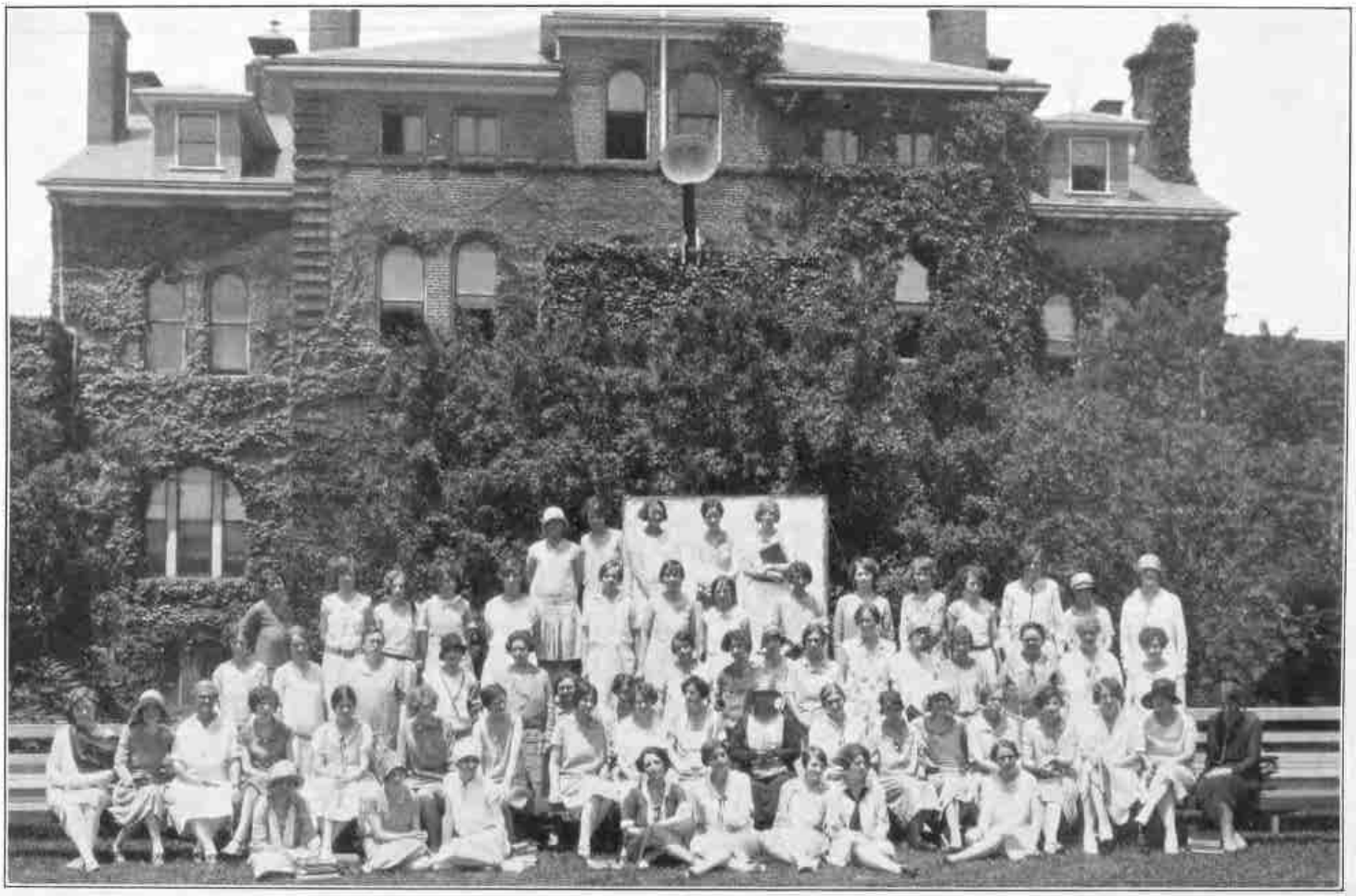
North Carolina State College

SUMMER SCHOOL

JUNE 11—JULY 19, 1929

COLLEGE Y. M. C. A. THE SOCIAL CENTRE

STATE COLLEGE STATION
Raleigh



A GROUP OF WOMEN ATTENDING 1928 SUMMER SCHOOL

STATE COLLEGE RECORD

VOL. 27 MARCH, 1929 No. 4

Summer School

JUNE 10—JULY 19, 1929

Announcement of Courses

North Carolina State College
of Agriculture *and* Engineering

STATE COLLEGE STATION
Raleigh

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DIRECTOR OF THE SUMMER SCHOOL
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Raleigh, N. C.

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SUMMER SESSION, 1929

The sixteenth Summer Session of the North Carolina State College of Agriculture and Engineering, which begins Monday, June 10th, and closes Friday, July 19th, has broadened considerably its instruction, particularly by offering additional courses in the Liberal Arts field. In the courses given, the work will be directed primarily to the needs of teachers in secondary education. The usual technical courses will also be offered, as well as courses for teachers of Industrial Arts who hold a certificate of Grammar Grade C or higher.

In addition to the subject matter courses open to all students who have graduated from high school and particularly suitable for those persons preparing to teach in the secondary schools, there will be courses in the methods of teaching the various high school subjects. There will be offered advanced courses in the field of education, dealing with Philosophy, History of Education and Phychology. The purpose of these is to build upon the several courses in Education that have been given heretofore and which will be repeated in 1929.

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

HIGH SCHOOL PRINCIPALS AND SCIENCE TEACHERS

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

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

AGRICULTURE

A six-weeks course in professional and technical subjects will be given for the teachers of agriculture. It is designed for both the teachers already in service and for prospective teachers of agriculture in the vocational schools.

There will be a short course in Agriculture for teachers now in service, June 24-29. This work will be in charge of Mr. Roy H. Thomas, State Supervisor of Agricultural Education, assisted by the staff of the School of Education and by Assistant Supervisors.

COTTON CLASSING

The courses in Cotton Classing are arranged to instruct the producer in grading staple, to induce him, in consequence, to try to grow cotton of better staple, and to aid him in selling his product to better advantage. They are open also to buyers of cotton. The courses are arranged for young and middle-aged men, and are not intended for boys, nor for men who lack earnestness of purpose. There are no entrance requirements for the Cotton Classing courses except that the applicant should have a good English education.

INDUSTRIAL ARTS

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

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

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

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

INDUSTRIAL ARTS FOR ELEMENTARY TEACHERS

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

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

Ed. s353. **The Theory of Industrial Arts in the Elementary School.** Five hours a week; three credits.

Ed. s354. **Practical Arts Problems.** Ten hours a week; three credits.

Tex. s115. **Courses for Teachers.** Four hours a week; two credits.

Ed. s201. **Educational Psychology.** Five hours a week; three credits.

Ed. s327. **Educational Tests and Measurements.** Five hours a week; three credits.

Ed. s320. **Vocational Guidance.** Five hours a week; three credits.

Ed. s355. **Art Studies in the Elementary School.** Ten hours a week; 1½ or 3 credits.

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

PHYSICAL EDUCATION AND COACHING

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

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

RECREATION

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

GRADUATE STUDIES

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

COLLEGE CREDIT

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

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

The courses for college credit are open to graduates of standard high schools, and to others of equal qualifications. These courses give college students the opportunity to remove conditions, so that they may enter their classes in the fall in full standing. They will also make it possible to secure advanced credit. The college-credit courses are also open to teachers who hold standard State certificates.

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

PROVISION FOR BOTH MEN AND WOMEN

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

ACCOMMODATIONS FOR WOMEN

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

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

ENTERTAINMENTS AND SOCIAL FEATURES

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

FEES AND EXPENSES FOR SIX-WEEKS STUDENTS

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

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

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

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

In a limited number of cases one may be able to room alone upon payment of $10 room rent.

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* FREE TUITION FOR TEACHERS

Exemption from the payment of the $10.00 tuition fee is provided by legislative enactment for teachers now in service in the schools of North Carolina, and for residents of the State who are preparing to teach during the school year 1929-30.

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

BOARD AND LODGING

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

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

The registration fee is not returnable after June 5. There will be no refund of room rent or tuition after June 19.

WHAT STUDENTS NEED FOR THEIR ROOMS

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

SELECTION OF COURSES

The advisers of the different groups will be available at the College during the morning and afternoon of the opening day of the session. All students registering will consult advisers appointed by the school to assist applicants in arranging their schedules. These are as follows:

College-Credit Courses—W. L. Mayer, Director of Registration.

Vocational Education Courses—Leon E. Cook, Professor of Education and E. W. Boshart, Professor of Education.

Cotton-Classing Courses—W. H. Darst, Professor of Farm Crops.

High School and Administration Courses—J. Henry Highsmith, State High School Supervisor.

Graduate Courses—Carl C. Taylor, Dean of Graduate School.

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 Monday, June 10th, so that they may begin class work on the morning of Tuesday, June 11th, at 8 o'clock.

Section 1. A student may, upon recommendation of his Vocational Adviser and the approval of the Director of the Summer School, register for credits in excess of those prescribed in his curriculum, provided he has attained fifty per cent excess points on his previous term's work.

Teachers and those who are not students during the regular college term will be allowed to take more than eighteen actual hours only on recommendation of the Director of the Summer School.

Section 2. A student having failed a course may, upon recommendation of his Vocational Adviser and the approval of the Director of the Summer School, schedule the same course in addition to the courses prescribed in his curriculum, provided he has satisfactorily completed all of his preceding term's work or has failed on only one course.

There will be a key deposit of twenty-five cents, which amount will be refunded when the key is returned. In some of the classes there will be a small fee to cover cost of materials, which will be designated in the description of the course.

HOURS OF WORK

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session.

In addition to the eighteen hours which may be taken for credit, each student will be allowed a limited number of visiting hours, not to exceed four for any class.

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

All courses carrying numbers of 100 or above offered in Summer School are college-credit courses.

CREDITS

Summer School credit will not be given to any one whose class attendance, scholarship or deportment is unsatisfactory, or to any one who is indebted to the school, or who takes more than eighteen hours a week of class work, unless permission to take the excess has been given in writing by the Director.

THE ATTRACTIONS OF RALEIGH

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

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

THE SOCIAL CENTER

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

THE D. H. HILL LIBRARY

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

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

FRANK THOMPSON GYMNASIUM

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

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

RELIGIOUS ACTIVITY

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

VESPER SERVICES

On the lawn every Sunday evening just after supper attractive religious services will be held. The talent of Raleigh in religious leadership and in reading and recitation is called on to make these meetings a great success. They have been much enjoyed not only by the students of the Summer School but the College community as a whole.

CLASS IN THE LIFE OF CHRIST

At eight-thirty each Sunday morning Professor Heck will give his lecture course in the Life of Christ. This course has been given for a number of years and is especially helpful for those who teach Sunday School classes of high school and college students. The simple story of Jesus' life told with vividness and sympathy gives the class its power.

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

FARM AND HOME WEEK—JULY 22, 23, 24, 25, 26

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

4-H CLUB SHORT COURSE

A course for 4-H Club members, Local Leaders and Extension workers will be held July 29 to August 3. This course is designed to meet the needs of the 4-H Club boys and girls who wish to come to the college for a week of instruction in subjects relating to Agriculture, Home Making and Leadership Training.

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

COURSES TO BE OFFERED IN THE SUMMER SCHOOL

AGRONOMY

Agron. s1. Cotton Classing. Twenty hours a week for six weeks. Mr. Darst, Mr. Cotner.

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

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

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

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

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

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

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

Agron. s201. Cereal Crops. Prerequisite: General Field Crops. Five hours a week; three credits. Mr. Darst, Mr. Cotner.

Lectures and recitations in history, production, cultivation, improvement, harvesting, storage, and marketing. Laboratory consists of structural studies, seed judging, variety identification, and commercial grading. Special problems in cereal production. Laboratory fee, $2.

Agron. s210. Cotton Production, or s215. Tobacco Production. Five hours a week; three credits. Mr. Cotner.

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. Laboratory fee, $2.

Agron. s330. Advanced Seed Judging and Grading. Prerequisite: Cereals, Five hours a week; three credits. Mr. Darst, Mr. Cotner.

Lectures and practice in planning, arranging and judging field crops exhibits. Study of the Federal grain and hay standards. A course planned to develop experts in the judging of field crop seeds and in the grading of grain and hays. A course designed for agricultural extension workers and vocational teachers. Laboratory fee, $2.

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

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

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

Agron. s110. Soil Geology. Eight hours a week; four credits. Required of Sophomores in Agriculture. Mr. Cobb.

Lectures, laboratory and field work in physical geology with special reference to the origin of soils and mineral fertilizer materials.

Agron. s265. Soil Fertility and Fertilizers. Ten hours a week; five credits. Required of Juniors in Vocational Education and Seniors in General Agriculture. Mr. Cobb.

A course dealing with chemical and biochemical properties of soils as related to soil fertility, and with the characteristics and use of commercial fertilizing materials. A study is made of chemical reactions concerned with plant nutrition, soil acidity and liming, figuring fertilizer formulas, and home mixing.

Agron. s315. The Soils of North Carolina. Five hours a week; three credits. Mr. Cobb.

A study of the origin and characteristics of North Carolina soil types. Emphasis is placed on the fertilizer needs and agricultural adaptation of the more important types.

Agron. s321. Soil Technology I. Two or four credits. Mr. Cobb.

A laboratory study of technical methods used in the investigation of the physical, chemical and biological properties of soils.

Agron. s322. Soil Problems. Five hours a week; three credits. Mr. Cobb.

Special problems in the particular phase of soil science the student is especially interested in. A course designed especially for seniors specializing in soils and for graduate students.

ANIMAL HUSBANDRY AND DAIRYING

A. H. s102. Animal Nutrition. Ten hours a week; five term credits. Mr. Ruffner.

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

A. H. s201. Swine Production. Five hours a week; three term credits. Mr. Hostetler.

A study of types, breed characteristics and adaptability of swine. Emphasis is given to breeding, housing, and marketing of swine. Practical work is given in the laboratory in feeding, management, and judging.

A. H. s202. Animal Breeding. Eight hours a week; four term credits. Mr. Ruffner.

A subject in which detailed attention is given to the causes which have brought about the improvement in our domestic animals. As far as possible, a first hand study is made of different successful breeding establishments and their problems, by the instructor and students.

A. H. s203. Advanced Stock Judging. Five hours a week; three term credits. Mr. Haig.

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

A. H. s208. Stock Farm Management. Five hours a week; three term credits. Mr. Ruffner.

A subject devoted to the study of successful methods of operating farms devoted chiefly to livestock production. Special reference is made to the best systems as applied to North Carolina conditions.

A. H. s211. Advanced Nutrition. Eight hours a week; four term credits. Mr. Ruffner.

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

A. H. s218. Hygiene and Sanitation of Farm Animals. Five hours a week three term credits. Mr. Koonce.

This course naturally follows the previous course, as it takes up those diseases of our domestic animals that are communicated from one to another, principally by bacteria. In the third term a discussion of external and internal parasites is carried on to acquaint the student with the best known means of combating them.

BOTANY

Botany s101. General Botany. Nature of the Higher (Crop) Plants. Two lectures; two recitations; eight hours laboratory; four credits. Equivalent to Freshman and Sophomore courses given the first quarter of the regular college year. Mr. Shunk, Mr. Whitford.

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

(1) Teachers of Biology who desire to enhance their knowledge of the higher plants, especially the crop plants.

(2) Agricultural workers who desire a thorough review of the fundamental structure and functions of the crop plants.

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

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

Botany s202. General Bacteriology. Four recitations; eight hours laboratory; four credits. Prerequisite Bot. 102 or equivalent. Mr. Shunk.

This course, which is basic for all other work in the subject, gives an introduction to the principles of bacteriology. All of the various fundamental phases

of bacteriology are taken up. Through laboratory work the student learns modern cultural methods of handling and studying bacteria. Toward the latter part of the term opportunity will be offered students to do special laboratory work on water, milk, and disease-producing bacteria, if they so desire.

Botany s203. Systematic Botany. Two lectures; eight or sixteen hours of laboratory; five credits. Equivalent to Junior and Senior courses given in third quarter of the regular college year. Prerequisite: Elementary Botany. Mr. Shunk, Mr. Whitford.

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

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

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

CHEMISTRY

Chem. s101a. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Wilson, Mr. Satterfield.

Composition and properties of air and water. First principles of Chemistry, such as atomic theory, laws of chemical combination, valence, chemical formulas and equations, oxidation, reduction, behavior of gases and solutions. Study of a few typical elements, such as oxygen, hydrogen, carbon and nitrogen, together with their simpler compounds.

Chem. s101b. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Wilson, Mr. Satterfield.

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

Chem. s101c. General Chemistry. Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Wilson, Mr. Satterfield.

Chemistry of clays, ceramics, glass, cement, soils, fertilizers, insecticides, lime, hard water, alloys, paints, storage batteries, photography, flames and explosions.

Compounds and properties of phosphorous, arsenic, bismuth, silicon, boron, potassium, calcium, magnesium, zinc, aluminum, iron, tin, lead, nickel, copper, mercury, silver, gold, platinum and other less common elements. Thermochemistry, colloids and radioactivity.

Chem. s111. Qualitative Analysis. Two hours lecture with four laboratory periods of three hours each, per week. Equivalent to one term of college work. Four hours credit. Prerequisite: General Chemistry. Mr. Wilson.

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

Chem. s112. Quantitative Analysis. Two lectures and twelve hours laboratory. Equivalent to one term of college work. Four hours credit. Prerequisite: Qualitative Analysis. Mr. Wilson.

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 percent purity of iron ores, oxalates, sulphates, magnesium phosphate rock, etc.

Chem. s141. Organic and Biological Chemistry. Five hours a week; three credits. Prerequisite: General Chemistry. Mr. Satterfield.

A systematic study of the compounds of carbon with emphasis on those substances of particular importance in the life of man. Such common substances as alcohol, ether, chloroform, glycerin, quinine, carbolic acid, Rochelle salt, saccharin, aspirin and benzoate of soda. Such frequently mentioned compounds as caffeine, nicotine, wood alcohol, mustard gas, nitroglycerine, citric acid, cream of tartar, acetanilide, menthol, salvarsan, mercurochrome, formaldehyde. Such materials as gasoline, kerosene, rubber, collodion, celluloid, rayon, duco, turpentine, soap, glue, linseed oil, ethyl gasoline and such processes as decay, fermentation, rancidity, hardening of oils, tanning of leathers. Particular attention is given to carbohydrates, fats and proteins and their fate in digestion and metabolism.

Chem. s221. Organic Chemistry. Seven hours lecture with eight hours laboratory. Six credits. Prerequisite: General Chemistry. Mr. Wilson.

This course is intended for students who desire four semester credits in Organic Chemistry for pre-medical credit and also for those desiring credit for the regular college course. The aliphatic series of compounds will be studied. The laboratory work involves the identification of the halogens, nitrogen, carbon, etc., the melting point of substances, and the preparation and purification of a number of organic compounds.

Chem. s240. Industrial Foods. Five hours a week; three credits. Prerequisite: General Chemistry. Mr. Satterfield.

A study of the production of food products. Food principles, cereals, starches, sugars, fats, milk, and milk products, the packing house, food preservation, beverages, spices, and condiments will be treated. Food Legislation.

Chem. s241. Chemistry of Life. Five hours a week, three credits. Prerequisite: General Chemistry. Mr. Satterfield.

Nutrition and growth of the plant. Protection of the plant with insecticides. Plant materials used as food for man. Digestion and nutrition in man and the animal. Promoting the health and comfort of man by fuel, pure water, disposal of waste, clothing and drugs. Glass and pottery; dyes and toilet preparations; paints and varnishes; cleaning agents and stain removal.

Chem. 342. See Ed. s342.

Chem. s344. Food, Nutrition and Diet. Five hours a week, three credits. Prerequisite: General Chemistry. Mr. Satterfield.

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

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

ECONOMICS

Econ. s102. Introduction to Economics. Five hours a week; three credits. Mr. Moen.

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

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

Econ. s103. General Economics. Five hours a week; three credits. Mr. Forster.

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.

Econ. s212. Statistical Method. Five hours a week; three credtis. Elective Prerequisite: Economics 102. Mr. Forster.

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

Econ. s215. Marketing Methods. Five hours a week; three credits. Mr. Moen.

Classification of commodities from the viewpoint of distribution functions, channels, selling policy, market analysis for manufactured goods.

Econ. s217. Advertising. Five hours a week; three credits. Mr. Moen.

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

Econ. s218. Sales Management. Five hours a week; three credits. Mr. Moen.

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

Econ. s265. Farm Marketing Five hours a week; three credits. Prerequisite: Economics 102. Mr. Forster.

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

Econ. s269. Farm Accounting. Five hours a week; three credits. Mr. Forster.

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

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

Econ. s361. Farm Organization and Management. Five periods a week; three credits. Mr. Forster.

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

Econ. s366. Marketing Methods and Problems. Five periods a week; three credits. Mr. Forster.

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

EDUCATION

Ed. s201. Educational Psychology. Five hours a week; three credits. Mrs. Wallace.

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

Ed. 203. Psychology of Adolescence. Five periods; three credits. Mr. Garrison.

A study of the physiological and mental development of the adolescent boy and girl. The following are topics treated: physiological development and classification; developing social attitudes; emotional development and control; the development of special abilities; and, mental hygiene. Special emphasis will be given to the psychological problems involving the various organizations, clubs, and "gangs" during this period of life.

Ed. s208. Visual Aids. Five periods; three credits. Mr. Armstrong.

Instruction and practice in the use of blackboards, charts, graphs, maps, slides, stereographs, motion pictures, models, and exhibits in public school teaching. Demonstration lessons; visual aids available. Designed for elementary and high school teachers and grade supervisors.

Ed. s303. Problems of the High School Teacher. Five periods; three credits. Mr. Highsmith, Mr. Mayer, Mr. Owens.

This course will cover the State requirement with reference to supervision for a high school teacher. Topics and problems discussed will include: The aims of secondary education; the high school teacher, and the high school pupil; discipline; classroom technique; training in habits of study; the curriculum; student rating; salaries; professional duties and responsibilities; school morale, and extra-curricular activities.

Text-books, lectures, readings, and reports.

Ed. s305. Methods of Study. Five periods; three credits. Mr. Cook.

A course for teachers in the methods of study and the technique of supervising study. Considers the factors of study, the chief difficulties, the general principles

for improving study, and special devices. Teachers will have the opportunity of making special studies and reports on study procedures related to the subjects which they teach.

Ed. s306. Educational Sociology. Five times a week; three credits. Mr. Anderson.

This course will deal with the social objectives of education, the school as a social factor in its relations to the home, church, and state; the relations of education to the solution of social problems.

Ed. s308. Supervision—The Improvement of Instruction. Five periods; three credits. Mr. Highsmith.

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

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

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

Text-books, lectures, readings, and reports.

Ed. s315. Methods of Teaching Modern Languages. Five hours a week; three credits. Mr. Mumford.

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

Ed. s316. Teaching of Literature in Secondary Schools. Five hours a week; three credits. Mr. Owens.

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

Ed. s317. Methods of Teaching History. Five times a week; three credits. Mr. Lefler.

The purpose of this course is to discuss the various methods of teaching history in the secondary schools: the types of recitation, assigning the lesson, teaching pupils how to study history, reports on collateral-reading, history tests, notebooks, survey of textbooks, and the teaching of Current Events. R. M. Tryon, "The Teaching of History in Junior and Senior High Schools," will be used as a text.

Ed. s318. Teaching of Composition in Secondary Schools. Five hours a week; three credits. Mr. Owens.

The purpose of this course is to discuss various methods of teaching composition and grammar in high schools: lesson assignments, class discussions and recita-

tion, written exercises, grading of papers. A thorough examination will be made of the requirements in composition and grammar for the several years of the high school course. Textbook assignments, reports, discussions, practice teaching.

Ed. s320. Vocational Guidance. Five times a week; three credits. Mr. Boshart.

Treats of the problems of directing pupils in the study of occupations for the purpose of selecting satisfactory life work. It includes studies of the history of occupational guidance and personnel administration, principles and practices in guidance and employment, compulsory school laws, child labor legislation, and forms and records essential for school use.

Ed. s321. Vocational Education. Five hours a week; three credits. Mr. Coggin.

Place and need for vocational education in the public school system; present practices in organization of vocational guidance work in trades and industries, home economics, and agriculture, including continuation schools, part-time and evening classes; need for vocational guidance, placement, and follow-up work. Intended for those in supervisory or administrative positions as superintendents, principals, and directors.

Ed. s323. Study of Occupations. Five hours a week; three credits. Mr. Boshart.

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

Ed. s327. Standard Testing and Measuring. Five hours a week; three credits. Mr. Mayer.

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

Ed. s328. Tests, Examinations, and Grading. Five hours a week; three credits. Mr. Mayer.

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

Ed. s330. Visual Instruction. Five periods; three credits. Mr. Armstrong.

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. s335. Problems in School Administration. Five periods; three credits. Mr. Highsmith.

Problems common to any school system will be considered, such as the powers and duties of the board of education; the powers and duties of the superintendent; problems pertaining to the teacher and the pupil; problems of finance, salaries and pensions; school building problems; library and textbook problems; problems of the course of study and program making; school, home, community problems.

An attempt will be made to bridge the gap between theory and practice in school administration.

Textbooks, lectures, readings, and reports.

Ed. s336. Problems in Secondary Education. Five periods; three credits. Mr. Highsmith.

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

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

Text books, lectures, readings, and reports.

Ed. s338. Methods of Science Teaching. Five hours a week; three credits. Mr. Showalter.

A course for teachers of science in the secondary schools. It will include the aims and values of the various courses in science, organization, and sequence of studies, methods of teaching adapted to the various sciences, and means of measuring results.

Ed. s339. Materials in Science Teaching. Five hours a week; three credits. Mr. Showalter.

A course in the materials needed for the teaching of general science, biology, physics, and chemistry in the junior and senior high schools. Such problems will be considered as arrangement of laboratories, equipment, how and where to secure supplies, use of home-made apparatus, collection and preservation of biological materials, laboratory technique, and adapting the content of courses to the various localities of the State.

Ed. s340. Methods of Teaching Geography. Five hours a week; three credits. Mr. Showalter.

This course is designed to meet the needs of those teachers who will teach geography in the high school as provided for in the plan of High School Reorganization. It will deal with the methods of using visual aids in geography, laboratory materials, and techniques adapted to the teaching of all phases of geography. Teachers of geography in the elementary school will also find this course helpful.

Ed. s342. Methods of Teaching Chemistry. Five hours a week; three credits. Prerequisite: General Chemistry. Mr. Williams.

Particularly intended for teachers and prospective teachers of Chemistry.

Lectures and recitations dealing with the problems encountered by the teacher of Chemistry. Preparation and execution of lecture table demonstrations. Supervised observation in laboratory instruction. Critical study of the many Chemistry text books. Assignments; consultations.

Ed. s351. Organization and Administration of Part-time and Continuation Schools. Five hours a week; three credits. Mr. Coggin.

A study of the part-time and continuation schools as to their place in an educational system; the selection and organization of teaching materials; the preparation of type lessons; the division of time allotments; the methods of teaching, and the procedure in organization of classes. Primarily for principals and teachers who are attempting or planning to attempt work of this character.

Ed. s353. Theory of Industrial Arts in the Elementary School. Five hours a week; three credits. Mr. Boshart.

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

Ed. s354. Practical Arts Problems. Ten hours a week; three credits. Mrs. Leggette.

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

Ed. s355. Art Studies in the Elementary School. Five or ten hours a week; 1½ or 3 credits. Mrs. Leggette.

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

Ed. s360. Special Problems in Teaching Agriculture. Five hours a week; three credits. Mr. Cook.

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

Ed. s362. Psychology of Secondary School Education. Five hours a week; three credits. Mr. Garrison.

This course is intended for students interested in junior and senior high school work. The following topics are treated: The psychology of learning in the case of English, foreign languages, history, science, arithmetic, algebra, and geometry; developing motor skills; transfer of training; fatigue; methods of study; tests for special abilities; classification according to mental ability and physiological development; the psychological basis for the development of social ideals and helpful individual attitudes; abilities necessary for successful high school work. Part of the courses will be devoted to laboratory work.

Ed. s364. History of Education. Five times a week, three credits. Mrs. Wallace.

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

Ed. s375. Advanced Methods in Science Teaching. Five hours; three credits. Mr. Showalter.

A course for advanced students in science teaching. It will consider some of the important problems of the science teacher and the results of recent investigations.

Ed. s403. Developments in Education and Psychology. Five hours a week; three credits. Mr. Garrison.

This course will attempt to answer the question: How is education concerned with modern psychological conceptions of, for example original nature, emotional

conditioning, transfer of training, individual differences, attention and the higher thought processes? The historical movements in psychology, beginning with the introduction of scientific methods, will be studied and considered as they relate to modern methods of work in educational research and practice.

Ed. s406. Philosophy of Education. Five hours a week; three credits. Mr. Garrison.

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

Ed. s416. Problems in Agricultural Teaching. Five periods; three credits. Prerequisite: Eight credits in education. Mr. Cook.

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

ENGINEERING

C. E. s105. Mechanics. Five hours per week; three credits. Mr. Foster. Prerequisite: Trigonometry and Analytics. Mathematics 103 and 104.

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

M. E. s102. Engineering Drawing. Ten or twenty hours a week; three or six credits. Required of Engineering Freshmen. Mr. Foster.

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

M. E. s103. Descriptive Geometry. Ten hours per week; three credits. Mr. Foster.

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

M. E. s105. Woodshop. Five or ten hours a week; one or two credits. Mr. Wheeler.

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

M. E. s107. Mechanical Drawing. Four, seven or ten hours per week; one, two or three credits. Mr. Briggs.

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

M. E. s118. Machine Shop I. Ten hours a week; two credits. Mr. Wheeler.

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

Instruction in the use of hand and machine tools.

M. E. s130. Metal Work. Fifteen hours a week; three credits. Mr. Wheeler.

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

M. E. s132. Woodworking for Teachers. Fifteen hours a week; three credits. Mr. Wheeler.

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

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

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

ENGLISH

Eng. s101. Rhetoric and Composition. Five hours a week; three credits. Mr. Marshall.

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

Eng. s201. Business English. Five hours a week; three credits. Mr. Robertson.

A systematic treatment of the best modern business practice in writing, with special attention to the form, style, and tone of effective correspondence.

Eng. s203. Technical Writing. Five hours; three credits. Prerequisite: Eng. 101. Mr. Harrison.

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

Eng. s202. Advanced English Grammar. Five hours a week; three credits. Mr. Owens.

This course is designed to meet the needs of teachers who desire to get a more comprehensive knowledge of grammar than that furnished in the usual high school and college courses in grammar and composition. Teachers who feel that their preparation for teaching grammar and composition is inadequate should find in this course the means of learning purely technical grammar and in gaining a confidence in their own knowledge of the subject. Methods of teaching the grammatical requirements in the high school English course of study will be stressed. Text book assignments, written work, discussions, drills, and lectures.

Eng. s208. The Essay. Five hours; three credits. Prerequisite: Eng. 101. Mr. Harrison.

Planned as a course in advanced composition and in appreciation of this important form of writing. Style and content of the literary, non-technical essay;

various types of formal and informal essays to be read as models of structure, mechanics, and material; frequent brief practice papers and one longer essay. Conferences.

Eng. s209. The Short Story. Five hours a week; three credits. Mr. Marshall.

The development, structure, types, and style of the short story; the present-day short story in collections and in current periodicals as models; the writing of narratives of fact and of fiction. Conference.

Eng. s230. Shakespeare. Five hours a week; three credits. Mr. Harrison.

"The Tempest," "Antony and Cleopatra," and "Twelfth Night," for intensive class study. The plays most frequently read in high schools frequently commented upon and difficult passages discussed. Certain additional plays assigned for collateral reading. On a reserve shelf in the library for the use of the class, books to furnish a background in the general history of the Elizabethan period, the drama and the theatre of Shakespeare's time, and the "Variorum" edition of the plays.

Eng. s235. Victorian Poetry. Five hours a week; three credits. Mr. Marshall

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

Eng. s250. History and Principles of Journalism. Five hours a week; three credits. Mr. Robertson.

A survey of American journalism from the first newspaper to the present day, with special attention to journalism as a profession, to its aims, ideals, and standards. The systematic analysis of the principles of journalism is supplemented by practice in writing the simplest types of new stories.

Eng. s252. Magazine and Feature Writing. Five hours a week; three credits. Prerequisite: English 150 or equivalent. Mr. Robertson.

Lectures and discussion upon the preparation of articles for magazines and newspapers. Emphasis is placed on originality of ideas, organization of material, and correspondence and vigor of expression. The aim of the course is to develop both the creative and the critical ability of the student.

Eng. s255. Industrial News Writing. Five hours a week; three credits. Mr. Robertson.

Industrial news gathering and news writing; preparation of house organs; study of trade and technical publications; frequent practice in writing material of industrial nature.

Eng. s260. Public Speaking. Five hours a week; three credits. Mr. Owens.

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

Eng. s271. See Education s316.

Eng. s273. See Education s318.

Eng. s337. Contemporary Literature. Five hours a week; three credits. Mr. Harrison.

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

GEOLOGY AND PHYSICAL GEOGRAPHY

Geol. s101. Earth History. Five hours a week; three credits. Mr. Stuckey.

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

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

Geol. s105. Physical Geography. Five lectures; four hours laboratory and field work; four credits. Equivalent to the regular course in physical geography given in the third term of the college year. Mr. Stuckey.

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

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

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

Geol. s291. Geology of North Carolina. Three lectures; four hours laboratory; three credits. Mr. Stuckey.

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

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

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

HISTORY

Hist. s101a. American Economic History. Five hours a week; three credits. Mr. Armstrong.

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

Hist. s101c. Commercial Geography (Commercial and Industrial.) Eight hours a week. Four credits. Mr. Lefler.

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. s104. History of the Early World. Five hours a week; three credits. Mr. Barnhardt.

This course gives a survey of the ancient civilizations and their contributions to the modern world. The civilization, from pre-historic times, of Egypt, Babylonia, Assyria, Persia, the Hebrews, and the Agean; the development of the

Greek states, their conflicts, institutions, art and literature; the expansion of Macedonia, the Hellenistic age; the rise of Rome, the Republic, the Empire and its fall. James H. Breasted, "Ancient Times A History of the Early World," will be used as a text.

Hist. s105. Methods of Teaching History. Mr. Lefler. (See Ed. s317.)

Hist. s201b. Modern European History. Five hours a week; three credits. Mr. Barnhardt.

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

Hist. s201c. Contemporary Europe. Five hours a week; three credits. Mr. Barnhardt.

Continuation of History s201b. This course deals with the economic and political developments in Europe from 1870 to the present time. Special emphasis is laid upon the causes of the World War. The war itself is studied in outline, and attention is given to the work of reconstruction.

Hist. s209. State Government. Five hours a week; three credits. Mr. Lefler.

The purpose of this course is to give a general view of the organization, problems, and functions of state governments in the United States, with special attention to the officers and agencies of government in North Carolina. The various forms of county and city government are studied, emphasis being placed on the recent reorganization of county government in this state.

W. F. Dodd, State Government, revised edition, will be used as a text, with collateral readings in P. W. Wager, County Government and Administration in North Carolina.

Hist. s302. Recent U. S .History. Five hours a week; three credits. Mr. Barnhardt.

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

Hist. s303. History of North Carolina. Five hours a week; three credits. Mr. Lefler.

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

MATHEMATICS

Math. s101. Algebra. Five credits. Prerequisite: Algebra to Quadratics and Plane Geometry. Mr. Mock.

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

Math. s102. Solid Geometry. Five credits. Prerequisite: Plane Geometry. Mr. Fisher.

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

Math. s103. Plane Trigonometry. Five credits. Prerequisite: Algebra through Quadratics and Plane Geometry. Mr. Fisher.

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

Math. s104. Analytical Geometry. Ten hours a week; five credits. Prerequisite: Mathematics 101, 103. Mr. Mock.

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

Math. s201. Differential Calculus. Ten hours a week. Five credits. Prerequisite: Mathematics 104. Mr. Harrelson.

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

Math. s202. Integral Calculus. Ten hours a week; five credits. Prerequisite: Mathematics 201. Mr. Harrelson.

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

Math. s343. The Teaching of Mathematics. (See Ed. s343.)

*MODERN LANGUAGES

French

Mod. L. s101. Elementary French. Five hours a week; three credits. Mr. Mumford.

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

Mod. L. s104. French Prose. Five hours a week; three credits. Mr. Hinkle, Mr. Mumford.

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

Mod. L. s208. Conversational French. Five hours a week; three credits. Mr. Mumford.

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

Mod. L. s303. Scientific French. Five hours a week; three credits. Mr. Hinkle.

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

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

Mod. L. s310. French Civilization. Five hours a week; three credits. Mr. Hinkle.

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

German

Mod. L. s102. Elementary German. Five hours a week; three credits. Mr. Hinkle.

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

Mod. L. s105. German Prose. Five hours a week; three credits. Mr. Hinkle.

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

Mod. L. s304. Scientific German. Five hours a week; three credits. Mr. Hinkle.

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

Spanish

Mod. L. s103. Elementary Spanish. Five hours a week; three credits. Mr. Hinkle.

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

Mod. L. s106. Spanish Prose. Five hours a week; three credits. Mr. Hinkle or Mr. Mumford.

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

Mod. L. s209. Conversational Spanish. Five hours a week; three credits. Mr. Hinkle.

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

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

Mod. L. s311. Spanish Civilization. Five hours a week; three credits. Mr. Hinkle.

This course is primarily a reading course on topics dealing with the development of Spanish civilization and culture. The reading material in the texts used

is supplemented by lectures on Spanish manners and customs. The work is conducted in such a way as to increase facility in the use of narrative Spanish and at the same time develop an accurate concept of present-day Spain.

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

PHYSICS

Physics s110. General Physics. Four or eight credits. Five hours class work, one 2½ hours laboratory each week for four credits. Double this for eight credits. Mr. Heck.

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

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

Physics s104. Five or ten term credits. Mr. Derieux.

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

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

Physics s113. Science Today.

Once a week, at six-thirty in the evening, an illustrated lecture will be given in the auditorium of the Y. M. C. A. for those who wish to bring themselves up to date in modern science. This year the emphasis will be placed on the physical sciences, Astronomy, Physics, and Chemistry. These lectures will be given by Professor Heck of the Physics Department. Not only the results of recent developments along these lines will be taken up, but the relation of the advance of science to education and philosophy will be discussed.

Those taking the course for credit will be required to do assigned parallel reading and take an objective test at the end of the course. The lectures, however, are open to the public.

Physics s411. Research.

PHYSICAL EDUCATION

NOTE.—Summer School students are very desirous of getting in Coaching Courses but find it difficult to schedule them in addition to other required subjects. The Coaching Courses of the regular term have been combined, to make it possible

for students to get instruction in all the major sports if they so desire. These classes meet daily, each sport covering one half the summer term.

P. E. s112-114. Theory of Football and Baseball Coaching. Five hours theory, one hour practice; three credits. Mr. Miller.

This course will cover the rules, equipment, schedule making, individual position play, offensive and defensive team play, signal systems, conditioning, individual and team strategy. Sufficient practice sessions will be held to thoroughly demonstrate the teaching of the fundamentals and technique of the sport covered.

P. E. s113-115. Theory of Basketball and Track Coaching. Five hours theory, one hour practice; three credits. Mr. Miller.

During the first half of the term basketball will be covered with the same thoroughness as football. Both team and individual technique will be stressed in the class room and on the floor. The second half of the term, the organization of track practice, the best training methods for each track and field event, the running off of meets and the duties of officials.

P. E. s117. Physical Training and Recreation Program for the H. S. Three hours theory, one hour practice; two credits. Mr. Miller.

This course is designed to aid those teaching in smaller high schools to meet the demands that are made of them. An organized system of physical training and recreation will be covered. The construction of playgrounds, the organization of classes, the administration, sports suitable to the playfield, calisthenic drills and health talks to be used on the inside on rainy days constitute this course. It is open to both men and women and should be a popular course because of the regular programs of Physical Education that are being instituted all over the State.

POULTRY SCIENCE

Poul. s101. General Poultry. Five hours a week for six weeks; three credits. Mr. Armstrong.

Three one-hour recitations, two laboratory periods of two hours each. Scope of the poultry industry and its possibilities; first, from the farm department standpoint and, second, as a separate business. Includes general problems, as sanitation, location of poultry houses, principles of poultry house construction, and general problems of small flock production.

Poul. s302. Poultry Nutrition. Two or six weeks course; one or three credits. Mr. Kaupp.

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

Poul. s304. Poultry Diseases. Five hours a week for six weeks; three credits. Mr. Kaupp, Mr. Dearstyne.

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

Drawings, museum specimens, cases from the poultry hospital, and autopsies from the disease research laboratory.

Poul. s307. Special Poultry Marketing. Five hours a week for six weeks; three credits. Mr. Kaupp.

Three one-hour recitations and two two-hour laboratory periods. Detailed study from the production standpoint of grading, packing, handling, storing, preserving, pickling, refrigerating, storing, and shipping of eggs. Graphing of the storage holdings of dried, frozen, and shell eggs each month of the year and the poultry production problems associated with it. Similar studies are made with live and dressed poultry and the fattening, shrinkage, and storage in dressed and live poultry shipments.

Poul. s311. Operation of Commercial and Community Hatcheries. Two or six weeks course; one or three credits. Mr. Armstrong.

Organization of community hatchery work. The theory of operation of the mammoth incubators of various types; handling of breeding flocks, care of eggs, operation of machine; care of chicks; boxes and methods of shipping of the baby chicks; cost factors as hatching, shipping and other overhead. The relation of bacillary white diarrhea to the commercial hatcheries.

Poul. s312. Poultry Judging. Five hours a week; two or six weeks course; one or three credits. Mr. Armstrong.

Both class and practice work in standard judging of fowls, laying special stress on Wyandottes, Rhode Island Reds, Leghorns, and Plymouth Rocks. Both class and practice work in the judging of fowls for egg production and meat qualities, using utility breeds.

Poul. s313. Advanced Poultry Nutrition. Five hours a week. Two or six weeks; one or three credits. Dr. Kaupp.

This covers the field of poultry nutrition, including physiology of digestion, absorption, metabolism, and waste elimination. Experimental data from the nutritional laboratory and the four production plants will be used for analysis and interpretation. Requirements for greatest results in broiler production, egg production, for fertility, hatchability and livability of chicks. For fattening, and growing out pullets.

Poul. s314. Devolpment of Poultry Extension Program. Five hours a week. Two weeks; one credit. Poultry staff.

This covers a discussion of organization of extension work and methods of outlining and carrying out a poultry extension program. Discussion of methods of approach and methods of field teaching and details of carrying out in practice the program of breeding, production, and marketing programs. A job analysis of the work.

Poul. s315. Laboratory Diagnosis. Two or six weeks course; one or three credits. Mr. Dearstyne.

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

Poul. 406. Production Studies and Experiments. Three credits. Mr. Kaupp.

This work involves problems in nutrition, as relative values of animal and vegetable feeds, green feeds, and of mineral supplements. Carried on with brooder

chicks for eight weeks periods, range chicks, and with laying hens. Value of fattening rations, and marketing studies. Inheritance in egg production and of the size of the egg. Other breeding experiments can be arranged for. Incubation experiments as to the value of times of turning the hatching eggs, sprinkling eggs, shrinkage experiments, and studies in pedigree work.

Poul. 408. Graduate Seminar. Three credits. Mr. Kaupp, Mr. Dearstyne.

SOCIOLOGY

Soc. s102. Introductory Sociology. Five hours a week; three credits. Mr. Anderson.

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

Soc. s202. Rural Sociology. Five hours a week; three credits. Mr. Anderson.

This course deals with the social aspects of rural life. It gives consideration to a number of specific rural social problems, such as rural recreation, rural health, rural schools, rural churches, the farm home, rural art, and similar problems. It spends considerable time in discussing rural community organization and community life, and concludes with the consideration of the psychology of rural life and the farmer's place in civilization.

Soc. s203. Community Organization. Five hours a week; three credits. Mr Anderson.

This course will discuss problems that result from present social disorganization among rural people, the philosophy of community organization, and practical plans and programs. It will also consider the problems of leadership in community life.

Soc. s306. See Education 306.

TEXTILES

Tex. s1. Yarn Manufacture. Special course for Mill Men. Credits assigned according to time given to study. Mr. Hilton.

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

Tex. s2. Loom Fixing, Designing, Fabric Analysis, and Calculations. Mr. Nelson, Mr. Hart.

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

Tex. s102. Yarn Manufacture I. Two credits. Mr. Hilton.

Study of physical properties of cotton fibers. Mixing of cotton; openers; pickers, cards; drawing frames. Description and setting of different parts. Cal-

culations for production, speeds, and drafts. Mechanical and electrical stop motions. Setting and weighting of rolls; sliver lapper; ribbon lapper; comber; description and setting of different parts; care of machines; fly frames; builder and differential motions; roll settings.

Tex. s104. Fabric Structure. Two credits. Mr. Hart.

Calculations to obtain quantities of warp and filling in fabrics. To find number of ends per inch, using a given weight of warp; also number of picks, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen and cotton yarns. Relations of fabric structure to design of fabric. 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.

Tex. s107. Fabric Design. Two credits. Mr. Nelson, Mr. Hart.

Construction of fancy weaves, such as broken twills, curved twills, entwining twills, granite weaves, sateen and other figures striped on plain ground. Imitation leno; honeycomb weaves; fabrics backed with warp or filling; fabrics ornamented with extra warp or filling; combining weaves together to produce new patterns.

Tex. s108. Fabric Analysis II. Two credits. Mr. Nelson, Mr. Hart.

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. s110. Dyeing I. Two credits. Mr. Grimshaw.

Study of direct cotton colors, their composition and application on cotton, function of assistants used and the effect of temperature and volume of dye bath upon depth of shade. Methods of after treatment to improve fastness. Methods of making tests for fastness to washing, light, perspiration, and cross dyeing. The diazotizing and developing process. The various colors and methods of application.

Tex. s115. Textiles for Teachers. Five hours a week; three credits. Mr. Grimshaw.

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. Methods of bleaching, dyeing and laundering fabrics containing rayon and other 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. s202. Dobby Weaving. Two credits. Mr. Nelson, Mr. Hart.

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

ZOOLOGY

Zool. s101. General Zoology. Four recitations, eight hours laboratory; four credits. Mr. Snyder, Mr. Mitchell.

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

Zool. s103. Ornithology. Four recitations, eight hours laboratory; four credits. Prerequisite: Zool. 101. Mr. Snyder.

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

Zool. s202. Economic Entomology. Four recitations, four hours laboratory; three credits. Prerequisite: Zool. 101. Mr. Mitchell.

A study of the economic importance of insects in relation to North Carolina agricultural conditions, the health of man and domestic animals, with emphasis placed on their specific control.

Zool. s208. Beekeeping. Two recitations, eight hours laboratory; three credits. Mr. Meacham.

The first term will consist of introductory beekeeping, marketing, fall management, and wintering. The third term will be devoted to proper equipment, spring management, and honey production.

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

SCHEDULE FOR SUMMER SCHOOL, 1929

All 400 Courses by Arrangement

ABBREVIATIONS FOR BUILDINGS

G.—Gymnasium
H.—Holladay
O. M.—Old Mechanical
P.—Page
P. & E.—Physics and Electrical Engineering Building
Pe.—Peele Hall
Pk.—Polk Hall
Pt.—Patterson
R.—Ricks
T.—Textile
Pl.—Pullen Hall
W.—Winston
Z.—Zoölogy Building

Name of Course	Number	Teacher	Hours per Week		Time of Recitation		Room
			Clock	Credit	Hours	Days	
AGRONOMY–							
Cotton Classing	Agron. S1	Darst, Cotner	20	none	9–1	M. T. W. Th. F.	Pt. 41-42-43
Cereal Crops	Agron. S201	Darst	7	3	11	M. W. F.	Pt. 28
		Cotner			11–1	T. Th.	Pt. 26
Cotton or Tobacco	Agron. S210 or S215	Cotner	5	3	8	M. T. W. Th. F.	Pt. 26
Seed Judging	Agron. S330	Cotner	7	3	12	M. W. F.	Pt. 28
		Darst			2–4	T. Th.	Pt. 26
Advanced Study of Crops Research	Agron. S351	Darst, Cotner		3–9	By	arrangement	Office
Soil Geology	Agron. S110	Cobb	8	4	By	arrangement	Office
The Soils of North Carolina	Agron. S315	Cobb	5	3	9	M. T. W. Th. F.	Pt. 16
Soil Fertility	Agron. S265	Cobb	10	5	10–12	M. T. W. Th. F.	Pt. 16
Soil Technology I	Agron. S321	Cobb		2–4	By	arrangement	Office
Soil Problems	Agron. S322	Cobb	5	3	By	arrangement	Office
Tax. of Field Crops	Agron. S334	Darst	5	3	By	arrangement	Office
Fertility Problems	Agron. S324	Cobb	5	3	By	arrangement	Office
ANIMAL HUSBANDRY—							
Animal Nutrition	A. H. S102	Ruffner	10	5	8–10	M. T. W. Th. F.	Pk. 109
Swine Production	A. H. S210	Hostetler	7	3	11	M. W. F.	Pk. 108
					2–6	T.	Pk. 109
Animal Breeding	A. H. S202	Ruffner	8	4	11–1	M. T. W. Th.	Pk. 110
Advanced Stock Judging	A. H. S203	Haig	8	3	8	T. Th.	Pk. 108
					8–10	M. W. F.	Pk. 110
Stock Farm Management	A. H. S208	Ruffner	5	3	10	M. T. W. Th. F.	Pk. 109
Adv. Nutrition	A. H. S211	Ruffner	8	4	2–4	M. T. W. Th.	Pk. 109
Hygiene-Sanitation of Farm Animals	A. H. S218	Koonce	7	3	8	M. W. F.	Pk. 108
					2–4	T. Th.	Pk. 108
BOTANY—							
General Botany	Bot. S101	Shunk	12	4	8	M. T. W. Th.	Pt. 38
		Whitford			2–4	M. T. W. Th.	Pt. 49
General Bacteriology	Bot. S202	Shunk	12	4	11	M. T. W. Th.	Pt. 38
					2–4	M. T. W. Th.	Pt. 38
Systematic Botany	Bot. S203	Shunk	17	5	9	T. Th.	Pt. 38
		Whitford			2–5	M. T. W. Th. F.	Pt. 38
CHEMISTRY—							
General Chemistry	Chem. S101a	Wilson	9	4	8	M. T. W. Th. F.	W. 208
		Satterfield			11–1	M. F.	W. 208
General Chemistry	Chem. S101b	Wilson	9	4	9	M. T. W. Th. F.	W. 208
		Satterfield			11–1	T. Th.	W. 208
General Chemistry	Chem. S101c	Wilson	9	4	1	M. T. W. Th. F.	W. 208
		Satterfield			Lab.	by arrangement	
Qual. Analysis	Chem. S111	Wilson	17	4	11	T. Th.	W. 208
					8–11	M. T. W. Th. F.	W. 204A

SCHEDULE SUMMER SCHOOL, 1929—*(Continued)*

Name of Course	Number	Teacher	Hours per Week		Time of Recitation		Room
			Clock	Credit	Hours	Days	
Quan. Analysis	Chem. S112	Wilson	17	4	E 10	M. W.	
					E 2–5	M. T. W. Th.	W. 214
Organic and Biological Chemistry	Chem. S141	Satterfield	5	3	By	arrangement	
Chemistry of Life	Chem. S241	Satterfield	5	3	By	arrangement	
Food, Nutrition and Diet	Chem. S242	Satterfield	5	3	By	arrangement	
Organic Chemistry	Chem. S221	Wilson	15	6	By	arrangement	Office
Industrial Foods	Chem. S240	Satterfield	5	3	By	arrangement	Office
ECONOMICS—							
Introduction to Economics	Econ. S102	Moen	5	3	9	M. T. W. Th. F.	Pe. 3
General Economics	Econ. S103	Forster	5	3	8	M. T. W. Th. F.	Pe. 1
Statistical Methods	Econ. S212	Forster	5	3	10	M. T. W. Th. F.	Pe. 1
Marketing Methods	Econ. S215	Moen	5	3	10	M. T. W. Th. F.	Pe. 3
Advertising	Econ. S217	Moen	5	3	8	M. T. W. Th. F.	Pe. 3
Farm Marketing	Econ. S265	Forster	5	3	9	M. T. W. Th. F.	Pe. 1
Farm Accounting	Econ. S269	Forster	5	3	11	M. T. W. Th. F.	Pe. 1
Farm Org. and Manage	Econ. S361	Forster	5	3	12	M. T. W. Th. F.	Pe. 1
Marketing Methods and Problems	Econ. S366	Forster	5	3	By	arrangement	Pe. 1
EDUCATION—							
Theory of Industrial Arts	Ed. S353	Boshart	5	3	8	M. T. W. Th. F.	Pe. 13
Practical Arts Problems	Ed. S354	Leggette	10	3	(1)11–1	M. T. W. Th. F.	Pe. 9
					(2)9–11	M. T. W. Th. F.	Pe. 9
Art Studies	Ed. S355	Leggette	* 10	3	9-11	M. T. W. Th. F.	Pe. 9
Educational Psychology	Ed. S201	Wallace	5	3	9	M. T. W. Th. F.	Pl. 8
Visual Aids	Ed. S208				9	M. T. W. Th. F.	R. 302
Tests and Measurements	Ed. S327	Mayer	5	3	8	M. T. W. Th. F.	Pe. 4
Examinations and Grading	Ed. S328	Mayer	5	3	9	M. T. W. Th. F.	Pe. 4
Problems of the High School Teacher	Ed. S303	Highsmith	5	3	12	M. T. W. Th. F.	Pe. 6
Methods of Study	Ed. S305	Cook	5	3	9	M. T. W. Th. F.	Pe. 201
Teaching Modern Languages	Ed. S315	Mumford	5	3	10	M. T. W. Th. F.	Pe. 212
Teaching of Literature in Secondary Schools	Ed. S316	Owens	5	3	8	M. T. W. Th. F.	Pl. 101
Teaching History	Ed. S317	Lefler	5	3	10	M. T. W. Th. F.	Pl. 5
Teaching of Composition	Ed. S318	Owens	5	3	10	M. T. W. Th. F.	Pl.101
Vocational Guidance	Ed. S320	Boshart	5	3	9	M. T. W. Th. F.	Pe 13
School Administration	Ed. S335	Highsmith	5	3	9	M. T. W. Th. F.	Pe. 6
Problems in Secondary Education	Ed. S336	Highsmith	5	3	10	M. T. W. Th. F.	Pe. 6
Methods of Teaching Geography	Ed. S340	Showalter	5	3	9	M. T. W. Th. F.	Pe. 209
Methods of Science Teaching	Ed. S338	Showalter	5	3	10	M. T. W. Th. F.	Pe. 209
Materials of Science Teaching	Ed. S339	Showalter	5	3	12	M. T. W. Th. F.	Pe. 209
Rural Education	Ed. S345	Mayer	5	3	11	M. T. W. Th. F.	Pe. 4
Org. and Admin. of Part-time and Continuation Schools	Ed. S351	Coggin	5	3	8	M. T. W. Th. F.	Pl. 4
History of Education	Ed. S364	Wallace	5	3	11	M. T. W. Th. F.	Pl. 8
Visual Instruction	Ed. S330	Armstrong	7	3	8	M. T. W. Th. F.	R. 302
Problems in Agriculture Teaching	Ed. S416	Cook	5	3	12	M. T. W. Th. F.	R. 302
Special Problems in Teaching Agriculture	Ed. S360	Cook	5	3	10	M. T. W. Th. F.	R. 302

* May be taken half time for half credit.

Name of Course	Number	Teacher	Hours per Week		Time of Recitation		Room
			Clock	Credit	Hours	Days	
Supervision	Ed. S308	Highsmith	5	3	11	M. T. W. Th. F.	Pe. 6
Adv. Methods in Science Teaching	Ed. S375	Showalter	5	3	8	M. T. W. Th. F.	Pe. 209
Educational Sociology	Ed. S306	Anderson	5	3	9	M. T. W. Th. F.	Pl. 7
Vocational Education	Ed. S321	Coggin	5	3	9	M. T. W. Th. F.	Pl. 4
Study of Occupations	Ed. S323	Boshart	5	3	10	M. T. W. Th. F.	Pe. 13
Methods of Teaching Chemistry	Ed. S342	Satterfield	5	3	By	arrangement	Office
Psychology of Adolescence	Ed. S203	Garrison	5	3	9	M. T. W. Th. F.	Pe. 204
Psychology of Secondary Ed.	Ed. S326	Garrison	5	3	10	M. T. W. Th. F.	Pe. 204
Teaching Mathematics	Ed. S343	Mock	5	3	10	M. T. W. Th. F.	Pe. 206
ENGINEERING—							
Mechanics	C. E. S105	Foster	5	3	8	M. T. W. Th. F.	P. 104
Eng. Drawing	M. E. S102	Foster	(a) 10	3	10-12	M. T. W. Th. F.	P. 106
			(b) 20	6	9-1	M. T. W. Th. F.	P. 106
Descriptive Geometry	M. E. S103	Foster	10	3	10-12	M. T. W. Th. F.	P. 106
Woodshop	M. E. S105	Wheeler	10	2	2-4	M. T. W. Th. F.	Woodshop
Mechanical Drawing	M. E. S107	Briggs	(a) 4	1	11-1	T. Th.	P. 206
			(b) 7	2	11-1 10-1	W. F. M.	P. 206
			(c) 10	3	11-1	M. T. W. Th. F.	P. 206
Machine Shop Work	M. E. S118	Wheeler	10	2	9-11	M. T. W. Th. F.	Mch. Shop
Metal Work	M. E. S130	Wheeler	15	3	9-12	M. T. W. Th. F.	Mch. Shop
Woodworking for Teachers	M. E. S132	Wheeler	15	3	2-5	M. T. W. Th. F.	Woodshop
Mechanical Drawing for Teachers	M. E. S134	Foster	15	4	By	arrangement	P. 106
ENGLISH—							
Rhetoric and Composition	Eng. S101	Marshall	5	3	10	M. T. W. Th. F.	Pl. 2
Journalism	Eng. S250	Robertson	5	3	10	M. T. W. Th. F.	Pl. 108
Public Speaking	Eng. S260	Owens	5	3	9	M. T. W. Th. F.	Pl. 101
The Essay	Eng. S208	Harrison	5	3	11	M. T. W. Th. F.	Pl. 104
Shakespeare	Eng. S230	Harrison	5	3	10	M. T. W. Th. F.	Pl. 104
Magazine Writing	Eng. S252	Robertson	5	3	11	M. T. W. Th. F.	Pl. 108
Contemporary Literature	Eng. S209	Harrison	5	3	8	M. T. W. Th. F.	Pl. 104
Business English	Eng. S201	Robertson	5	3	8	M. T. W. Th. F.	Pl. 108
Technical Writing	Eng. S203	Harrison	5	3	9	M. T. W. Th. F.	Pl. 104
Industrial News Writing	Eng. S255	Robertson	5	3	12	M. T. W. Th. F.	Pl. 108
Advanced English Grammar	Eng. S202	Owens	5	3	12	M. T. W. Th. F.	Pl. 101
The Short Story	Eng. S210	Marshall	5	3	8	M. T. W. Th. F.	Pl. 2
Victorian Poetry	Eng. S235	Marshall	5	3	11	M. T. W. Th. F.	Pl. 2
GEOLOGY—							
Earth History	Geol. S101	Stuckey	5	3	9	M. T. W. Th. F.	W. 104
Physical Geography	Geol. S105	Stuckey	11	4	10 2-4	M. T. W. Th. F. M. W. F.	W. 104
Geology of North Carolina	Geol. S291	Stuckey	7	3	12 2-4	M. W. F. T. Th.	W. 104
HISTORY—							
Commercial Geography	Hist. S101c	Lefler	5	3	8	M. T. W. Th. F.	Pl. 5
American Economic History	Hist. S101a	Armstrong	5	3	10	M. T. W. Th. F.	R. 1
Contemporary Europe	Hist. S201c	Barnhardt	5	3	8	M. T. W. Th. F.	Pl. 6
Methods of Teaching History	Hist. S105	Lefler	See Ed. S317				

Name of Course	Number	Teacher	Hours per Week		Time of Recitation		Room
			Clock	Credit	Hours	Days	
Recent United States History	Hist. S302	Lefler	5	3	8	M. T. W. Th. F.	Pl. 5
State Government	Hist. S209	Lefler	5	3	11	M. T. W. Th. F.	Pl. 5
Mod. European History	Hist. S201b	Barnhardt	5	3	9	M. T. W. Th. F.	Pl. 6
History of Early World	Hist. S104	Barnhardt	5	3	11	M. T. W. Th. F.	Pl. 6
History of North Carolina	Hist. S303	Lefler	5	3	9	M. T. W. Th. F.	Pl. 6
MATHEMATICS—							
Algebra	Math. S101	Mock	10	5	11–1	M. T. W. Th. F.	Pe. 206
Solid Geometry	Math. S102	Fisher	10	5	11–1	M. T. W. Th. F.	Pe. 208
Plane Trigonometry	Math. S103	Fisher	10	5	8–10	M. T. W. Th. F.	Pe. 208
Analytical Geometry	Math. S104	Mock	10	5	8–10	M. T. W. Th. F.	Pe. 206
Differential Calculus	Math. S201	Harrelson	10	5	11–1	M. T. W. Th. F.	Pe. 207
Integral Calculus	Math. S202	Harrelson	10	5	8–10	M. T. W. Th. F.	Pe. 207
MODERN LANGUAGES—							
Elementary French	Mod. L. S101	Mumford	5	3	8	M. T. W. Th. F.	Pe. 211
French Prose	Mod. L. S104	Hinkle / Mumford	5	3	9	M. T. W. Th. F.	Pe. 212
Scientific French	Mod. L. S303	Hinkle	5	3	12	M. T. W. Th. F.	Pe. 212
Conversational French	Mod. L. S208	Mumford	5	3	11	M. T. W. Th. F.	Pe. 211
French Civilization	Mod. L. S310	Hinkle	5	3	9	M. T. W. Th. F.	Pe. 212
Elementary German	Mod. L. S102	Hinkle	5	3	10	M. T. W. Th. F.	Pe. 212
Scientific German	Mod. L. S304	Hinkle	5	3	11	M. T. W. Th. F.	Pe. 212
German Prose	Mod. L. S105	Hinkle	5	3	10	M. T. W. Th. F.	Pe. 212
Elementary Spanish	Mod. L. S103	Hinkle	5	3	12	M. T. W. Th. F.	Pe. 212
Spanish Prose	Mod. L. S106	Hinkle / Mumford	5	3	9	M. T. W. Th. F.	Pe. 212
Conversational Spanish	Mod. L. S209	Hinkle	5	3	1	M. T. W. Th. F.	Pe. 212
Methods of Teaching Modern Languages	See Ed. S315						
Spanish Civilization	Mod. L. S311	Hinkle	5	3	9	M. T. W. Th. F.	Pe. 212
PHYSICAL EDUCATION—							
Football and Baseball Coaching	P. E. S112-114	Miller	5	3	12	M. T. W. Th. F.	Gym
Basketball and Track Coaching	P. E. S113-115	Miller	5	3	8	M. T. W. Th. F.	Gym
Physical Training and Recreation	P. E. S117	Miller	4	2	By	arrangement	Office
PHYSICS—							
General Physics	Phys. S110	Heck	7	3	9	M. T. W. Th.	P. & E. 113
					11–1	T.	P. & E. 113
General Physics	Phys. S110	Heck	14	6	9–11	M. T. W. Th.	P. & E. 113
					11–1	T. Th.	P. & E. 113
Physics II or III	Phys. S104	Derieux	11	5	8	M. T. W. Th. F.	P. & E. 112
					2–4	M. W.	P. & E. 112
Physics II or III	Phys. S104	Derieux	20	10	8–10	M. T. W. Th. F.	P. & E. 112
					2–4	M. T. W. Th. F.	P. & E. 112
Science Today	Phys. S113	Heck		none		arrangement	Y.M.C.A.
POULTRY—							
General Poultry	Poul. S101	Armstrong	7	3	11	M. W. F.	R. 207
					2–4	T. Th.	R. 207

Name of Course	Number	Teacher	Hours per Week		Time of Recitation		Room
			Clock	Credit	Hours	Days	
Poultry Diseases	Poul. S304	Kaupp	7	3	10	M. W. F.	R. 207
		Dearstyne			2–4	M. W.	R. 207
Poultry Marketing	Poul. S307	Kaupp	7	3	12	T. Th. F.	R. 207
					11–1	M. W.	R. 207
Commercial and Community Hatcheries	Poul. S311	Armstrong	5	3	9	M. T. W.	R. 207
					2–4	W.	
Laboratory Diagnosis	Poul. S315	Dearstyne	5	3	10	M. T. W. Th. F.	R. 203
Poultry Nutrition	Poul. S302	Kaupp	5	3	8	M. T. W. Th. F.	R. 203
Poultry Judging	Poul. S312	Armstrong	5	3	By	arrangement	Office
Adv. Poultry Nutrition	Poul. S313	Kaupp	5	3	By	arrangement	Office
Poultry Extension Program	Poul. S314	Staff	5	3	By	arrangement	Office
SOCIOLOGY—							
Introductory Sociology	Soc. S102	Anderson	5	3	10	M. T. W. Th. F.	Pl. 7
Rural Sociology	Soc. S202	Anderson	5	3	12	M. T. W. Th. F.	Pl. 7
Community Organization	Soc. S203	Anderson	5	3	11	M. T. W. Th. F.	Pl. 7
TEXTILE—							
Yarn Manufacture	Tex. S1	Hilton		none	By	arrangement	Tex. Bldg.
Loom Fixing	Tex. S2	Nelson		none	By	arrangement	Tex. Bldg.
		Hart					
Yarn Manufacture I	Tex. S102	Hilton		2	By	arrangement	Tex. Bldg.
Fabric Structure	Tex. S104	Hart		2	By	arrangement	Tex. Bldg.
Fabric Design	Tex. S107	Nelson		2	By	arrangement	Tex. Bldg.
		Hart					
Fabric Analysis II	Tex. S108	Nelson		2	By	arrangement	Tex. Bldg.
		Hart					
Dyeing I	Tex. S110	Grimshaw		2	By	arrangement	Tex. Bldg.
Textile for Teachers	Tex. S115	Grimshaw	5	3	8	M. T. W. Th. F.	Tex. Bldg.
Dobby Weaving	Tex. S202	Nelson		2	By	arrangement	Tex. Bldg.
		Hart					
ZOOLOGY—							
General Zoology	Zool. S101	Snyder	12	4	8	M. T. W. Th.	Z. 106
		Mitchell			2–4	M. T. W. Th.	
Bird Study	Zool. S103	Snyder	12	4	9	M. T. W. Th.	Z. 106
					2–4	M. T. W. Th.	
Economic Entomology	Zool. S202	Mitchell	8	3	By	arrangement	Office
Beekeeping	Zool. S208	Meacham	10	3	By	arrangement	Office

Please reserve room for me during 1929 Summer School.

NAME .....

Address ..... R. F. D.

County .....

I prefer room in ..... dormitory

I am particularly interested in the following courses:

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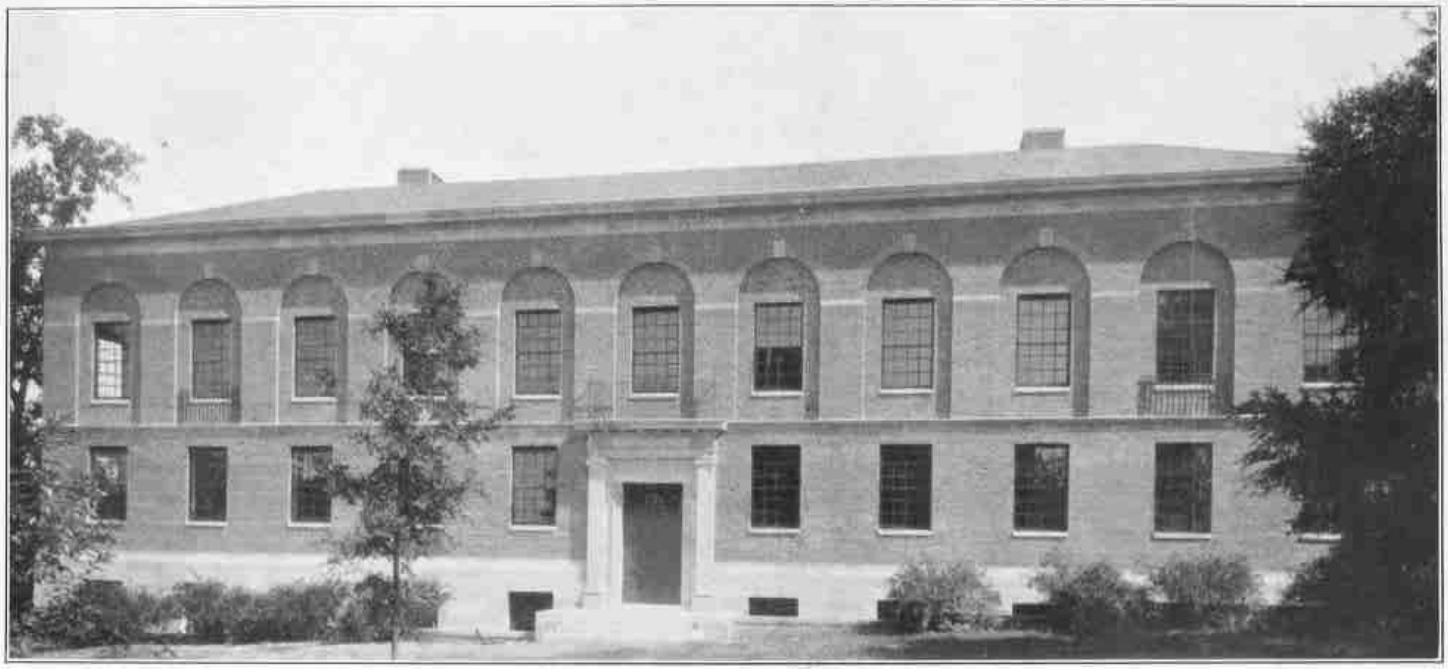
Fifth and Sixth dormitories will be reserved for women, Wataugua, South, and Fourth for men.

Please tear off and mail to *Director of Summer School, State College Station, Raleigh, N. C.*, if you wish room reserved.



PEELE HALL, THE NEW LIBERAL ARTS BUILDING

A 1928 SUMMER SCHOOL GROUP