

# STATE COLLEGE RECORD

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VOL. 31

MARCH, 1932

No. 3

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## Summer School

JUNE 13—JULY 22, 1932

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Announcement of Courses



North Carolina State College  
*of*  
Agriculture and Engineering

STATE COLLEGE STATION  
RALEIGH, N. C.

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

Entered as second-class matter, October 16, 1917, at the post office at College Station,  
Raleigh, N. C., under the Act of August 24, 1912.

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Address official communications to  
DIRECTOR OF THE SUMMER SCHOOL  
State College Station  
Raleigh, N. C.

Bring This Copy of the Record With You to the School

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Professor of Poultry Science	
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Professor of Theoretical Physics	
HILBERT ADAM FISHER, M.S., Graduate U. S. Naval Academy.....	<i>Mathematics</i>
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Associate Professor of Yarn Manufacture	
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Assistant Professor of English	

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	Professor of Physical Education	
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	Assistant Professor of Zoology	
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	Assistant Professor of Mathematics	
CAREY G. MUMFORD, B.A.	.....	<i>Mathematics</i>
	Instructor in Mathematics	
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	Dean of the Textile School	
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	Assistant Professor of Architectural Engineering	
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	Professor of Animal Husbandry and Dairying	
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	Associate Professor of Education	
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	Assistant Professor, Meredith College	
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	Assistant Professor of Poultry	
SANFORD RICHARD WINSTON, B.A., Ph.D.	.....	<i>Sociology</i>
	Associate Professor of Sociology	

## SUMMER SESSION, 1932

The nineteenth Summer Session of the North Carolina State College of Agriculture and Engineering, which begins Monday, June 13th, and closes Friday, July 22nd, has broadened considerably its instruction, particularly by offering additional courses. In the courses given, the work will be directed primarily to the needs of teachers in secondary education. The usual technical courses will also be offered, as well as courses for teachers of Industrial Arts who hold a certificate of Grammar Grade C or higher.

In addition to the subject-matter courses open to all students who have graduated from high school and particularly suitable for those persons preparing to teach in the secondary schools, there will be courses in the methods of teaching the various high school subjects. There will be offered advanced courses in the field of education, dealing with Philosophy, History of Education and Psychology. The purpose of these is to build upon the several courses in Education that have been given heretofore and which will be repeated in 1932.

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.

Dr. J. Henry Highsmith, Director, Division of School Inspection, State Department of Public Instruction, will have charge of the general courses for superintendents, high school principals, and teachers. Professor M. F. Showalter will give the courses in special methods for high school teachers. 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 this science course 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.

### 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 concerning 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.

## VOCATIONAL GUIDANCE

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

Vocational guidance, Ed. 320, is a beginning course for advanced undergraduates and graduates, also for teachers in service who wish help in guidance activities. Occupational Counseling, Ed. 412, is a graduate course for those who have had Ed. 320 and some experience in teaching, and those who have had a wider experience in school and industry. Closely correlated with these courses are those in Psychology, Sociology, Economics and testing.

## 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.

\* A fee of \$1.00 will be charged those taking Ed. s354 and Ed. s355 to pay for the materials used.

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

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

### PHYSICAL EDUCATION AND COACHING

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

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

### MUSIC AND ASSEMBLIES

The success of the musical organizations of the Summer School under the direction of Mrs. Lillian Parker Wallace has elicited favorable comment from friends throughout the city. These are voluntary organizations and Mrs. Wallace kindly gives her services to these groups without charge. Students interested in music should by all means bring their musical instruments with them.

Only one assembly period per week will be provided. Interesting programs will be arranged for each of these. All students and faculty members are expected to attend these assemblies.

### 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.

A popular occasion during the 1931 Summer School was the ALL COLLEGE PARTY. These parties give an opportunity for the students and faculty to know each other better by playing and dancing together. More of these will be provided in 1932.

### 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.

Six summer schools of six weeks in residence at the College are reckoned sufficient to fulfill the residence requirement for the Master's degree. By specific approval of the Committee on Graduate Instruction, one summer period may be spent away from the College if devoted to the preparation of the thesis required for graduation.

### **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 as meeting Summer School requirements if all the demands 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 Mrs. Verona Hoggard who has served so efficiently for several summers.

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

### **EDUCATIONAL FORUM**

An open forum for discussion of timely subjects in the several larger fields of study in the college will be conducted for the benefit of Summer School students. These meetings will consist of an opening lecture by a recognized leader in his field, followed by a period of round table conference. These meetings will be as frequent as the attendance and interest will warrant.

## PERSONAL PROBLEMS CONFERENCE

In view of the unusually difficult conditions under which teachers are working, the Summer School is providing for a weekly conference period of faculty and students for the consideration of urgent problems in fields in which students may not be able to get sufficient information and help in regular courses. The conference plan will have the advantage of having a number of faculty members in attendance to bring in their individual experience and points of view bearing on the problem under consideration. This plan aims to afford students the opportunity to have light thrown upon just as many of their general and individual problems as possible to provide.

## OPPORTUNITY FOR INTERVIEWS

Members of the faculty will maintain office hours for consultation with students on problems related to their respective fields of work.

In addition to regular personal and professional assistance the State College faculty is always anxious to give teachers, it should be of tremendous value to teachers to attend Summer School in Raleigh where they are in easy access to the various State Departments. This is especially true in connection with personal interviews teachers may arrange with heads of Divisions in the State Department of Education. The Director's office will be glad to aid in arranging for these interviews.

## SOCIAL FEATURES

A reception for students and faculty, followed by other social and recreational events such as week-end picnics and excursions, serve to foster a congenial spirit in the student body as well as to keep students physically and mentally fit for efficient study.

## FEEES AND EXPENSES FOR SIX-WEEKS STUDENTS

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

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

### \*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 1931-32.

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.

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

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

The registration fee is not returnable after June 4. There will be no refund of room rent or tuition after June 18.

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

## BOARD AND LODGING

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

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.

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

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

## WHAT STUDENTS NEED FOR THEIR ROOMS

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

## REGISTRATION

All registrations will be conducted in Frank Thompson Gymnasium beginning at 9 a.m., on June 13th. Students are expected to report in person on Monday, June 13th, so that they may begin class work on the morning of Tuesday, June 14th, at 8 o'clock. Deans and Directors of Instruction will be present to advise students relative to courses.

## DIPLOMAS

Students expecting to receive a degree at the end of the Summer School should come to the Office of Registration early in the session and check up on all credits; also check their names as to correctness of spelling, etc., in order that they may appear properly upon the diploma.

## HOURS OF WORK

It is important to notice that teachers are required to take at least fifteen hours weekly in order to receive credit for one summer session. Additional credits may be taken by students if they have points to justify, and by teachers on approval of the Director. However, a fee of \$5.00 will be charged for the extra course, and in no case will a student be allowed more than twelve credits per week. *Each student will be allowed to audit a class five times, if agreeable to instructor.*

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

## SCHOOL FOR JANITORS AND FIREMEN

For the past few summers the Mechanical Engineering Department of North Carolina State College, as a feature of the Summer School, has conducted a short course for six days for white janitors and firemen, teaching the fundamental principles of combustion, how to fire economically, and general instructions about heating systems and operation of the plant. The mornings are given to lectures and talks by members of the college faculty and representa-

tives from other state departments, and the afternoons are given over to the practical problems and inspection trips to different schools. The total cost which includes cost of registration and room rent will not exceed \$3.00. Board is not furnished, but can be secured from the College Cafeteria. The 1932 school will be held the week of July 18-23 and applications for admission should be sent to Professor L. L. Vaughan, North Carolina State College, Raleigh, North Carolina.

### **THE ATTRACTIONS OF RALEIGH**

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

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

### **THE SOCIAL CENTER**

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

### **THE D. H. HILL LIBRARY**

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

The Olivia Rancey 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.

### **MEETING OF YOUNG TAR HEEL FARMERS**

The annual meeting of Young Tar Heel Farmers, the State-wide organization of students of vocational agriculture, will be held at N. C. State College June 24 and June 25, 1932.

## COURSES TO BE OFFERED IN THE SUMMER SCHOOL

### ABBREVIATIONS FOR BUILDINGS

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

### ANIMAL HUSBANDRY AND DAIRYING

**A. H. s217. Ice Cream Making.** Four credits; lectures and laboratories.  
Prerequisite: A. H. 103. Mr. Ruffner. By arrangement. Pk. 110.

Standardizing of mixing and freezing of ice cream, sherbets, and other frozen products, and the physical principles involved; types of freezers, flavoring materials, fillers and binders; ice cream standards; the theory and practice of artificial refrigeration and its use in the ice cream plant.

**A. H. s304. Herd Improvement.** Five times a week; three credits.  
Prerequisite: A. H. 101, 102, 103. Mr. Ruffner. By arrangement.  
Pk. 110.

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

### BOTANY

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

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

- (1) Teachers of Biology who desire to enhance their knowledge of the higher plants, especially the crop plants.
- (2) Agricultural workers who desire a thorough review of the fundamental structure and functions of the crop plants.
- (3) College students who, having failed this course in past years, desire to change their record in regard to it.

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

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

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

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

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

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

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

## CHEMISTRY

**Chem. s101a. General Chemistry.** Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to first term General Chemistry as given in the regular college year. Mr. Jordan, Mr. Williams. 8 M. T. W. T. F.; 1-5 M. W. 114.

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

**Chem. s101b. General Chemistry.** Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to second term General Chemistry as given in the regular college year. Mr. Jordan, Mr. Williams. 9 M. T. W. T. F.; 1-5 T. W. 102.

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

**Chem. s101c. General Chemistry.** Five hours in classroom and five hours in laboratory each week. Four credits. Equivalent to third term General Chemistry as given in the regular college year. Mr. Jordan, Mr. Williams. 10 M. T. W. T. F.; 1-5 W. W. 114.

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

**Chem. s111. Qualitative Analysis.** Two hours lecture with four laboratory periods of three hours each, per week. Equivalent to one term of college work. Four hours credit. Prerequisite: General Chemistry. Mr. Williams. 11 T. Th.; 8-11 M. T. W. T. F. W. 102.

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

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

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

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

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

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

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

The influence of vitamins, minerals, proteins, amino acids, carbohydrates, fat, fiber, flavor, color, enzymes, preservatives and stimulants on the body.

Chemical and physical nature of carbohydrates, fats and proteins. Digestion and metabolism. Study of the proper diet. Flesh-forming and flesh-producing diets. Diet in disease. Sour milk therapy.

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

## ECONOMICS

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

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

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

**Econ. s103. General Economics.** Five hours a week; three credits. Mr. Shulenberger. 11 M. T. W. T. F. Pe. 109.

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

An introduction to the general field of Economics. A study of economic institutions and the general principles governing the production and distribution of wealth under the existing economic organization.

Sections for F. W. S.

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

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

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

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

Required of all sophomores in Business Administration and Industrial Management.

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

Sections for F. W. S.

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

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

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

**Econ. s212. Statistical Method.** Five hours a week; three credits. Elective. Prerequisite: Economics 102. Mr. Leager. 10 M. T. W. T. F. Pe. 3.

A study of the elements of statistical methods, collection and analysis of statistical data. This course stresses the application of statistical methods to educational data—graphical presentation, and analysis of teachers' problems.

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

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

**Econ. s266. Current Marketing Problems.** Five hours a week for three weeks; one and one-half credits. Mr. Knapp. Prerequisite: Econ. 102 and Agr. Econ. 265 or the equivalent.

A discussion of practical marketing problems affecting teachers of vocational agriculture.

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

This course deals with the practical aspects of farm accounting, such as preparation of inventories of farm property, simple financial statements, method of keeping farm records, analysis of farm records, and the interpretation of results obtained from farm business transactions. Attention will also be given to methods of obtaining information on the business aspects of farming.

**Econ. s363. Agricultural Cooperation.** Five hours a week; three credits. Mr. Knapp. By arrangement. R. 114.

A study of all types of farmers' cooperative enterprises. Specific consideration is given to local community cooperation, both economic and social, farmers' buying, selling, and service organizations. A comparative study of all foreign and American farmers' cooperatives is made.

**Econ. s366. Marketing Methods and Problems.** Five hours a week; three credits. Prerequisite: Econ. 103, Agr. Econ. 260, Agr. Econ. 265, and three additional credits in Economics. Mr. Knapp. By arrangement. R. 114.

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

## EDUCATION

### Courses for Undergraduates

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

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

**Ed. s203a. Educational Psychology.** Five hours a week; three credits.  
Required of students in Education; elective for others. Mr. ....  
8 M. T. W. T. F. H. 3.

Original nature and environment are analyzed in this course as to their function in the educational processes. The elementary principles of psychology are illustrated and studied as they relate to the learning process.

**Ed. s203b. Educational Psychology.** Five hours a week; three credits.  
Required of students in Education; elective for others. Mr. Gar-  
rison. 10 M. T. W. T. F. H. 3.

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

**Ed. s205. Introduction to Education.** Five hours a week; three credits.  
Mr. Mayer. 11 M. T. W. T. F. Pe. 203.

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

**Ed. s303. Problems of the High School Teacher.** Five hours a week;  
three credits. Mr. Showalter. Prerequisite: Twelve credits in  
Education. 9 M. T. W. T. F. Pe. 203.

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

Textbooks, lectures, readings, and reports.

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

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

**Ed. s320. Vocational Guidance.** Five hours a week; three credits. Mr.  
Boshart. Prerequisite: Twelve credits in Education. 9 M. T. W.  
T. F. H. 16.

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

**Ed. s321. Vocational Education.** Five hours a week; three credits. Mr.  
Boshart. Prerequisite: Twelve credits in Education. 12 M. T. W.  
T. F. H. 16.

This course is organized especially for administrators, supervisors, principals, and teachers who have not had opportunity of working out the relation-

ships governing vocational and general education. It will treat of the needs and place of vocational education in the public school system; practices in organization of vocational education and vocational guidance in trades and industries, home economics, and agriculture, including continuation schools, part-time and evening classes; and the problems related to administration of the Smith-Hughes Act.

**Ed. s323. Study of Occupations.** Five hours a week; three credits. Mr. Boshart. 10 M. T. W. T. F. II. 16.

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

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

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

**Ed. s328. Tests, Examinations, and Grading.** Five hours a week; three credits. Prerequisite: Twelve credits in Education or Senior Standing. Mr. Mayer. 8 M. T. W. T. F. Pu. 7.

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

**Ed. s330. Visual Instruction.** Five hours a week; three credits. Prerequisites: Twelve credits in Education. Mr. Armstrong. 9 M. T. W. T. F. Pe. 201.

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

**Ed. s331. Problems in Visual Instruction.** Five hours a week; three credits. Prerequisites: Ed. 208 or Ed. 330 and 9 other credits in Education. Mr. Armstrong. 8 M. T. W. T. F. Pe. 201.

A thorough study of educational problems pertaining to teaching through the sense of sight; psychology of sight perception; comparison of various visual aids; a study of research reports. Each student will be required to complete a brief special problem in the field of visual instruction.

**Ed. s335. Public School Administration.** Five hours a week; three credits. This course is intended primarily for superintendents and principals. Prerequisite: Twelve credits in Education. Mr. Highsmith. 9 M. T. W. T. F. Pe. 208.

The following problems will receive consideration:

The powers and duties of the board of education; the powers and duties of the superintendent; the county-wide plan; consolidation of schools; trans-

portation of pupils; school buildings and equipment; operation and maintenance of plant; janitor service; selection, purchase and distribution of supplies; school reports; problems pertaining to the teacher, pupil and home; educational problems of a county school system.

Textbooks, lectures, readings and reports.

**Ed. s336. Problems in Secondary Education.** Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Highsmith. 11 M. T. W. T. F. Pe. 266.

The purpose of this course is to give as practical assistance as possible to those men and women who wish to become or who are now serving as 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 organization); standards for high schools; classification of pupils; control of pupils and discipline; regulation of attendance; guidance of pupils; classroom standards; examination; marking system; interpretation of intelligence scores; supervision of study; class schedule making; duties of the principals; supervision of instruction; selection of teachers; teaching load; salaries; professional ethics.

Textbooks, lectures, readings, and reports.

**Ed. s337. The Teaching of Science in the Secondary School.** Five hours a week; three credits. Prerequisites: Thirty term credits in Science and twelve term credits in Education. Mr. Showalter. 10 M. T. W. T. F. Pe. 208.

The place in secondary education of the field of natural science, special aims and purposes to be achieved, principles of selection and organization of the materials of instruction, teaching techniques, and the construction and use of written tests.

**Ed. s339. The Teaching of High School Geography.** Five hours a week; three credits. Prerequisite: Twelve credits in Education. Mr. Showalter. 12 M. T. W. T. F. Pe. 268.

Study of the content of the high school course in Geography; the conduct of demonstration and laboratory work; the problem approach; the technique of class discussion and directing or supervising student effort.

Students taking this course should have their texts in high school Geography.

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

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

**Ed. s351. Organization and Administration of Part-time and Continuation Schools.** Five hours a week; three credits. Prerequisites: Twelve credits in Education or administrative experience. Mr. .... 8 M. T. W. T. F.

A study of the part-time and continuation schools as to their place in an educational system; the selection and organization of teaching ma-

terials; 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. Prerequisite: Twelve credits in Education. Mr. Boshart. 8 M. T. W. T. F. H. 16.

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

**Ed. s354. Practical Arts Problems.** Ten hours a week; three credits. Prerequisite: Twelve credits in Education. Mrs. Leggette. 9-11 M. T. W. T. F. or 11-1 M. T. W. T. F. H. 15.

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

**Ed. s355. Art Studies in the Elementary School.** Five or ten hours a week; one and one-half or three credits. Prerequisite: Twelve credits in Education. Mrs. Leggette. 9-11 M. T. W. T. F. H. 15.

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

**Ed. s356. Clay Modeling for Public School Teachers.** Five double periods; three credits. Additional work and credit if desired. Mr. Paulson. 9-11 M. T. W. T. F. C. 1.

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

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

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

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

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

This course is for graduates of the Department of Agricultural Education. It will consist of special individual problems and preparation of plans for

the next year's work, involving a survey of the school and community in which they are to work the coming year. From this information each student will prepare a program of agricultural education especially adapted to his school and community. It will include classroom arrangements and fixtures, library equipment, gathering specimens and illustrative materials, and the organization of courses of study.

**Ed. s364. History of Education.** Five times a week; three credits. Mrs. Wallace. 9 M. T. W. T. F. Pu. 8.

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

**Ed. s371. Child Psychology.** Five hours a week; three credits. Prerequisite: Twelve credits in Education, six of which must be in Psychology. Mr. Garrison. 9 M. T. W. T. F. H. 5.

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

**Ed. s403. Advanced Educational Psychology.** Five hours a week; three credits. Prerequisite: Eighteen term credits in Education and Psychology. Mr. Garrison. 11 M. T. W. T. F. H. 5.

This course will attempt to answer the question: How is education concerned with modern psychological conceptions of, for example, original nature, principles of learning, transfer of training, attention and the higher thought processes. Special emphasis will be given to the methods and results of recent experimental work in the field of learning.

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

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

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

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

Textbooks, lectures, readings, and reports.

**Ed. s412. Occupational Counseling.** Five hours a week; three credits. Prerequisite: Ed. 320, 327. Mr. Boshart. 8 M. T. W. T. F. H. 16.

Special attention is given to counseling as it may be applied in the junior and senior high schools, colleges, or placement offices, and the method of con-

ducting individual interviews and group conferences. Information covering occupational material will be organized, evaluated, and applied to specific case studies. For teachers of experience and those familiar with personnel work.

**Ed. s417. Principles of Agricultural Education.** Five hours a week; three credits. Prerequisite: Eighteen credits in Education and Agriculture, twelve of which must be in Education. Students should have a good understanding of Educational Psychology and the principles and practices of agricultural education. Permission to register will be required. Mr. Cook. 9 M. T. W. T. F. Pe. 201.

The principles and practices of agricultural education in the light of the findings of educational psychology and recent investigations in education. Adapting rural and agricultural education to the changing conditions in farming and rural life.

## ENGINEERING

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

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

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

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

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

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

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

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

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

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

Instruction in the use of hand and machine tools.

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

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

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

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

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

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

## ENGLISH

**Eng. s101. Rhetoric and Composition.** Five hours a week; three credits. Mr. Ladu. 12 M. T. W. T. F. Pu. 105.

For credit or to remove condition in first-year college English. Study of words: spelling, derivation, definitions, synonyms. Structure of sentences, paragraphs, and whole compositions. Introduction to the writing of description, narration, exposition, and argument. Short exercises and practice papers. Readings in class as drill in accurate interpretation and as models.

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

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

**Eng. s226. Modern Drama.** Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Ladu. 8 M. T. W. T. F. Pu. 105.

A study of representative modern plays, beginning with those of Ibsen. Special attention will be given to contemporary English and American productions. The drama will be considered as a vehicle of interpretation of modern thought.

**Eng. s320. The Short Story.** Five hours a week; three credits. Prerequisite: English 101. Mr. Ladu. 10 M. T. W. T. F. Pu. 105.

Development, structure, types, and style of the short story. The more important writers in this form. The contemporary short story in a collection of representative stories and in current periodicals. A manual on the writing of a short story. Practice in writing narratives of fact and of fiction. Individual conferences.

**Eng. s330. Shakespeare.** Five hours a week; three credits. Prerequisite: Eng. 101 and three additional credits in English. Mr. Clark. 8 M. T. W. T. F. Pu. 108.

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

**Eng. s332. The Romantic Period.** Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Clark. 11 M. T. W. T. F. Pu. 108.

A study of representative poems of Wordsworth, Coleridge, Byron, Shelley, and Keats, prefaced by a review of eighteenth century forerunners of Romanticism. Attention will be given to the Romantic interest in nature and individualism, and to the contribution of the Romanticists to poetic style.

**Eng. s335. Milton.** Five hours a week; three credits. Prerequisite: Eng. 101 and Eng. 220 or its equivalent. Mr. Clark. 10 M. T. W. T. F. Pu. 108.

A study in the major and minor poems of Milton, with some limited treatment of his prose. Matters of religious, educational, political and critical significance will necessarily be treated in this course.

**Eng. s337. Contemporary American Literature.** Five hours a week; three credits. Elective. Prerequisite: English 101. Mr. Ladu. 12 M. T. W. T. F. Pu. 105.

A study of the leading American writers of the present century, and an attempt to interpret their works against the social background of the period. Some of the chief writers to be studied are as follows: Dreiser, Lewis, Willa Cather, Anderson, in the realm of fiction; Frost, Robinson, Sandburg, Masters, Amy Lowell, in that of poetry; the dramas of O'Neill, and the general literary activity of Mencken will also receive attention.

## FIELD CROPS

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

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

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

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

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

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

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

The Cotton Classing course is designed for a special group, and does not carry collegiate 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.

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

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

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

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

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

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

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

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

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

**F. C. s401. Crop Research.** Prerequisite: Eighteen credit hours in Field Crops. By arrangement. Mr. Darst and Mr. Cotner.

## GEOLOGY AND PHYSICAL GEOGRAPHY

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

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

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

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

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. 12 M. W. F. Laboratory by arrangement. Pr.

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

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

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

## HISTORY

**Hist. s101c. Commercial Geography (Commercial and Industrial).** Five hours a week; three credits. Mr. Shulenberger. 11 M. T. W. T. F. Pu. 109.

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

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

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

**Hist. s209. Government.** Five hours a week; three credits. Mr. Earnhardt. 10 M. T. W. T. F. Pu. 6.

Organization and activities of our local, State and National governments, party politics; economic, social, and legal factors in the functioning of government.

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

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

**Hist. s303. History of North Carolina.** Five hours a week; three credits. Prerequisite: History 101. Mr. Barnhardt. 11 M. T. W. T. F. Pu. 6.

The purpose of this course is to give the teachers of North Carolina and others a general view of the political, economic, and social development of

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

### MATHEMATICS

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

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

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

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

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

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

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

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. Mock. 8-10 M. T. W. T. F. P. 203.

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

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

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

**Math. s341.** See Ed. s341 for description.

## \*MODERN LANGUAGES

### French

**Mod. L. s104. French Prose.** Five hours a week; three credits. Mr. Hinkle. 8 M. T. W. T. F. Pe. 212.

This course consists of readings and translations based upon selections from representative modern French authors. Rapid reading and sight translation are stressed.

**Mod. L. s313. French Prose Masterpieces.** Five hours a week; three credits. Mr. Hinkle. 9 M. T. W. T. F. Pe. 212.

This is a reading translation course developing facility in French for purposes of investigation. The class work is supplemented by lectures and reports in such a way as to give a general survey of French literature.

### German

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

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

**Mod. L. s304. Scientific German.** Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

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

**Mod. L. s314. German Prose Masterpieces.** Five hours a week; three credits. Mr. Hinkle. 10 M. T. W. T. F. Pe. 212.

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

### Spanish

**Mod. L. s103. Elementary Spanish.** Five hours a week; three credits. Mr. .... 11 M. T. W. T. F. Pe. 212.

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

**Mod. L. s106. Spanish Prose.** Five hours a week; three credits. Mr. .... 12 M. T. W. T. F. Pe. 212.

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

\*NOTE. 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. The courses in French and Spanish are given alternately.

## PHYSICS

**Physics s110. General Physics and Physics for Textile Students.** Four or eight credits. Five hours class work, one 2½ hours laboratory each week for four credits. Double this for eight credits. Mr. Heck. 9 M. T. W. T. F. 2-4 Tu. 9-11 M. T. W. T. F.; 2-4 T. T. P. & E. 212.

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

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

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

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

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

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

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

**Physics s411. Research.**

## PHYSICAL EDUCATION

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

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

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

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

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

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

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

**P. E. s117. Physical Education and Recreational Programs.** Five hours theory, one hour practice; three credits. Mr. Miller and Mrs. Hutchinson. By arrangement. Gym.

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

#### POULTRY SCIENCE

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

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

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

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

**Poul. s306. Commercial Plant Management and Commercial Incubation.** Five hours a week; three credits. Mr. Williams. M. T. W. T. F. Ricks.

A study of the construction and operation of commercial incubators. The development of community hatcheries. Incubator sanitation. The development of commercial poultry plants and their operation. Course includes an outline of breeding practices, culling, egg grading, and marketing.

## SOCIOLOGY

**Soc. s102. Introductory Sociology.** Five hours a week; three credits. Mr. Winston. 11 M. T. W. T. F. Pu. 8.

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

**Soc. s103. General Sociology.** (1st term.) Five hours a week; three credits. Mr. Winston. 10 M. T. W. T. F. Pe. 108.

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

The course deals first with the basic principles of sociology, then analyzes society and its influence on human behavior.

**Soc. s301. Social Pathology.** Five hours a week; three credits. Prerequisite: Soc. 103. Mr. Winston. 8 M. T. W. T. F. Pe. 108.

The course gives primary attention to the problems of adjustment resulting from the complexities of modern life. In the Summer Session, it is particularly adapted to the behavior problems of children which teachers face in their work.

**Soc. s306. The Family Organization.** Five hours a week; three credits. Prerequisite: Soc. 103 and three additional term credits in Sociology. Mr. Winston. 9 M. T. W. T. F. Pe. 108.

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

## SOILS

**Soils s110. Soil Geology.** Seven periods a week; four credits. Mr. Cobb. 11 M. T. W. T. F. Laboratory arranged. Pt. 16.

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

**Soils s265. Soil Fertility.** Five periods a week; three credits. Mr. Cobb. 9 M. T. W. T. F. Pt. 16.

A course dealing with the chemical and biological properties of soils as related to soil fertility.

**Soils s310. Fertilizers.** Five periods a week; three credits. Mr. Cobb. 8 M. T. W. T. F. Pt. 16.

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

**Soils s324. Fertilizer Problems.** Five periods a week; three credits. Mr. Cobb. 8 M. T. W. T. F. Pt. 16.

Designed especially for agricultural teachers and specialists. A course dealing with fertilizer problems which the agricultural teacher or specialist

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

## TEXTILES

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

Mixing of cotton, Openers, Pickers, Cards, Description and setting of different parts. Calculations for production, speeds and drafts.

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

Practical methods of mixing cotton, opening and feeding cotton to pickers, obtaining weights per yard. Grinding and setting cards.

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

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

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

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

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

This course is designed to give a fundamental knowledge of fabrics. It will include a study of various fabrics and their selection and adaptability to different uses. Various methods of distinguishing fabrics made from different materials such as cotton and rayon, cotton and wool, wool and silk, and other combination of yarns will be given and analysis made of the fabrics. In addition, a general survey of the various processes through which cotton passes in its transition from the raw material to the finished product will be studied.

**Tex. s201. Yarn Manufacture II.** Three credits. Mr. Hilton. By arrangement. Textile Building.

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

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

Practical operation of draw frames; sliver lapper; ribbon lapper and comber. Setting of rolls. Operation of fly frames, changing of hank roving and the setting of speeder builder motions.

**Tex. s205. Fabric Design and Analysis I.** Three or six credits. Mr. Hart.  
By arrangement. Textile Building.

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

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

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

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

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

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

**Tex. s404. Textile Fabrics: Their Qualities and Uses.** Three credits. Mr. Nelson. By arrangement. Textile Building.

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

## ZOOLOGY

**Zool. s101. General Zoology or Economic Zoology.** Six recitation periods; four hours laboratory; four credits. Mr. Mitchell.

General Zoology—An elementary study of vertebrate anatomy. This is equivalent to the first term course of the regular college year. A study is made of the systems of organs of a typical mammal, with their functions and their modifications in other vertebrates, coupled with the consideration of the fundamentals of the science of Zoology. This course is foundational to such fields as Animal Physiology, Psychology, Animal Husbandry and Poultry.

Economic Zoology—A survey of the Animal Kingdom, with special reference to the more important economic groups. This is equivalent to the second term course of the regular college year. A study is made of the fundamental differences between the various groups of animals, with special emphasis on the economic aspects of each group, coupled with such general considerations as distribution, relations to environment, evolution, etc. This is foundational to such fields as Entomology, Parasitology, General Agriculture, etc.

One or the other of these courses will be given, depending upon the demands or needs of the students.

**Zool. s102. Physiology.** Five times a week; three credits. Prerequisite: Zool. 101. Mr. Bostian.

A course devoted to the comparative physiology of vertebrate animals, with particular reference to mammals and man. Detailed studies are made of the various functions, with special emphasis on metabolism.

APPLICATION FOR ADMISSION

TO

STATE COLLEGE SUMMER SCHOOL

Name in full.....

Home Address: P. O....., R. F. D.....

County....., State.....

Courses desired.....

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

Name.....

In case of sickness notify.....

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

Church preference.....

Date of application.....

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

the 1990s, the number of people with a university degree has increased in all countries. The increase is most pronounced in the Netherlands, where the number of university graduates has increased from 10% in 1980 to 25% in 1995. In the United States, the number of university graduates has increased from 15% in 1980 to 25% in 1995.

As a result of the increase in the number of university graduates, the average educational level of the population has increased. In the Netherlands, the average educational level has increased from 10 years in 1980 to 12 years in 1995. In the United States, the average educational level has increased from 12 years in 1980 to 13 years in 1995.

The increase in the number of university graduates and the average educational level of the population has led to a change in the structure of the economy. In the Netherlands, the number of people employed in the tertiary sector has increased from 30% in 1980 to 45% in 1995. In the United States, the number of people employed in the tertiary sector has increased from 35% in 1980 to 45% in 1995.

The increase in the number of university graduates and the average educational level of the population has also led to a change in the structure of the labor market. In the Netherlands, the number of people employed in the public sector has increased from 15% in 1980 to 25% in 1995. In the United States, the number of people employed in the public sector has increased from 15% in 1980 to 20% in 1995.

The increase in the number of university graduates and the average educational level of the population has also led to a change in the structure of the labor market. In the Netherlands, the number of people employed in the private sector has increased from 15% in 1980 to 20% in 1995. In the United States, the number of people employed in the private sector has increased from 15% in 1980 to 20% in 1995.

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