

Soils s315. Soils of North Carolina. Four hours of class, one laboratory period a week. Three credits. Mr. Clevenger. 11 M. T. W. T. Laboratory to be arranged.

A study of the origin, characteristics, distribution, and utilization of North Carolina soil types.

Soils s319. Fertilizer Experimentation. Three credits. Mr. Lutz. By arrangement.

A study of methods of determining the fertilizer needs of different crops on different soil types.

Soils s430. Soil Research. Two to five credits. Mr. Clevenger and Mr. Lutz. By arrangement.

TEXTILES

The Textile School at State College occupies a place of merited leadership in this country. A state with North Carolina's rank in the textile field needs to take advantage of the latest developments in research and training in this, North Carolina's largest industry. The Textile School offers its equipment and faculty to the people of the State during the Summer School.

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.

If there is sufficient demand, a second summer session of textile courses will be offered from July 22 to August 29. Students interested in attending this special session should communicate with Dean Thomas Nelson of the Textile School as early as possible, but not later than July 10. The courses given will depend upon the requests received.

Tex. s102. Yarn Manufacture I. Three credits. Mr. Hilton. By arrangement. Textile Building.

Mixing of cotton, description and setting of openers, pickers, and cards. Production, speed, and draft calculations.

Tex. s103. Yarn Manufacture Laboratory I. One or two credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of machines. Grinding and setting cards.

Tex. s104. Knitting I. Two credits. Mr. Lewis. By arrangement. Textile Building.

Selection and preparation of knitting yarns, knitting mechanisms, plain and rib knitting machines, circular ribbers, and circular automatic machines.

Tex. s105. Knitting Laboratory I. One, two, or three credits. Mr. Lewis. By arrangement. Textile Building.

Operation of machines, practical experiments, hosiery analysis, topping, transferring, and looping.

Tex. s106. Fabric Structure and Analysis. Two or four credits. Mr. Lewis. By arrangement. Textile Building.

Systems of numbering woolen, worsted, silk, linen, rayon, and cotton yarn. Plain, twill, and sateen weaves. Ornamentation of plain weaves; wave designs; pointed twills; diamond effects; plain and fancy basket weaves; warp and filling rib weaves.

Analyzing plain, twill, sateen, and other fabrics made from simple weaves, ascertaining the number of ends and picks per inch in sample. Fabric analysis calculations.

Tex. s107. Power Weaving. Two credits. Mr. Nelson. By arrangement. Textile Building.

Construction of auxiliary motions on plain looms. Cams and their construction. Drop-box loom construction. Methods of pattern chain building. Construction and value of pattern multipliers. Timing of drop-box motion, and other studies.

Tex. s108. Power Weaving Laboratory. One or two credits. Mr. Hart. By arrangement. Textile Building.

Operating and fixing of plain, automatic, and drop-box looms. Pattern chain building for drop-box looms.

Tex. s109. Fabric Testing. One credit. Mr. Shinn. By arrangement.

Testing fabrics for strength. Effect of heat upon fabrics. Effect of regain upon tensile strength. Elasticity of fabrics. Micrometer and calculated tests for fabric thickness.

Tex. s115. Textiles for Teachers. Five hours a week. Three credits. Mr. Lewis. 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. Three credits. Mr. Hilton. By arrangement. Textile Building.

Construction of draw frames; sliver lapper; ribbon lapper, comber; mechanical and electrical stop motions, description and setting of the different parts; weighting of rolls; types of roll covering; care of machines; fly frame builder and differential motions.

Tex. s202. Yarn Manufacture Laboratory II. One, two, or three credits. Mr. Hilton. By arrangement. Textile Building.

Operation and fixing of draw frames; sliver lappers; ribbon lapper; comber and fly frames. Changing of hank roving and the setting of rolls and speeder motions.

Tex. s205. Fabric Design and Analysis I. Three 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.

Tex. s207. Dobby Weaving. Three credits. Mr. Nelson. By arrangement. Textile Building.

Methods of drawing in and starting up cotton and rayon warps. Setting of harness shafts. Selection of springs or spring jacks. Construction and methods of fixing single and double index dobbies. Methods of pattern-chain building.

Tex. s208 or s209. Dobby Weaving Laboratory I or II. One, two, or three, or six credits. Mr. Hart. By arrangement. Textile Building.

Preparation of warps for weaving cotton and rayon fabrics on dobby looms; starting up warps in looms; fixing single and double index dobbies; pattern chain building; operation of dobby looms.

Tex. s301. Yarn Manufacture IV. Three credits. Mr. Hilton. By arrangement. Textile Building.

Spinning; spooling; twisting. Description and setting of different parts. Builder of motions for warp and filling. Bobbin holders, thread guides, traverse motions. Ply yarns. Calculations for twist, speed, and production.

Tex. s309. Cotton and Rayon Fancy Design I. Three, six, or nine credits. Mr. Shinn. By arrangement. Textile Building.

Designing fancy and jacquard fabrics. These fabrics include tablecloths, figured double plain; matelasse, velvet, corduroy. Leno weaves with one, two, or more sets of doups. Combinations of plain and fancy weaves with leno. Methods of obtaining leno patterns. Methods of making original designs by combinations of color, weave, and sketches. Designs for table napkins, table covers, dress goods, draperies.

Tex. s311. Fabric Analysis. Two credits. Mr. Shinn. By arrangement.

Analyzing samples of cotton, wool, worsted, linen, rayon, and silk fabrics for size of yarns, ends and picks per inch, weight of warp and filling, so as to accurately reproduce samples analyzed. Obtaining design, drawing in draft, chain, and reed plan for fancy fabrics, such as stripes, checks, extra warp and extra filling figures, leno fabrics, jacquard fabrics, draperies.

ZOOLOGY

Zool. s101. General Zoology. Five recitations, four hours laboratory. Four credits. Mr. Bostian. 9 M. T. W. T. F. Laboratory arranged. Z. 7.

A study of the structures and functions of the vertebrates, with special reference to man and the rat.

Zool. s103. Human Physiology. Five recitations, four hours laboratory. Three credits. Mr. Bostian. 8 M. T. W. T. F. Laboratory arranged. Z. 8.

A study of the functions of the human body, designed especially for teachers.

****Zool. s204. Economic Entomology.** Five recitations, four hours laboratory. Four credits. Mr. Mitchell. 8 M. W. F. Laboratory arranged. Z. 7.

A general study of the insects, including their economic importance, with emphasis upon control of the more important local species.

Zool. s304. Genetics. Four credits. Mr. Bostian. By arrangement. Prerequisite: Bot. 101 and 102 or Zool. 101.

Basic principles of heredity and variation. Students carry on and analyze breeding experiments, analyze inheritance in various animals and plants.

Courses for Graduates Only

Zool. s403. Research in Zoology. Three credits. Mr. Metcalf, Mr. Mitchell, Mr. Bostian. By arrangement. Prerequisite: Eighteen term credits in Zoology.

The student will be assigned a problem in development morphology, ecology, physiology, genetics, or taxonomy.

****Not offered summer 1936. To be offered summer 1937.

THE WOMAN'S COLLEGE

OF THE

UNIVERSITY OF NORTH CAROLINA

GREENSBORO, N. C.

July 9–July 17

The chief purpose of the Summer Session is to serve students and teachers of North Carolina to the greatest possible extent at the least possible cost.

Distinctive features of the Summer Session at this division of the University are:

1. Courses in elementary and high school education.
2. Full home economics curriculum.
3. New courses in Art.
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W. C. JACKSON,
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Numerous special courses, conferences, seminars, and institutes in the fields of the Social Sciences, Public Administration, Political Science, Music, and Education and Public Relations will be held during the first term of the Summer Session.

EXPENSES

(For each term of six weeks)

LIVING ACCOMMODATIONS

Room rent in University (other than Spencer Hall or the Graduate Clubs)	$ 7.50
Room rent in Spencer Hall and Graduate Woman's Club:	
Single room	22.50
Double room	15.00
Room rent in Graduate Men's Club	15.00

The average cost for board in Chapel Hill cafeterias, cafes, and boarding houses should be about $6 per week.

OTHER EXPENSES

Registration fee for each student	12.50
Course fee for each quarter-hour credit per term	2.25

For further information write:

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Dean of Administration,
Chapel Hill, N. C.