STATE COLLEGE RECORD

Vol. 40 MARCH, 1941 No. 7

The North Carolina State College

of

Agriculture and Engineering

of

THE UNIVERSITY OF NORTH CAROLINA

CATALOG ISSUE

1940-1941

Announcements for the Session 1941-1942

STATE COLLEGE STATION
RALEIGH

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COLLEGE CALENDAR

1941-42

	Fall Term 1941	Winter Term 1942	Spring Term 1942
College Faculty Meeting	September 12		
Inspection trips for seniors	–		March 16-21
*Registration of Freshmen	September 16	†December 30	†March 23
*Registration of new students admitted with advanced standing	September 17, 18	December 30	March 23
*Registration of Soph., Jr., Sr., and Graduate Students	September 19	December 31	March 24
Class work begins	September 22	January 1	March 25
Last day for registration and changes	September 27	January 8 10	March 31
Anniversary Day (not a holiday)	October 3		
Mid-term reports due	October 27	February 23	April 27
Final date for dropping a course without a grade of F	November 8	February 11 12	May 6
Armistice Day (not a holiday)	November 11		
Thanksgiving holiday	November 20		
Scholarship Day (not a holiday)			May 7
Final examinations begin	December 8	March 9 12	May 29
Term ends	December 13	March 14 18	June 4
Commencement			June 7, 8

Summer School—1942

	First Session	Second Session
Registration of all students	June 10	July 22
Class work begins	June 11	July 23
Final date for registration	June 11	July 23
Term ends	July 21	August 29

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* An extra fee charged for registration after the day designated.

† The winter and spring term registrations include all students who have a freshman classification on their registration cards.

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B.S., University of Maryland; M.S., N. C. State College.

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‡ On leave.

CHARLES HORACE HAMILTON, *Professor of Rural Sociology.*
B.A., Southern Methodist University; M.S., Texas A. & M. College; Ph.D., University of North Carolina.

REINARD HARKEMA, *Assistant Professor of Zoölogy.*
A.B., Calvin College; Ph.D., Duke University.

THOMAS PERRIN HARRISON, *Dean Emeritus of the College; Editor of Official College Publications.*
B.S., Citadel; Ph.D., Johns Hopkins University; LL.D., Citadel.

THOMAS ROY HART, *Professor of Weaving and Designing.*
B.E., T.E., M.S., N. C. State College.

LODWICK CHARLES HARTLEY, *Professor of English.*
B.A., Furman University; M.A., Columbia University; Ph.D., Princeton University.

PAUL HENRY HARVEY, *Associate Professor of Field Crops.*
B.S., University of Nebraska; Ph.D., Iowa State College.

ARTHUR COURTNEY HAYES, *Instructor in Textile Chemistry and Dyeing.*
Ph.B., Brown University; M.S., N. C. State College.

CHARLES MCGEE HECK, *Professor of Physics.*
A.B., Wake Forest College; M.A., Columbia University.

DAVID ELDRIDGE HENDERSON, *Instructor in Industrial Engineering.*
B.S., University of North Carolina.

WILLIAM NORWOOD HICKS, *Associate Professor of Ethics and Religion.*
B.E., N. C. State College; A.B., Duke University; M.A., Oberlin College; M.S., N. C. State College.

JOHN THOMAS HILTON, *Professor of Yarn Manufacture.*
Diploma Bradford Durfee Textile School; B.S., M.S., N. C. State College.

LAWRENCE EARLE HINKLE, *Professor of Modern Languages.*
B.A., University of Colorado; M.A., Columbia University; D.S.es L., Dijon.

ELMER GEORGE HOEFER, *Professor of Mechanical Engineering.*
B.S. in M.E., M.E., University of Wisconsin.

JULIUS VALENTINE HOFMANN, *Professor of Forestry.*
B.S.F., M.F., Ph.D., University of Minnesota.

SIDNEY W. HOLMAN, *Instructor in Field Crops.*
In charge of Cotton Classing Service, U. S. Department of Agriculture, North Carolina.

JOHN ISAAC HOPKINS, *Instructor in Physics.*
B.S., A.M., Ph.D., Duke University.

EARL HENRY HOSTETLER, *Professor of Animal Husbandry.*
B.S. in Agr., Kansas State Agricultural College; M.Agr., M.S., N. C. State College.

THOMAS EDWARD HYDE, *Instructor in Mechanical Engineering.*

FRANKLIN CARLISLE JOHNSON, *Assistant Professor of Chemical Engineering.*
B.S., North Carolina State College; M.S., Massachusetts Institute of Technology.

THEODORE SEDGWICK JOHNSON, *Professor of Industry.*
B.S., Denison University; C.E., Ohio State University; M.S., Denison University.

ARTHUR DAVE JONES, *Assistant Professor of Chemistry.*
A.B., M.A., University of Cincinnati.

WALTER EDWARD JORDAN, *Associate Professor of Chemistry.*
B.S., M.A., Wake Forest College; M.S., N. C. State College.

LEROY MONROE KEEVER, *Associate Professor of Electrical Engineering.*
B.E., M.S., N. C. State College.

HENDERSON GRADY KINCHELOE, *Instructor in English.*
A.B., University of Richmond; A.M., Harvard University.

LEONARD MARION KNIGHT, *Instructor in Military Science and Tactics.*
Sergeant, DEML, U. S. Army.

WILLIAM WURTH KRIEGEL, *Assistant Professor of Ceramic Engineering.*
B.S. in Civil and Ceramic Engineering, University of Washington; M.S., Montana School of Mines; Dr.Ing., Technische Hochschule, Hanover, Germany.

ARTHUR I. LADU, *Professor of English.*
A.B., Syracuse University; M.A., Ph.D., University of North Carolina.

ROBERT EDGAR LAKE, *Instructor in Mathematics.*
B.S., M.S., University of Alabama; Ph.D., Pennsylvania State College.

CLAUDE MILTON LAMBE, *Assistant Professor of Civil Engineering.*
B.E., N. C. State College.

FORREST WESLEY LANCASTER, *Associate Professor of Physics.*
B.S. in Ch.E., Purdue University.

JOSEPH LETOURNEAU LANCASTER, *Assistant Professor of Military Science and Tactics.*
Lieutenant Colonel, Infantry, U. S. Army; A.B., Creighton University; Graduate Infantry School, Fort Benning, Georgia.

NILS GUNNAR LANGE, *Assistant Professor of Agricultural Economics.*
M.A., University of Stockholm, Sweden.

BRYON ELMER LAUER, *Associate Professor of Chemical Engineering.*
B.S. in Ch.E., Oregon State College; M.S. in Ch.E., Ph.D., University of Minnesota.

MARC C. LEAGER, *Professor of Statistics and Accounting.*
B.S., M.S., University of Minnesota; Ph.D., Columbia University.

JOHN EMERY LEAR, *Professor of Electrical Engineering.*
B.S. in E.E., Virginia Polytechnic Institute; E.E., Texas A. & M. College.

ROBERT TERRELL LEE, *Instructor in Mechanical Engineering.*
B.S. in M.E., University of Illinois.

SAMUEL GEORGE LEHMAN, *Professor of Plant Pathology.*
B.S. in Ed., Ohio University; M.S., N. C. State College; Ph.D., Washington University.

HENRY PETERSON LEIGHTON, *Instructor in Military Science and Tactics.*
Staff Sergeant, DEML, U. S. Army.

JOHN ANTHONY LEIPOLD, *Instructor in Military Science and Tactics.*
Technical Sergeant, DEML, U. S. Army.

JACK LEVINE, *Associate Professor of Mathematics.*
A.B., University of California at Los Angeles; Ph.D., Princeton University.

JOHN GARY LEWIS, *Assistant Professor of Knitting.*
B.S., M.S., N. C. State College.

DAVID ALEXANDER LOCKMILLER, *Associate Professor of History and Political Science.*
B.Ph., M.A., Emory University; LL.B., LL.D., Cumberland University; Ph.D., University of North Carolina.

RICHARD HENRY LOEPPERT, *Instructor in Chemistry.*
B.S., Northwestern University; Ph.D., University of Minnesota.

ROY LEE LOVVORN, *Associate Professor of Field Crops.*
B.S., Alabama Polytechnic Institute; M.S., University of Missouri.

JOHN ROBERT LUDINGTON, *Associate Professor of Industrial Arts Education.*
B.S., Ball State Teachers College; M.A., Ph.D., Ohio State University.

JAMES FULTON LUTZ, *Associate Professor of Soils.*
B.S., N. C. State College; M.A., Ph.D., University of Missouri.

FRANK HALLAM LYELL, *Instructor in English.*
A.B., University of Virginia; M.A., Columbia University; Ph.D., Princeton University.

*PAUL FRANKLIN MACY, *Instructor in Chemistry.*
B.S., Purdue University; Ph.D., Cornell University.

CHARLES WALKER MADDISON, *Foreman of Foundry.*

CARROLL LAMB MANN, *Professor of Civil Engineering.*
B.S., C.E., N. C. State College.

WILLIAM RUSSER MANN, *Instructor in Aeronautics.*
B.S., N. C. State College.

ROGER POWELL MARSHALL, *Assistant Professor of English.*
B.A., Wake Forest College; M.A., Columbia University; M.S., N. C. State College.

FRANCIS EARL MASK, *Instructor in Mathematics.*
B.S., M.S., N. C. State College.

JOE THOMAS MASSEY, *Instructor in Engineering Mechanics.*
B.S., N. C. State College.

SELZ CABOT MAYO, *Instructor in Rural Sociology.*
A.B., Atlantic Christian College; M.S., N. C. State College.

FREDERICK HAROLD MCCUTCHEON, *Assistant Professor of Zoölogy.*
B.S., M.S., North Dakota State College; Ph.D., Duke University.

WILLIAM MCGEHEE, *Associate Professor of Psychology.*
B.A., University of the South; M.A., Ph.D., Peabody College.

ROBERT LEROY MCMILLAN, *Instructor in Business Law.*
A.B., M.A., Wake Forest College; LL.B., Columbia University.

FRANK BARNARD MEACHAM, *Assistant Professor of Zoölogy and Entomology.*
B.S., M.S., N. C. State College.

JEFFERSON SULLIVAN MEARES, *Associate Professor of Physics.*
B.S., University of South Carolina; M.S., N. C. State College.

ZENO PAYNE METCALF, *Director of Instruction, School of Agriculture and Forestry, Professor of Zoölogy, and Director of Graduate Studies.*
A.B., Ohio State University; D.Sc., Harvard University.

GORDON KENNEDY MIDDLETON, *Professor of Field Crops.*
B.S., N. C. State College; M.S., Ph.D., Cornell University.

ERNEST PERCY MILES, JR., *Instructor in Mathematics.*
B.S., Birmingham-Southern College; M.A., Duke University.

MARSHALL WILLIAM MILLAR, *Instructor in Education.*
B.S., Stout Institute.

ARTHUR STEHMAN MILLER, *Assistant Professor of Economics.*
B.S., Elizabethtown College; M.B.A., University of Pennsylvania.

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* Resigned.

JOHN FLETCHER MILLER, *Professor and Head of Department of Physical Education and Athletics.*
B.Pd., Central Missouri Teachers' College; B.P.E., Springfield College of Physical Education.

WILLIAM DYKSTRA MILLER, *Associate Professor of Forestry.*
B.A., Reed College; M.F., Ph.D., Yale University.

THEODORE BERTIS MITCHELL, *Professor of Zoölogy and Entomology.*
B.S., Massachusetts Agricultural College; M.S., N. C. State College; D.Sc., Harvard University.

REUBEN O. MOEN, *Professor of Business Administration.*
B.A., M.A., Ph.D., University of Iowa.

DANNIE JOSEPH MOFFIE, *Instructor in Psychology.*
B.S., M.S., Ph.D., Pennsylvania State College.

†PERRY EARL MOOSE, *Assistant Professor of Military Science and Tactics.*
Captain, Infantry-Reserve; B.S., N. C. State College; M.S. in C.E., Purdue University.

CAREY GARDNER MUMFORD, *Associate Professor of Mathematics.*
B.A., Wake Forest College; A.M., Ph.D., Duke University.

HOWARD M. NAHIKIAN, *Assistant Professor of Mathematics.*
A.B., M.A., Ph.D., University of North Carolina.

‡THOMAS LEWIS NASH, *Instructor in Mechanical Engineering.*
Graduate, United States Naval Academy.

THOMAS NELSON, *Dean of the Textile School.*
D.Sc., N. C. State College.

EDWIN HUGH PAGET, *Associate Professor of English.*
B.L., Northwestern; M.A., University of Pittsburgh.

CHARLES BENJAMIN PARK, *Instructor Emeritus in Machine Shop.*

HUBERT VERN PARK, *Assistant Professor of Mathematics.*
A.B., Lenoir-Rhyne College; M.A., Ph.D., University of North Carolina.

JOHN MASON PARKER, III, *Assistant Professor of Geology.*
A.B., A.M., Ph.D., Cornell University.

LESLIE RENDALL PARKINSON, *Associate Professor of Aeronautical Engineering.*
B.S., Guggenheim School of Aeronautics, New York University.

JEHU DEWITT PAULSON, *Associate Professor of Architecture.*
B.F.A., Yale University.

ROBERT JAMES PEARSALL, *Assistant Professor of Electrical Engineering.*
B.E., N. C. State College.

J. RODNEY PILAND, *Assistant Professor of Soils.*
B.S., Wake Forest College; M.S., N. C. State College.

JOSHUA PLUMMER PILLSBURY, *Professor of Landscape Architecture.*
B.S., Pennsylvania State College.

JOSEPH ALEXANDER PORTER, JR., *Instructor in Weaving and Designing.*
B.S., N. C. State College.

GLENN ORVICE RANDALL, *Associate Professor of Horticulture.*
B.S., University of Arkansas; M.S., Iowa State College.

EDGAR EUGENE RANDOLPH, *Professor of Chemical Engineering.*
A.B., A.M., Ph.D., University of North Carolina.

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† On leave from Mechanical Engineering Department.
‡ On leave.

WILLIS ALTON REID, *Instructor in Chemistry.*
B.S., Wake Forest College; Ph.D., Wisconsin University.

ROBERT BARTON RICE, *Professor of Experimental Engineering.*
B.S., Tufts College; A.M., Columbia University.

WALLACE CARL RIDDICK, *Dean Emeritus of the School of Engineering and Professor of Hydraulics.*
A.B., University of North Carolina; C.E., LL.D., Lehigh University; LL.D., Wake Forest College.

JACKSON ASHCRAFT RIGNEY, *Instructor in Field Crops.*
B.S., New Mexico State College; M.S., Iowa State College.

MACON ROGERS ROWLAND, *Instructor in Mechanical Engineering.*
B.S., M.S., N. C. State College.

ROBERT HENRY RUFFNER, *Professor of Animal Husbandry and Dairying.*
B.S., University of Maryland; M.S., N. C. State College.

CARL NICHOLS SANFORD, *Assistant Professor of Aeronautical Engineering.*
B.S. in M.E., Oregon State College.

GEORGE HOWARD SATTERFIELD, *Professor of Biochemistry.*
A.B., Duke University; B.S., University of North Carolina; M.A., Duke University.

HOWARD ERNEST SATTERFIELD, *Professor of Mechanical Engineering.*
B.S. in M.E., M.E., Purdue University.

IRA OBED SCHAUB, *Dean of the School of Agriculture and Forestry and Director of Agricultural Extension*
B.S., N. C. State College; D.Sc., Clemson College.

WILLIAM ARTHUR SCHOLES, *Instructor in Ceramic Engineering.*
B.S., N. C. State College; M.S., Pennsylvania State College.

HERBERT FREDERICK SCHOOF, *Instructor in Zoölogy and Entomology.*
B.S., M.S., N. C. State College; Ph.D., University of Illinois.

WAYLAND PRITCHARD SEAGRAVES, *Instructor in Mathematics.*
B.S., M.S., N. C. State College.

L. WALTER SEEGERS, *Assistant Professor of History.*
A.B., Muhlenberg College; A.M., University of Pennsylvania.

JOSEPH ATKINS SHACKFORD, *Instructor in English.*
A.B., Emory and Henry; M.A., Peabody College.

HOWARD BURTON SHAW, *Professor of Industrial Engineering.*
A.B., B.C.E., University of North Carolina; A.M., Harvard University.

LUTHER SHAW, *Professor of Plant Pathology.*
B.S., N. C. State College; M.S., University of Arkansas; Ph.D., University of Wisconsin.

ALFRED BERNARD ROWLAND SHELLEY, *Instructor in English.*
B.S., Tufts College; A.M., Harvard University.

MARSHALL LEROYCE SHEPHERD, *Assistant Professor of Military Science and Tactics.*
First Lieutenant, Infantry-Reserve; B.S., N. C. State College; M.A., Cornell University.

WILLIAM EDWARD SHINN, *Associate Professor of Weaving and Designing.*
B.S., M.S., N. C. State College.

MERLE FRANKLIN SHOWALTER, *Associate Professor of Chemistry.*
A.B., Indiana University; M.S., Purdue University.

CLARENCE B. SHULENBERGER, *Associate Professor of Accounting.*
A.B., Roanoke College A.M., Columbia University.

ROSS EDWARD SHUMAKER, *Professor of Architecture.*
B.Arch., Ohio State University; Registered Architect.

IVAN VAUGHAN DETWEILER SHUNK, *Associate Professor of Botany.*
A.B., A.M., University of West Virginia; Ph.D., Rutgers University.

GEORGE KELLOGG SLOCUM, *Associate Professor of Forestry.*
B.S., M.S., N. C. State College.

BEN W. SMITH, *Assistant Professor of Field Crops.*
A.B., University of Virginia; M.S., University of Wisconsin.

CLYDE FUHRIMAN SMITH, *Assistant Professor of Entomology.*
B.S., M.S., Utah State Agricultural College; Ph.D., Ohio State College.

GEORGE WALLACE SMITH, *Professor of Engineering Mechanics.*
B.S.E.E., University of North Carolina; M.S.E. in C.E., D.Sc., University of Michigan.

JOHN WARREN SMITH, *Associate Professor of Industrial Education.*
B.S., Miami University, Oxford, Ohio; M.S., Columbia University.

RAYMOND FRANKLIN STAINBACK, *Assistant Professor of Physics.*
S.B., M.S., University of North Carolina.

ROBERT LEE STALLINGS, JR., *Instructor in Economics.*
B.S., N. C. State College.

ROSS OLIVER STEVENS, *Associate Professor of Zoölogy.*
B.S., M.S., University of Michigan.

*MAURICE ALEXANDER STRICKLAND, *Instructor in Economics.*
B.S., University of Georgia; M.B.A., Ph.D., New York University.

ARCHIE DAVID STUART, *Assistant Professor of Field Crops.*
B.S., M.S., N. C. State College.

JASPER LEONIDAS STUCKEY, *Professor of Geology.*
A.B., A.M., University of North Carolina; Ph.D., Cornell University.

PAUL PORTER SUTTON, *Instructor in Chemistry.*
Ph.D., Johns Hopkins University.

CLARENCE DALTON SWAFFAR, *Instructor in Animal Husbandry.*
B.S., Oklahoma A. and M. College.

HORACE CARTER THOMAS, *Instructor in Military Science and Tactics.*
Technical Sergeant, DEML, U. S. Army.

HARRY TUCKER, *Professor of Highway Engineering and Director of the Engineering Experiment Station.*
B.A., B.S., C.E., Washington and Lee University.

BLAKE RAGSDALE VAN LEER, *Dean of the School of Engineering.*
B.S. in E.E., M.E., Purdue University; M.S., University of California.

‡WILLIAM GARDNER VAN NOTE, *Assistant Professor of Chemical Engineering.*
C.E., Rensselaer Polytechnic Institute; M.S., University of Vermont.

LILLIAN LEE VAUGHAN, *Professor of Mechanical Engineering.*
B.E., N. C. State College; M.E., Columbia University.

EDMUND M. WALLER, *Instructor in Physical Education.*
A.B., Vanderbilt University, M.A., Peabody College.

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* Resigned, effective September 1, 1940.
‡ On leave.

ROBERT SULLIVAN WARREN, *Assistant Professor of Physical Education and Head Coach of Basketball.*
D.O., American School of Osteopathy; B.S., N. C. State College; M.A., University of North Carolina.

DAVID STATHEM WEAVER, *Professor of Agricultural Engineering.*
B.S., Ohio State University; M.S., N. C. State College.

JAMES GRAY WEAVER, *Assistant Professor of Horticulture.*
B.S., M.S., N. C. State College.

LLOYD T. WEEKS, *Instructor in Field Crops.*
B.S., N. C. State College.

BERTRAM WHITTIER WELLS, *Professor of Botany.*
A.B., M.A., Ohio State University; Ph.D., University of Chicago.

J. FRANK WEST, *Instructor in Geological Engineering.*
B.S., M.S., University of Wisconsin.

FRED BARNETT WHEELER, *Professor of Practical Mechanics and Superintendent of Shops.*
B.E., M.E., N. C. State College.

RAYMOND CYRUS WHITE, *Instructor in Chemistry.*
B.S., Davis Elkins College; M.S., Ph.D., West Virginia University.

LARRY ALSTON WHITFORD, *Assistant Professor of Botany.*
B.S., M.S., N. C. State College.

CHARLES BURGESS WILLIAMS, *Professor Emeritus of Agronomy.*
B.S., M.S., N. C. State College.

FRED CARTER WILLIAMS, *Assistant Professor of Architecture.*
B.S., N. C. State College; B.S., University of Illinois; Registered Architect.

HARVEY PAGE WILLIAMS, *Associate Professor of Mathematics.*
B.A., William and Mary College; M.A., Duke University.

LEON FRANKLIN WILLIAMS, *Professor of Organic Chemistry.*
A.B., A.M., Trinity College; Ph.D., Johns Hopkins University.

NORWOOD WADE WILLIAMS, *Assistant Professor of Poultry.*
B.S., M.S., N. C. State College.

ARTHUR JOHN WILSON, *Professor of Analytical Chemistry.*
B.S., M.S., N. C. State College; Ph.D., Cornell University.

THOMAS LESLIE WILSON, *Assistant Professor of English.*
A.B., Catawba College; A.M., Wofford College.

EDWIN WEEMS WINKLER, *Assistant Professor of Electrical Engineering.*
S.B., Montana State College; M.S., University of North Carolina.

SANFORD RICHARD WINSTON, *Professor of Sociology.*
B.A., Western Reserve University; Ph.D., University of Minnesota.

LOWELL S. WINTON, *Assistant Professor of Mathematics.*
B.S., Grove City College; M.A., Oberlin College; Ph.D., Duke University.

LENTHALL WYMAN, *Professor of Forestry.*
A.B., M.F., Harvard University.

WILLARD KENDALL WYNN, *Assistant Professor of English.*
A.B., Wofford College; M.A., Emory University; M.A., Columbia University.

ROBERT BAKER WYNNE, *Instructor in English and Public Speaking.*
A.B., A.M., William and Mary College.

Teaching Fellows, 1940-41

Wm. F. Alston, Botany
Frank B. Brown, Jr., Physics
A. G. Bullard, Agricultural Education
W. T. Burnette, Chemistry
R. F. Coleman, Civil Engineering
David Colvin, Chemistry
L. F. Drum, Chemical Engineering
J. A. Gillenwater, Engineering Mechanics
J. F. Gilmore, Engineering Mechanics
J. W. Harrington, Physical and Engineering Geology
W. T. Hunt, Jr., Engineering Mechanics
M. S. Hayworth, Civil Engineering
Albert Kelner, Botany
R. O. Lackey, Animal Husbandry and Dairying
R. V. Lamb, Mathematics
W. A. Mappus, Chemistry
R. P. McCabe, Ceramic Engineering
E. F. McClain, Zoölogy and Entomology
J. McClendon, Chemistry
Dan Moss, Textile Chemistry and Dyeing
J. F. Mynes, Electrical Engineering
W. F. Parker, Poultry Science
J. J. Pratt, Jr., Zoölogy and Entomology
S. C. Schell, Zoölogy and Entomology
J. F. Seely, Chemical Engineering
B. F. Volkerding, Botany
R. C. Walter, Mechanical Engineering
Charles K. Watson, Textile Chemistry and Dyeing
R. W. Whitley, Chemistry
H. A. Whitten, Chemistry
R. W. Wrenn, Chemistry

Research Fellows, 1940-41

Robert Aycock, Plant Pathology
J. B. Ballentine, Soils
C. R. Barnes, Zoölogy and Entomology
E. B. Browne, Field Crops and Plant Breeding
J. W. Bunkley, Field Crops and Plant Breeding
C. I. Bunn, Wildlife Conservation and Management
Sidney Cox, Plant Pathology
C. O. Deakyne, Soils
Oscar W. Deyton, Animal Husbandry
J. W. Farrior, Field Crops and Plant Breeding
James W. Gibert, Field Crops and Plant Breeding
R. M. Gibson, Field Crops and Plant Breeding
R. H. Grady, Sanitary Engineering
Beale Hargrove, Soils
T. T. Hebert, Plant Pathology
W. R. Hodgen, Soils
W. A. L. Kleinkauf, Soils
J. A. Lyle, Plant Pathology
W. J. Majure, Wildlife Conservation and Management
Norman R. Page, Soils
Z. H. Ponder, Soils
T. L. Quay, Zoölogy and Entomology
C. H. Steelman, Jr., Horticulture
H. L. Sweezy, Plant Pathology
M. H. Taylor, Wildlife Conservation and Management
J. D. Thompson, Soils
C. W. Turner, Soils

Student Assistants, 1940-41

R. C. Andrews, Engineering Mechanics
G. R. Bason, English
M. R. Campbell, Engineering Mechanics
E. E. Durham, Farm Management
W. G. Holadia, Weaving
Harry Hondros, English
Bruce Lewis, English
C. S. McCallum, Agricultural Economics
E. W. McLeod, Yarn Manufacturing
Annette M. Noell, Cotton Marketing
A. W. Powell, Textile Chemistry and Dyeing
G. R. Sedberry, Yarn Manufacturing
J. T. Shotwell, Yarn Manufacturing
J. R. Turbeville, English
Ralph Williams, English
T. L. York, English

II. GENERAL INFORMATION

THE COLLEGE

Establishment.—The North Carolina State College of Agriculture and Engineering is one of the Land-Grant Colleges established under the provisions of the Morrill Act, passed by the Congress of the United States, June 2, 1862. The first session of the College was that of 1889-1890. Prior to that date, the funds received by the State under the Land-Grant Act had been used by the University of North Carolina, at Chapel Hill.

The name, The North Carolina College of Agriculture and Mechanic Arts, used in the establishment of the College, was changed by the General Assembly—the Legislature of the State—in 1917 to its present form.

In its session of 1931, the General Assembly passed an Act, of which the following is the first section: "That the University of North Carolina, the North Carolina State College of Agriculture and Engineering, and the North Carolina College for Women are hereby consolidated and merged into 'The University of North Carolina'."

This Act placed the three institutions under one Board of Trustees and one President, the separate affairs of each institution being in charge of its own Administrative Dean. The effect of the Act, by correcting unnecessary duplication and focalizing the work of each of its members, has tended to create a strong, unified State University.

Location.—State College Campus, of thirty acres, lies within the limits of Raleigh, a mile and a quarter west of the State Capitol, on United States Highway, Route 1. Adjoining the Campus westward, occupying four hundred fifty-six additional acres, are the College orchards, gardens, poultry yards, and the Central State Experiment Farms.

A mile still farther westward, the College has acquired a tract of thirteen hundred acres, which is maintained as livestock farms by the Department of Animal Husbandry and Dairying.

The part of this tract—about 500 acres—not adapted for these farms is being used by the Department of Forestry for demonstrations and development.

Organization. The organization of State College has as its objectives Campus Teaching, Extension Teaching, and Research.

Campus Teaching occupies the School of Agriculture and Forestry, the School of Engineering, the Division of Teacher Education, the Textile School, the Graduate Division, the Basic Division, and the Summer Session. The Schools and the Basic Division are organized for teaching by Departments. The details of the organization, the equipment, and the work of each School and Department are given under the various headings in the later pages of this Catalog. The work of the Summer Session is set forth in a special issue of STATE COLLEGE RECORD published each year in December, a copy of which is sent on request.

The Department of Military Training, including as the Reserve Officers Training Corps, students of all classes in all Schools, is placed immediately under the College Administration.

Extension Teaching is directed under the Division of College Extension. The work is closely coördinated with the work in the regular Departments of the College. In certain short courses, most of them in Agriculture and in Engineering, Extension overlaps with Campus Teaching. The whole State is covered in the activities of the Agricultural Extension Service.

Research is conducted, by individuals or by Departments, very generally at State College. Specially organized work is done through the Agricultural Experiment Station, the Engineering Experiment Station, and the Textile Research Department.

The Campus.—The Campus of State College presents an agreeably rolling terrain with adequate space west and south for expansion. Located on the eastern edge of the Piedmont Region of the State, within twenty-five miles of the Coastal Plain, opportunity is afforded for a pleasing variety of trees and shrubs in the landscaping. Fortunately, in the early years of the College a long-range plan for growth was made. This plan is now being intelligently followed.

Under the sections of the Catalog devoted to Schools and their Departments and to Divisions, are placed descriptions of buildings, laboratories, and facilities of each of these.

General Service Buildings. Holladay Hall, named for Colonel Alexander Quarles Holladay, first President of the College, 1889-1899, contains the general administrative offices of the College, and the offices and classrooms of the Military Department.

The D. H. Hill Library, named for Doctor Daniel Harvey Hill, President of the College, 1908-1916, was dedicated in 1926. It contains now about 55,000 volumes, exclusive of Government documents, and pamphlets.

The Y. M. C. A. building, the erection of which was made possible by a donation from the Rockefeller Foundation, serves the religious and social life of the College.

The Dining Hall, an H-shaped building, with kitchens, storage rooms, pantries, refrigerators, and other mechanical devices in the center and basement, has at each side, front and rear, a spacious dining hall. The service is on the cafeteria plan.

The Frank Thompson Gymnasium, named in honor of Frank Martin Thompson, distinguished athlete, graduate of State College, Class of 1910, killed in service during the World War, is thoroughly equipped and modern in all its appointments.

The Infirmary, recently enlarged and renovated, is a model of a small, special hospital.

Pullen Hall, named in honor of R. Stanhope Pullen, donor of first sixty acres of the College land, has classrooms on the first and basement floors, on the second floor, the College auditorium.

The Power Plant, recently erected, centrally located, furnishes heat, electric power, and hot water to all buildings on the Campus using these services.

Eleven College Dormitories now in use accommodate approximately 1400 students. Other students will room, as at present, in homes in the vicinity of the Campus and in fraternity houses. Full information in regard to dormitories is sent by the Registrar to applicants accepted for admission to the College, or by the Superintendent of Dormitories.

INFORMATION FOR APPLICANTS

I. Admission

1. The first step toward admission to the State College is to get from the Registrar, who is to be addressed at State College Station, Raleigh, a certificate blank. After the blank has been filled out and signed by the principal or the superintendent of the high school or other preparatory school, the certificate is sent to the Registrar for his decision on admission, notice of which will be given promptly.

The certificate must contain a statement from the school last attended of the good moral character of the applicant.

2. Undergraduate students may be admitted as regular or special.
   (1) A regular student is one who is registered in a four-year curriculum.
   (2) Women may be admitted as regular students provided they register in one of the regular curricula.
   (3) A special student is a person of mature age already engaged in some vocation in which instruction is desired. Such person may, upon presenting a satisfactory record of education and upon recommendation of the Dean of the School concerned, be admitted without the usual entrance requirements.
   Special students are not eligible for a degree, nor does work done as a special student have value for credit toward a degree. A special student cannot represent the College in any intercollegiate contest nor become a member of a fraternity.

3. Requirements for admission of regular students.
   (1) Sixteen years is the minimum age for admission.
   (2) Graduation from an accredited high school, or approved preparatory school, and fifteen units of credit, specified and elective as indicated below, are required for admission to the freshman class of four-year courses.
   (3) In exceptional instances a person of mature age may be admitted by the Dean of a School on the basis of his ability to carry the regular work of a curriculum in that School.

(4) A unit is allowed for a subject pursued for a year, five periods a week, each period being at least forty minutes, and successfully passed in a high school accredited by the North Carolina State Department of Public Instruction or other preparatory school accredited by competent authority.

(5) Applicants graduated by nonaccredited four-year high schools may be admitted by passing successfully an entrance examination such as that prepared by the Examination Committee of the North Carolina College Conference.

4. Subjects required for admission.

(1) **Specified Subjects.**—

	Units of Credit
English: Grammar, Composition, Literature	3
History: United States or equivalent	1
Algebra to Quadratics	1
Algebra, Quadratics through Progressions	.5
Plane Geometry	1
*Solid Geometry	.5
Any Science listed under Elective Subjects	1

A student not offering for credit History of the United States is required to take the subject in his College course.

(2) **Elective Subjects.**—The figure following each subject represents the maximum number of credits which will be accepted, including those in required subjects. Fewer than that number may be accepted.

Science—	Units of Credit
Biology	1
Botany	1
Chemistry	1
General Science	1
Geography	1
Physics	1
Physiology and Hygiene	1
Zoölogy	1

Language—	Units of Credit
English	4
French	2
German	2
Latin	4
Spanish	2

History and Social Science—	Units of Credit
United States or equivalent	1
English	1
General	1
Medieval and Modern	1
Ancient	1
North Carolina	.5
Civics	1
Sociology	1
Economics	1

Mathematics—	Units of Credit
Algebra	2.5
Business Arithmetic	1
Plane Geometry	1
Solid Geometry	.5
Trigonometry	.5

* Solid Geometry is required only in the School of Engineering. A special course is offered in college for applicants who do not present this credit for entrance. No college credit is allowed for the course.

Miscellaneous Subjects (a total of not over 4 credits allowed)

Agriculture	4	Drawing	1
Bookkeeping	1	Mechanic Arts	2
Stenography and Typewriting	1	Mill Practice	1
Any other high-school subject	1		

5. Advanced standing is allowed on work done in approved colleges upon presentation of a certificate or transcript, duly signed and sealed, to the Director of Registration. The transcript is evaluated in the Registration Office to determine the maximum amount of credit and is then sent to the Dean of the School concerned for a detailed evaluation of credits which can be used in the curriculum selected.

Because of the scholastic requirements imposed upon resident students, advanced standing credit cannot be allowed for courses passed at other institutions with the lowest passing letter grade, or corresponding numerical grades. At least one year in residence is required for a degree.

II. Expenses

Undergraduate

1. The total College expenses of a student resident of North Carolina need not for the regular College year exceed $450, for a non-resident of this State, $620. These amounts include the cost of room and board, heat and lights, tuition, fees and deposits, books, drawing instruments, laundry, and necessary incidentals. They do not include clothing, pocket money, or other incidentals.

2. Non-residents of North Carolina pay an additional tuition charge. The College Administration has defined a non-resident student as a person who comes into North Carolina from another state for the purpose of attending college.

In order to draw a clear line between resident and non-resident students, the Administration has ruled that all students whose parents have not been domiciled in North Carolina for more than six months immediately preceding the day of their first enrollment in the institution shall be termed non-resident students, with the following exceptions:

(1) Students, twenty-one years of age at the time of their first matriculation, who have resided in North Carolina for more than one year preceding the day of their first enrollment.

(2) Children of regular employees of the Federal Government stationed in the State of North Carolina.

(3) Children of regular employees of the Federal Government who are employed outside of the State, but who through law are permitted to retain their North Carolina citizenship.

(4) Students in summer sessions.

Students cannot claim a change in their resident status after matriculating. Students furnishing incomplete or incorrect information in order to secure an in state resident status shall be liable for dishonorable dismissal.

3. The State law requires the prepayment of College accounts: the time and the amount of payments must conform to this law. For the convenience of students, charges for tuition and fees may be made in two installments, one in September, one in January. Six per cent is charged on payments deferred beyond these dates.

4. Applications for credit must be made to Mr. A. F. Bowen, Treasurer of the College, prior to registration day. Applications made later, if granted, will require a special fee of $5 and possibly also the fee for late registration.

5. For each failure to meet deferred payments as scheduled, a fee of $5 is charged.

6. Tuition and fees for residents of North Carolina as regular undergraduates or as special students scheduled for twelve or more credit hours are as follows:

	September Payment	January Payment
Tuition	$40	$40
College Fees	37	37
Student-Activities Fee	4	4
Athletic Fee	8	7
Agricultural, and Agricultural-Education Students Fee	2	2
*Engineering Students Fee	2	1
Textile Students Fee	1	1
Military Deposit	10	—

Note.—Tuition and Fees are subject to change by the Board of Trustees without advance notice.

7. Any part of the military deposit left after paying for lost or damaged equipment is returned.

8. Nonresidents of North Carolina registered in Forestry and Textile will pay an additional $60 in September and $60 in January. Nonresident students registered in other curricula will pay an additional $85 in September and $85 in January.

9. Expenses include also the following:

	September	January
Room Rent, if not already paid	$16.50 to $27.00	$16.50 to $27.00
Books and Supplies	20.00 to 35.00	8.00
Drawing Equipment for those taking Drawing	7.50 to 17.50	
Military Shoes and Supplies (about)	7.50	

* Of the Engineering fee of $3, the students pay $1 for a year's subscription to "The Southern Engineer."

10. Room rent for the rest of the College year is the only regular payment at the March registration.

11. College fees include those for registration, for hospital and medical attention, for library and lectures, for laboratories and classrooms, and for physical education.

12. Student-activities fees include those for student government, student publications, and general student activities.

13. Freshmen, unless living at home with their parents, are required to room in specified College dormitories.

14. Reservation of a room and the first payment of rent must be made before August 15 to obtain the most desirable room available. A reservation may be canceled and the payment therefore refunded upon notice before September 1, not later. Information about rooms may be had by writing Mr. T. T. Wellons, Superintendent of Dormitories.

15. Dormitory rooms have necessary furniture, but each student must bring own blankets, bed linen, and towels.

16. Board at the College Cafeteria may be paid in cash for each meal, or in tickets bought at ten per cent discount from the cash price.

17. The Self-Help Secretary, N. B. Watts, will, upon request, write of possible employment to those wishing to earn, while in College, money to help in paying expenses.

18. A refund of the amount paid the College, less the registration fee and a reasonable charge for lodging and services, is made to a student withdrawing within ten days from the date of registration; on withdrawal later, no refund will be made except of the military deposit.

Graduate and Special Students

For graduate students and special students taking fewer than twelve credit hours the fees are:

(1) Registration fee, $2.00 per term.

(2) For each credit hour per term, $3.00, not including student-activities or athletic fees, which are optional.

III. Registration

1. A program of exercises during the first week is given each applicant for admission to the freshman class on his arrival upon the Campus.

2. The Certificate of Admission approved beforehand by the Registrar for the School and the Department in which the applicant wishes to register must be ready for presentation.

3. The dates indicated in the College Calendar for the registration of freshmen, of those applying for advanced credit, and of sophomores, juniors, seniors, and graduate students must be strictly observed.

4. For registration after the scheduled date, an extra fee of $2 is required for the first day and $1 for each additional day until a maximum of $10 is reached.

5. Directions in detail for registration are furnished each student on entering the registration room, the Gymnasium.

6. Vaccination against smallpox is required at the time of registration unless the applicant furnishes a doctor's certificate indicating he has been successfully vaccinated within two years preceding his registration.

7. Inoculation against typhoid fever, though not compulsory, is urgently suggested for those entering the College. Free inoculation is offered by the College to all students.

8. All new students will be given the Tuberculin Skin Test unless they present a statement from their family physician indicating that such a test has been taken during the past year.

9. Admission to classes is permitted only after complete registration certified on the official card of the Registrar. All instructors will enforce this rule.

IV. Financial Aids and Scholarships

1. **The Self Help Secretary** of the College Y. M. C. A. (see page 40) will assist those desiring employment to help pay expenses.

2. **A Student Loan Fund,** first established by the State College Alumni Association, amounting now to $34,000, renders assistance to needy students of talent and high character. The Fund includes the **Finley Loan Fund** of $1,000 (see below), the **Masonic Loan Fund,** $4,500, the **Frank M. Harper Loan Fund,** $200, and the **Escheats Loan Fund** of $15,000. Contributions have also been made by the **Sixth Masonic District** and by the **New Bern Masonic Theatre.**

At present, loans, restricted to juniors and seniors, are made at 6 per cent on good security. The fund being small and kept loaned out, new loans can be made only as old ones are repaid.

The Finley Loan Fund is a memorial of William Wilson Finley by the Southern Railway Company, of which Mr. Finley was, at the time of his death, president. It is designated for needy students in Agriculture.

3. **The John Gray Blount Scholarships** were endowed by Colonel W. B. Rodman, of Norfolk, Virginia, in memory of his great-grandfather. The maximum value of each of the two scholarships is $195.

4. **The Champion Paper and Fibre Company** provides a fund for a Fellowship to encourage graduate study and research in Chemical Engineering.

5. **The Syd Alexander Scholarship** was endowed by Mrs. Mary R. Alexander of Charlotte, North Carolina, in memory of her husband, the late Sydenham B. Alexander, alumnus and trustee of State College. The returns from the endowment—$5,000—are awarded to a student native and resident

of Mecklenburg County, North Carolina, who is pursuing a course in the School of Textiles of State College.

6. **The Barrett Company**, Distributors of Arcadian American Nitrate of Soda, offer to 4-H Club members the following one-year scholarships:

(1) To the member with the most distinguished record with a Corn-Club project.

(2) To the member with the most distinguished record in Cotton-Club work.

(3) To the member with the best Tobacco-Club record.

(4) To the member with the best record in Horticulture.

7. **The North Carolina Cottonseed-Crushers Association** offer to 4-H Club members the following one-year scholarships:

(1) To the member making the best record in the Baby-Beef contest.

(2) To the member making the best record in a dairy project.

(3) To the member making the best Pig-Club record.

8. (1) **The Chilean Nitrate Educational Bureau** offers a four-year scholarship to the 4-H Club member in North Carolina making the best record for three or more years in 4-H Club work.

(2) **The Chilean Nitrate Educational Bureau** also offers a hundred scholarships of $5 each: one to the most distinguished Club boy from each of the hundred counties of North Carolina attending the 4-H Summer Short Course at State College.

9. **Graduate Fellowships** are offered each year by State College, during the current year, thirty-three teaching, twenty-four research fellowships. As the number of these scholarships is limited, application should be made early to the Head of the Department concerned.

10. As need arises, assistants in various departments are selected from upperclass or graduate students.

STUDENT ACTIVITIES

Student Government

Student Government, in accordance with an agreement between the students and the Board of Trustees of the College, undertakes "to handle all matters of student conduct, honor, and general student interest, and to promote in Campus life self-control, personal responsibility, and loyalty to the College and the student body."

The Student Council, the legislative-executive body for Student Government, is composed of one senior, one junior, and one sophomore from each of the Schools Agriculture and Forestry, Engineering, and Textile, and the Division of Teacher Education—and one member chosen at large from the freshman class at the beginning of the second term.

For guidance in its operation, the **Constitution and By-Laws for Student Government** has been adopted.

Student Publications

The Publications Board is composed of the editors and business managers of all student publications, the president and the past president of the junior class, the president of the Student Council, and five faculty members. The Board seeks to promote the interests of the College and of the publications, to insure coöperation between the publications, and to hold the loyal support of the faculty, the students, and the public.

The Technician, the student newspaper, is delivered to each student's mail box every Friday morning of the regular College session. The charge for the paper is included in the student's publications fee.

The Agromeck is the official annual published at the end of each scholastic year of the College. A copy of **The Agromeck** is also paid for by each student in his publications fee.

The Wataugan, issued twice each term, is "a strictly humorous magazine." The student's publications fee covers his charge for it.

The Agriculturist, a monthly magazine in its field, was begun by the activities of the Alpha Zeta fraternity and the "Ag" Club. All students of the School of Agriculture and Forestry are concerned in this enterprise.

The Southern Engineer, the organ of the School of Engineering, is managed by the Board of Directors of the Southern Engineer. They plan to issue four numbers during the regular College session.

Pi-ne-tum is the annual of the Division of Forestry. Its contents constitute a record of persons, specially the graduating class, and of events of the year interesting to students of the Division and their friends.

Clubs and Societies

All clubs and societies endeavor to bring together students, several including members of the faculty, with the same interests or professional objective in order to cultivate close personal relations and fellowship. Their chief purpose is to inculcate high professional consciousness and *esprit de corps;* and, with a view toward the accomplishment of these ends, they afford to members an opportunity to hear and to participate in discussions of professional problems and themselves to present papers on current technical topics.

The Agricultural Club besides the usual activities, sponsors the Agricultural Fair and an annual "Barn-Warming."

Student Assembly

As an experiment and as a supplement to the Student Council, there has been initiated at North Carolina State College a legislative branch of the Student Government. This Student Assembly was originated in January 1940 for the purpose of widening the scope of Student Government by giving better representation in the determining of campus policies.

The Assembly is modeled after our own State Legislature, with a Senate and a House of Representatives. The Senate is composed of the Student Council and the Student Welfare Committee. The House of Representatives is composed of one representative from each social fraternity and from one to two men from each floor of all dormitories. The total number of students in the Assembly is nearly one hundred and fifty. Meetings are held monthly, usually in the State Capitol.

The Forestry Club, having the usual program through the year, publishes its own annual, **Pi-ne-tum.**

La Société des Beaux Arts includes students in Architectural Engineering and those in Landscape Architecture.

The Agricultural Engineering Club is a student branch of the national organization, The American Society of Agricultural Engineers, and brings together students of this department to discuss all phases of their specialty.

The Agricultural Education Society devotes its attention to matters of interest to students who are preparing to become teachers of agriculture.

Student Chapters in Engineering at State College represent the following national organizations:

The American Ceramic Society
The American Institute of Chemical Engineers
The American Society of Civil Engineers
The Associated General Contractors of America
The American Institute of Electrical Engineers
The National Society for the Advancement of Management
The American Society of Mechanical Engineers
The Institute of Aeronautical Sciences

Theta Tau, National Professional Engineering Fraternity, Rho Chapter, at State College, has a membership exceeding two hundred.

The Engineers' Council, composed of three students and a professor from each Department of the School of Engineering, publishes quarterly **The Southern Engineer** and sponsors the Engineers' Fair and Exposition.

The Tompkins Textile Society endeavors to keep abreast of whatever affects the textile industry, state, national, or foreign. For this society, the event of the year is the Textile Institute and Style Show.

The International Relations Club, including faculty and student members, seeks to arouse intelligent and active interest in national and foreign affairs.

The Monogram Club has as its purpose to develop the highest order of sportsmanship in all athletics.

State College Life-Saving Corps, affiliated with the Red Cross, is interested in ways to accomplish the worthy ends indicated by its name.

Honor Fraternities and Societies

Honor Fraternities and Societies strive to encourage and reward high attainment in scholarship and character, and to instill lofty professional

ideals, with leadership in contribution to existing knowledge and in service as prime objectives. The following national fraternities and societies have chapters or other organizations at State College:

Alpha Zeta: Agricultural
Eta Kappa Nu: Electrical Engineering
Gamma Sigma Epsilon: Chemical
Kappa Phi Kappa: Teaching
Keramos: Ceramic Engineering
Lambda Gamma Delta: Agricultural Judging
Mu Beta Psi: Musical
Phi Eta Sigma: Freshman, Scholarship
Phi Kappa Phi: Scholarship; Character
Phi Psi: Textile
Pi Kappa Delta: Public Speaking
Sigma Pi Alpha: Language
Tau Beta Pi: Engineering
Upsilon Sigma Alpha: Army
Blue Key: Scholarship, Leadership, Student Activities
Scabbard and Blade: Military; Reserve Officers Training Corps
Xi Sigma Pi: Forestry, Honorary.

The following are organizations peculiar to State College:

The Golden Chain: Citizenship, Senior
The Order of St. Patrick: Engineer; Senior; Collegiate and Personal Distinction
The Order of 30 and 3: Leadership; Sophomore
The Pine Burr Society: Scholarship and Extracurricular Activity
Sigma Tau Sigma: Scholarship; Textile

Social Fraternities

Following are the national Greek-Letter Fraternities having chapters at State College. Each chapter has in the vicinity of the Campus its own house.

Alpha Gamma Rho
Alpha Kappa Pi
Alpha Lambda Tau
Delta Sigma Phi
Kappa Alpha
Kappa Sigma
Lambda Chi Alpha
Phi Kappa Tau
Pi Kappa Alpha
Pi Kappa Phi
Sigma Alpha Mu
Sigma Nu
Sigma Phi Epsilon
Sigma Pi

The Interfraternity Council, composed of two representatives from each chapter, has as its purpose to advance the interests of North Carolina State College; to promote the general interests and welfare of the associated fraternities as a body; and to insure coöperation between them in their relations with the faculty, the student body, and the public in general.

MEDALS AND PRIZES

1. **The Alpha Zeta Cup** is awarded to the sophomore in Agriculture who during his freshman year made the highest scholastic average.

2. **The General Alumni Association of the College** presents annually a trophy to the member of the graduating class who during his College course has most distinguished himself in athletics.

3. **The American Institute of Chemical Engineers** presents annually its award to the sophomore who during his freshman year made the highest scholastic record.

4. **The Associated General Contractors of America Prize** is awarded each year by the Carolina Branch of organization to the member of the graduating class in Construction Engineering who during his sophomore, junior, and senior years has made the highest scholastic record.

5. **The Elder P. D. Gold Citizenship Medal**, founded by the late C. W. Gold in memory of his father and continued by his son, C. W. Gold, Jr., of Greensboro, North Carolina, is awarded annually to the member of the graduating class who during his sophomore, junior, and senior years has most distinguished himself in Student Citizenship. The qualities determining the award —scholarship, student leadership, athletics, and public speaking—are to be attested by the College Registrar, the Student Council, the Faculty Athletic Committee, and a committee composed of the Dean of Administration and Dean of Students.

6. **The Moland-Drysdale Corporation Scholarship Cup**, presented by Mr. George N. Moland, of Hendersonville, North Carolina, President of the Corporation, is awarded annually to the freshman in Ceramic Engineering who during the two terms preceding Scholarship Day, has the highest scholastic record together with interest shown in the activities of the Department.

7. **The J. C. Steele Scholarship Cup**, presented by J. C. Steele and Sons, of Statesville, North Carolina, to commemorate the establishment by Mr. Steele of the first plant for the manufacture in the South of ceramic machinery, is awarded annually to the student of the three upper classes in the Department of Ceramic Engineering who has made during the three terms preceding Scholarship Day the highest scholastic record. In making the award, personality and interest in the activities of the Department are considered.

8. **The Sigma Tau Sigma Cup** is awarded annually to the senior in Textiles who has the highest scholastic record.

9. **The Textile Colorist Medal** is awarded annually to the senior who presents the best thesis on some subject in Textile Chemistry and Dyeing.

10. **Phi Kappa Phi**, Honor Scholarship Society, awards each year a gold medal to the senior who as a junior, a silver medal to the junior who as a sophomore, and a bronze medal to the sophomore who as a freshman, made, respectively, the highest scholastic record.

11. **The National Association of Textile Manufacturers Medal** is awarded annually to a senior in the State College Textile School. The award is based upon conditions outlined by the National Association.

PHYSICAL EDUCATION AND ATHLETICS

Professor J. F. Miller, Head

Assistant Professor C. G. Doak, Physical Education and Intramurals.
Assistant Professor R. S. Warren, Physical Education, Assistant Coach Football and Head Coach Basketball.
Instructor E. M. Waller, Physical Education, General Athletic Assistant.
J. L. VonGlahn, Business Manager Athletics.
Wade Ison, Director Athletic Publicity.
Williams Newton, Head Coach Football and Baseball.
Herman Hickman, Assistant Coach Football and Head Coach of Wrestling and Track.
W. A. Woods, Assistant Coach Football.
R. W. Green, Head Coach Tennis.
L. W. Seegars, Assistant Coach Tennis.
C. R. Lefort, Head Coach Swimming.
C. N. Carroll, Custodian of Gym and Athletic Equipment.

Aims. In general, the Department aims are: (a) to promote a higher standard of physical fitness through "big muscle" activities; (b) to develop habits, knowledge, appreciation, and skills in desirable sports, and athletic and gymnastic procedures; (c) to develop the habit of safe recreative activities to be indulged in after graduation.

Organization.—The Department of Physical Education and Athletics is in the Basic Division of the College. The program of service has three sections: Physical Education, offered in various curricula, for which college credit is given; Intramural Activities, for every interested student in the College; Intercollegiate Athletics, representative of the College.

Control.—All activities of the Department are controlled by the College. Physical Education and Intramural Activities are under the supervision of the Dean of the Basic Division. Intercollegiate Athletic Activities are under the supervision of the Athletic Council. The Head of the Department seeks balance and coördination in the work of the three sections. He delegates the work of the staff and sees that policies of the Department are carried out by them. To the Business Manager of Athletics is delegated the responsibility for business, financial, and all other details connected with intercollegiate contests. The members of the staff are expected to give reasonable and capable assistance in any work of the Department insofar as it does not interfere with their main specialization. They are responsible to the Head of the Department for carrying out their duties.

Buildings and Fields.—The Department of Physical Education and Athletics is quartered in the Frank Thompson Gymnasium. It is among the largest and best equipped gymnasia in the South. An attractive feature is a white-tiled swimming pool and natatorium, with modern filter and chlorinating systems. The new Field House, located at the south end of Riddick Stadium, is the headquarters of the football squad. Offices of the football

coaching staff are located in this building. Riddick Stadium, with new concrete bleachers, seats 15,000 spectators. Freshman Field, adjacent to the Gymnasium, serves many purposes, such as freshman football, intramural games, physical-training classes, and varsity baseball. The new quarter-mile track, with its 220-yard straightaways, is located south of the Freshman Field. It has concrete stands seating about 3,000 spectators. "Red Diamond" and "1911 Parade Field" are available for intramural contests. The College has ten excellent clay tennis courts, with some additional contemplated.

Activities.—The College requires all students to enroll in some type of physical activity for two years, or six full terms. The classes meet twice a week and one term credit is given for each term's work. All students are required to take a physical and a medical examination at the time of registering in college. Those who have subnormal conditions of any sort are placed on the recall list. Students may receive free medical advice at any time. All freshmen are required to take a course in Health Education which meets once a week for one term. This course consists of instruction in personal hygiene by members of the Physical Education Staff. A swimming requirement is also made for all freshmen, which must be met before graduation.

The required physical training courses are so standardized that they are presented, instruction given, and examination required of each individual student on the same basis as all other college courses. Students having physical defects which would interfere with their meeting the regular class requirements are placed in a restricted group activity. In general, the physical training activities fall in one of three groups: (a) those developing individual physical efficiency, (b) those affording combative contests, (c) those occupying recreative or leisure time. Work for the most part is prescribed for freshmen; election of activities is permitted sophomores.

Intercollegiate Athletics.—North Carolina State College is a member of the Southern Conference, and subscribes to its rules of eligibility for all intercollegiate contests. The program consists of the organization and training of representative varsity and freshman teams in the following sports: football, basketball, baseball, track, cross-country, wrestling, boxing, swimming, tennis, golf, and rifle competition.

Intramural Athletics. Activities are fostered and promoted in many lines of athletic sports for the student body. Meets, tournaments, and leagues are seasonally organized in twelve separate sports. Participation in these activities is purely voluntary; it does not receive College credit. Sports used in this program are correlated with those used in the required class work in Physical Education. Instruction in the sports is given in the class work and opportunity for competition is provided in the intramural program. Cups, shields, and trophies are awarded winners in these competitions.

MUSIC

Christian D. Kutschinski, Director

Students with previous musical experience are encouraged to continue their musical activities in campus musical organizations for which they can qualify. Qualified musicians may enroll in the R.O.T.C. Band for their required military training.

The 80-piece **R. O. T. C. Band** and 50 piece **Drum and Bugle Corps** furnish martial music for all military parades by the R. O. T. C. Regiment.

The 90-piece **Red-Coat Band** plays and marches at all the football games, and at other campus and civic functions. Its membership comprises select R. O. T. C. and non R. O. T. C. bandsmen, who receive training in the fundamentals of a marching band together with the R. O. T. C. Band, but devote some additional time in preparation for special programs.

The band is also subdivided into smaller units which alternate in furnishing music at pep meetings, basketball games, and other such occasions.

The Concert Band, composed of 60 of the most proficient musicians on the campus, concentrates on the study and performance of the finest in band-concert music. Its activities have greatly increased the cultural growth of those participating, and have done much toward increasing appreciation of music on the campus and in the community, in addition to providing wholesome entertainment.

The Drum and Bugle Corps, besides functioning as a separate unit, is also combined with the band on certain occasions, giving State College a marching musical unit of 140 men, clad in flashy new red-and-white uniforms, acquired in 1938 by contributions from students and faculty, and from interested citizens of Raleigh through the untiring efforts of The American Legion and The Junior Chamber of Commerce.

Credit.—Juniors and seniors in the band who are not enrolled in the advanced course R. O. T. C. may obtain three term credits per year for Band when approved by the Director before registration.

The Concert Orchestra is augmented by a number of the best musicians in Raleigh to round out the instrumentation to that of symphonic balance. Besides preparing concert programs, the orchestra is divided into smaller units to provide music of a lighter nature for numerous College functions.

The Men's Glee Club rehearses three times a week, and alternates with the orchestra and bands in giving concerts throughout the year. It has proved to be a very popular extracurricular activity, and the group is in demand for concerts out of town and at civic functions in addition to those on the campus.

A **Male Quartet** and small **Chamber Music** ensembles are encouraged.

COLLEGE PUBLICATIONS

State College Record carries results of research and special studies by members of the Faculty and, in the April issue, the annual **Catalog** with announcements for the following year.

Agricultural Experiment Station publishes many bulletins of research conducted by the staff. These are sent on request, free to anyone in the State.

Agricultural Extension Service issues circulars of practically useful information on various home and farm problems. A list of those available or any circular available is sent on request, free to citizens of the State.

The College publishes the results of experimental and research projects made by the **Engineering Experiment Station** and Engineering Departments of State College. Information concerning these publications may be obtained from the Director of the Station, Professor Harry Tucker.

HEALTH OF STUDENTS

The authorities of the College strive to protect the health of students in every way. Each student is given a thorough physical examination when he enters the College. If remedial defects are discovered, such as defective tonsils or eyes, he is advised to have these defects corrected. If the defect is such that it may be corrected by exercise, the student is placed in a special class under the supervision of the Physical Education Director in the Physical Education Department of the College.

The Infirmary, maintained by the College, has accommodations for thirty-five bed patients. There is a staff of five: the College Physician, a Supervising Nurse, an Assistant Nurse, a Night Nurse—all graduates of Class-A Hospitals—and a Laboratory and X-Ray Technician.

A modernly equipped First-Aid Department, and a Laboratory and X Ray Department are valuable features of the Infirmary.

The College Physician visits the Infirmary regularly once daily and more often when necessary. The Infirmary is never closed. A graduate nurse is on duty day and night. Students have free access to the Infirmary at all times.

Parents or guardians will be notified immediately by the Dean of Students in case of accident or serious illness of their sons, and no surgical operation will be performed, except in cases of extreme emergency, without full consent of parents.

The medical fee provides for students' infirmary service, general medical treatment, and the services of nurses. It does not provide for surgical operations, outside hospital care, or the services of dentists or any other specialist.

THE GENERAL ALUMNI ASSOCIATION

Alumni Organization.—The purpose of this organization is to promote the interests of State College and to foster among its former students a

sentiment of regard for one another, an attachment to their Alma Mater, and the ideals of service to their fellow men; to interest prospective college students in the kind of training given at State College and in the advantages which young men who are graduates of schools of science and technology have in the fields of useful employment.

The annual business meeting of the General Alumni Association is held during the Commencement each year. Officers of the General Alumni Association, members of the Alumni Executive Committee, members of the Alumni Loyalty Fund Council, and alumni representatives on the Athletic Council are elected at the annual meeting.

Class reunions are held each year in connection with the annual meeting of the Association. These reunions are scheduled so that each class has a reunion the first year, and subsequently, every five years after graduation.

State College Clubs. Local Clubs of the General Alumni Association may be organized wherever there is sufficient interest to justify a club. At present, there are twenty-five clubs in North Carolina and fifteen clubs outside the State.

The Alumni Office.—Records of both graduates and nongraduates are kept by the Alumni Office. The master file includes information on all former students; other files are arranged geographically and by classes. Biographical files are also kept on all graduates.

Serving as a medium of communication between alumni and the College, the Alumni Offices, located on the second floor of Holladay Hall, are official headquarters for alumni when they visit the campus.

The Alumni News.—The ALUMNI NEWS is published monthly except July, August, and September, by the General Alumni Association. The purpose of this publication is to keep alumni in touch with the College and with each other. The magazine is edited by the Alumni Secretary.

THE D. H. HILL LIBRARY

Harlan Craig Brown, Librarian.
A.B., B.S. in L.S., University of Minnesota; A.M. in L.S., University of Michigan.

Clyde H. Cantrell, Circulation Librarian.
A.B., A.M., A.B. in L.S., University of North Carolina.

Mrs. Reba Davis Clevenger, Reference Librarian.
B.L.S., University of Illinois.

Miss Christine Coffey, Catalog Librarian.
A.B., University of North Carolina; A.B. in L.S., University of Michigan; A.M. in L.S., University of Chicago.

Cloyd Dake Gull, Periodicals Librarian.
A.B., Allegheny College; A.B., A.M. in L.S., University of Michigan.

Mrs. Martha B. Sewell, General Assistant.
A.B., Randolph Macon; Certificate in Library Science, Pratt Institute.

Miss Anne Leach Turner, Order Librarian.
A.B., University of North Carolina;
B.S. in L.S., Columbia University.

Miss Anna Elizabeth Valentine, Assistant in Cataloging.
B.S., N.C. State College; A.B. in L.S., University of North Carolina.

Beginning.—The library dates from December, 1889, when $500 was appropriated for the purchase of books as the nucleus of a library. From 1889 to 1903, the library was housed on the second floor of the Administration Building. Upon the completion of Pullen Hall, larger quarters on the first floor of that building were occupied. The library remained in Pullen Hall until 1926, when it was moved into its present building.

Technical, First.—Realizing that experience in the use of books is an essential part of the training of agriculturist, engineer, industrialist, and scientist, the College is striving to build strong, well-balanced collections in the degree-giving Departments, supported by adequate material in supplementary fields. To this end, the library is planned primarily to supply the study and research needs of the students and staff of the College. Its facilities, however, are available to all residents of the State for use within the library building. Technical materials not available from the North Carolina Library Commission may be secured from the State College Library through the agency of the Library Commission or through inter-library loan channels.

Inclusive.—The library collection includes all books and periodicals belonging to the College. The total number of cataloged volumes is approximately 60,000, exclusive of a large number of publications of the Federal Government, the State Agricultural Experiment Stations, the State Extension Divisions, the Engineering Experiment Stations, and the agricultural departments of many foreign countries. More than 700 periodicals and newspapers are received currently.

Facilities. The library contains two reading rooms with a minimum seating capacity of 164. The larger room is used for study. It contains a collection of encyclopedias, dictionaries, standard reference books in the different fields of study, and the current issues of periodicals and newspapers. The Reference Desk, where general and technical reference questions are answered, is conveniently located here. The smaller room, with a seating capacity of about twenty, is used for recreational reading. It is comfortably furnished and has a collection of the best fiction and non-fiction of general interest.

Instruction.—Through use of the Freshman English classes, elementary instruction in the use of the library is given during the fall quarter to all new students. This instruction includes lectures, and problems in the use of the card catalog, magazine indexes, and reference books.

YOUNG MEN'S CHRISTIAN ASSOCIATION

Board of Directors

F. B. WHEELER, *Chairman*

E. L. Cloyd
David A. Worth
L. L. Vaughan
M. E. Gardner
John A. Park
H. E. Satterfield
E. W. Boshart
Thomas Nelson
E. H. Hostetler
B. F. Brown

Employed Staff

EDWARD S. KING, General Secretary
N. B. WATTS, Self-Help Secretary
MRS. L. W. BISHOP, Office Secretary

Student Organization

The Student Cabinet
The Freshman Cabinet

The objective of the Young Men's Christian Association is to contribute whatever is lacking in the total educational situation to make the principles and the spirit of the Christian religion effective in personal life and in all social relations.

The Y. M. C. A. Building is the social and religious center of the campus. On the basement floor are a recreation room, a guest room, a barber shop, and the Student Supply Store. There is a spacious lobby, an auditorium, a reception room, a dining room, the self-help office, and the service office on the first floor. The second floor provides space for the Faculty Club, Council of Student Government, a committee room, the Y. M. C. A. Cabinet Room, and the office of the General Secretary.

The student-employment service is directed by the Self-Help Secretary of the Association. Approximately five hundred and fifty students obtain part-time work through the Y. M. C. A.

Student and faculty organizations of all kinds use the facilities of the building for meetings and social gatherings, entertainments and lectures.

The Y. M. C. A. program, directed by the Student Cabinet, includes, with other features not mentioned, work for new students; organizing a Freshman Cabinet; planning socials with the students from nearby women's colleges; bringing to the campus eminent men to speak on such topics as men-and-women relations, and present-day international, racial, and economic questions; conducting an annual religious-emphasis week under the leadership of Christian ministers or laymen who understand student life; sending delegates to State, regional, and National Christian Student Conferences; issuing annually **State College Handbook**, a compendium of extra-curricular activities on the Campus, specially those of students, with the personnel of each organization for the year.

MILITARY TRAINING

The Military Department: The Reserve Officers Training Corps

The Reserve Officers Training Corps, the official designation of the military organization at State College, conducts the work in two courses of two years each:

The Basic Course. A required course for all physically fit freshmen and sophomores.

The Advanced Course.—Elective and selective for juniors and seniors who have successfully completed the Basic Course. Satisfactory completion of the Advanced Course leads to a commission as Second Lieutenant of Infantry in the Officers Reserve Corps. Students holding such a commission are assigned, after graduation, to an Army Reserve Unit, usually in their own localities. Coöperative Engineering Students selected for Advanced Military Training are required to enter classes in the Fall.

Military Science I discusses in class such subjects as: the National Defense Act, Military Courtesy and Discipline, Hygiene and First Aid, Military Organization, Current International Situation, and Military History. One hour per week is devoted to classroom instruction.

Military Science II discusses Leadership, Scouting and Patrolling, Combat Principles of small units, Interior Guard Duty, and Military History. One hour per week is devoted to classroom instruction.

Military Science III discusses Leadership, Aerial Photography, Supply and Mess Management, Operation of Motor Vehicles, Defense against Chemical Agents, Combat Principles and Defensive Tactics. Three one-hour classroom periods are required.

Military Science IV discusses Leadership, Military Law, Military History, Anti-Aircraft Defense, Infantry Weapons and Unit Organization, Combat Intelligence and Signal Communications. Three one-hour classroom periods are required.

Drill. All ROTC students are required to attend three one hour drill periods per week.

Uniforms, Equipment, Fees

Army Officers. The Federal Government details officers of the Regular Army as Instructors in the R. O. T. C. The senior instructor is designated by the War Department as Professor of Military Science and Tactics. Regular Army and/or Reserve officers conduct all classroom instruction and supervise the instruction of the corps on the drill fields.

Uniforms.—Uniforms for Basic Course students, and all instructional equipment are provided by the Federal Government. This is loaned to the Institution which is accountable to the Federal Government for its proper care and use.

Financial Aid.—Members of the Advanced Course are paid a specified amount by the Federal Government toward the purchase of their uniforms. These uniforms are made in the pattern of the Army Officers uniform and

can be used by the student for several years after he has received his commission in the Reserve Corps. In addition, the Advance Course student receives from the Federal Government a daily pay amounting to approximately twenty five cents per day. An Advance Course student who withdraws from College prior to graduation must adjust his uniform account with the Military Department prior to departure from the campus.

Deposit.—A deposit of ten dollars is required of each student member of the R. O. T. C., as insurance against loss of equipment or damage thereto. A refund is made upon the return of the equipment in good condition.

Expenses.—Approximately $7.50 is required by each new student in the R. O. T. C. for the purchase of uniform shoes and other special articles not issued by the Government. Expenses for sophomore R. O. T. C. students may be less, dependent upon the serviceability of items purchased previously.

Organization. The R.O.T.C. at State College is organized into the following units:

An Infantry Regiment of three battalions, organized for training purposes.

A Military Band, supervised and trained by the Director of Music of the College. Instruments are provided by the Federal Government. Membership is open to all student musicians who can qualify. Time is given for instruction in concert music in addition to military-band music.

A Military Drum and Bugle Corps, supervised and trained by cadet officers. Instruments are provided by the Military Department.

Credits. Credit is allowed for work at other institutions having an R. O. T. C. Unit established in accordance with the provisions of the National Defense Act and Army Regulations. Record of a student's prior training in R. O. T. C. is obtained by the Military Department from the institution concerned.

Educational Value. The immediate purpose of the R.O.T.C. is to train officers for service in defense of the country in an emergency. This is clearly stated in the National Defense Act of Congress. The R. O. T. C. at State College is in no sense militaristic. As a by-product, the general educational value of the training for any profession in civil life is of incalculable great ness. Military discipline best instills the principle that to be a leader or to command one must first learn to obey. The training gives the advanced course student ample opportunity to practice the leadership of men resulting in self-confidence, initiative, and courage. Habits of regularity, of punctuality, of thoroughness in every duty, of respect for one's seniors are inculcated, along with neatness in dress and cleanliness in person. The importance of correct posture and bearing in social and business intercourse, as well as for health, is implanted.

The standard of discipline desired by the Military Department is exactly the same as the standard most helpful to fit college graduates to become honorable and outstanding members of their communities, in whatever profession or calling they may engage.

III. SCHOOLS, DIVISIONS & DEPARTMENTS

THE BASIC DIVISION

Benjamin Franklin Brown, Dean

Organization. Upon recommendation by President Graham, the Basic Division of the College was created by action of the Board of Trustees at its annual meeting on June 11, 1935. After considerable preliminary preparation, the organization of the Division became effective July 1, 1937, the first students being registered in the Division in September, 1938. For the first year it seemed advisable to include only the incoming freshmen. Beginning with the College year 1939-40 and thereafter, all freshmen and sophomores in the College will be registered in the Basic Division.

Administratively, the Basic Division includes the Departments of Economics, English, Ethics and Religion, History and Government, Modern Languages, Physical Education, and Sociology. The Heads of the Departments, or representatives from them, constituting **the Administrative Board of the Division,** together with the members of the several Departments follow:

Economics

Associate Professor C. B. Schulenberger, Administrative Board Representative

Professors B. F. Brown, R. O. Moen, M. C. Leager; Associate Professor R. W. Green; Assistant Professor A. S. Miller.

English

Professor Lodwick C. Hartley, Chairman

Professors J. D. Clark, T. P. Harrison, A. I. Ladu; Associate Professors A. M. Fountain, E. H. Paget; Assistant Professors R. P. Marshall, T. L. Wilson, W. K. Wynn; Instructors K. W. Cameron, C. C. Chadbourn, Philip H. Davis, H. T. Gibson, H. G. Kincheloe, F. H. Lyell, J. A. Shackford, A. B. R. Shelley, R. B. Wynne.

Ethics and Religion

Associate Professor W. N. Hicks, Head of Department

History and Political Science

Associate Professor David A. Lockmiller, Chairman

Assistant Professors L. W. Barnhardt, George Bauerlein, Jr., L. Walter Seegers.

Modern Languages

Professor L. E. Hinkle, Head of Department

Assistant Professor S. T. Ballenger; Instructor I. O. Garodnick

Physical Education and Athletics

Professor J. F. Miller, Head of Department
For names of Physical Education staff and athletic coaches see page—

Sociology

Professor Sanford R. Winston, Head of Department

The faculty is composed of the staff members of the Departments named above and, in addition, the teachers of freshmen and sophomores from the Departments of Botany, Chemistry, Geology, Mathematics, Physics, Psychology, and Zoölogy.

Purposes. Broadly speaking, the purposes of the Basic Division are (a) to provide the best possible preliminary training during the first two years of the student's college career so that he can during the last two years successfully pursue his professional education in agriculture and forestry, engineering, textiles, or vocational education; and (b) to provide effective guidance during the first two years, so that those students with well-chosen and fixed purposes can be well-advised in their educational careers and also so that those students who have made an unsatisfactory choice of curriculum or who have become uncertain of their careers, may receive helpful guidance and advice in finding themselves.

More specifically it is the function of the Basic Division:

First, to provide "two years of basic courses in the humanities, natural and exact sciences, and the social sciences as the foundation of the schools of agriculture and forestry, textiles and engineering;"[1]

Second, "to provide in the curricula of the upper years of each technological school for a minimum of the more general culture courses in the humanities, natural sciences, and social sciences."[2]

Student Guidance.—In carrying out its guidance program, the Basic Division avails itself of numerous tests which indicate the past achievements and the present rate of progress of its students. Upon entering, all freshmen take the placement tests in Mathematics and in English, and the psychological examination. In addition to these, the advisers have the use of mid-term reports on all students, the final examination record, the dormitory reports, and the record from the Dean of Students.

Each student is assigned to a technical adviser in the curriculum in which he is registered, to assist him in planning for his professional career. Students whose records come to indicate that they are not qualified for the curriculum they have chosen, or who become dissatisfied with their course, are assigned to guidance counselors for special assistance.

Special Testing Service is provided by the Department of Psychology in order to assist advisers and counselors in the guidance of students. In addition to the tests given to all freshmen already referred to, provisions are made for testing individual students who present special problems for

[1] President Graham's Report to the Board of Trustees, June 11, 1935, page 11.
[2] Ibid.

study. The "testing service" rendered by the staff in Psychology administers tests of aptitudes, personality, interests, and educational achievement. Efforts are being made to provide a clinical approach to a study of the educational, vocational, and personality problems of individual students.

PROGRAMS OF STUDY

Programs of Study.—The Basic Division grants no degrees. It provides two years of fundamental training in preparation for the special training of the last two years in the other divisions of the College:

The School of Agriculture and Forestry
The School of Engineering
The Division of Teacher Education
The Textile School

Its programs of study are as follows:

1. **In Agriculture and Forestry.** (For complete curricula see pages 54-82.)
   (a) Leading to the degree of Bachelor of Science in Agriculture in one of the following fields—Agricultural Economics, Animal Production, Dairy Manufacturing, Entomology, Field Crops and Plant Breeding, Floriculture, Plant Pathology, Pomology, Poultry Science, Soils, and Vegetable Gardening.

Freshman Year

COURSES	CREDITS First Term	Second Term	Third Term
Eng. 101, 102, 103	3	3	3
Chem. 101, 102, 103	4	4	4
Zool. 101	4	0	0
Bot. 102	0	4	0
Geol. 120	0	0	4
Hist. 101, 102, 103	3	3	3
Math. 111, 112	0	4	4
Mil. 101, 102, 103 or alt.	2	2	2
Phys. Ed. 101, 102, 103	1	1	1
	17	21	21

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Agr. Eng. 202	0	3	0
Soils, 201	0	0	4
Econ. 201, 202	3	3	0
Agr. Econ. 202	0	0	3
Phys. 115	5	0	0
Zool. 202 or Bot. 221	0	0	5
Zool. 102	0	4	0
Bot. 101	4	0	0
Chem. 221	0	4	0
A. H. 202	0	3	0
Poul. 201	3	0	0
For. 111	3	0	0
Hort. 203	0	0	3
F. C. 202	0	0	3
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	21	20	21

   (b) Agricultural Chemistry,—leading to the degree of Bachelor of Science in Agriculture.

Freshman Year

Eng. 101, 102, 103	3	3	3
Chem. 101, 102, 103	4	4	4
Zool. 101	4	0	0
Bot. 102	0	4	0
Geol. 120	0	0	4
Hist. 101, 102, 103	3	3	3
Math. 111, 112	0	4	4
Mil. 101, 102, 103 or alt.	2	2	2
Phys. Ed. 101, 102, 103	1	1	1
	17	21	21

Sophomore Year

Bot. 101	4	0	0
Zool. 102	0	4	0
Zool. 202 or Bot. 221	0	0	5
Chem. 211, 212, 213	4	4	4
Soils, 201	4	0	0
Bot. 402	0	4	0
A. H. 202	0	0	3
Econ. 201, 202	3	3	0
Agr. Econ. 202	0	0	3
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	18	18	18

(c) Agricultural Engineering,—leading to the degree of Bachelor of Science in Agriculture.

Freshman Year				Sophomore Year			
Math. 101, 102, 103	6	6	6	Math. 201, 202, 203	4	4	4
Eng. 101, 102, 103	3	3	3	Eng. 211, 231	3	0	3
Chem. 101, 102, 103	4	4	4	Agr. Eng. 202	0	3	0
M. E. 105, 106, 107	3	3	3	Phys. 201, 202, 203	4	4	4
Mil. 101, 102, 103 or alt.	2	2	2	Geol. 220	0	0	3
Phys. Ed. 101, 102, 103	1	1	1	Zool. 101	4	0	0
				Bot. 102	0	4	0
	19	19	19	Hist. 101, 102, 103	3	3	3
				Mil. 201, 202, 203 or alt.	2	2	2
				Phys. Ed. 201, 202, 203	1	1	1
					21	21	20

Summer requirement: C. E. s200.

(d) Forestry, leading to the degree of Bachelor of Science in Forestry.

Freshman Year				Sophomore Year			
Eng. 101, 102, 103	3	3	3	Math. 113	0	0	4
C. E. 101, 102, 103	1	1	1	Econ. 205	3	0	0
Bot. 101, 102, 203	4	4	3	Agr. Econ. 212	0	3	0
Math. 111, 112	0	4	4	Bot. 221	5	0	0
Zool. 101, 102, 213	4	4	4	Bot. 211, 213	3	0	3
For. 101, 102, 103	1	1	1	Chem. 101, 102, 103	4	4	4
Soc. 202	3	0	0	Geol. 120	0	4	0
Mil. 101, 102, 103 or Soc. 101, 102, 103	2	2	2	For. 202	0	3	0
Phys. Ed. 101, 102, 103	1	1	1	C. E. 221, 222	0	3	3
				C. E. 225-224	0	1	1
	19	20	19	Psych. 200	0	0	3
				Mil. 201, 202, 203, or Hist. 104	2	2	2
				Phys. Ed. 201, 202, 203	1	1	1
					18	21	21

Summer Camp, see p. 70.

(e) Landscape Architecture,—leading to the degree of Bachelor of Science in Agriculture.

Freshman Year				Sophomore Year			
Eng. 101, 102, 103	3	3	3	Eng. 211, 231	3	0	3
Math. 101, 102, 103	6	6	6	Bot. 221	0	0	5
Bot. 101, 102, 203	4	4	3	Hort. 301	3	0	0
M. E. 105, 106, 107	3	3	3	Geol. 120	0	4	0
L. A. 101, 102, 103	1	1	2	Econ. 205	0	3	0
C. E. 101, 102, 103	1	1	1	Psych. 200	3	0	0
Mil. 101, 102, 103 or Soc. 101, 102, 103	2	2	2	Arch. 201, 202, 203	3	3	3
Phys. Ed. 101, 102, 103	1	1	1	C. E. 221-2	3	3	0
				C. E. 225-227	1	0	0
	21	21	21	L. A. 201, 202, 203	2	2	2
				L. A. 212, 213	0	3	3
				Mil. 201, 202, 203 or Hist. 104	2	2	2
				Phys. Ed. 201, 202, 203	1	1	1
					21	21	20

Surveying, C. E. s310, 3 cr.

(f) Wildlife Conservation and Management, leading to the degree of Bachelor of Science in Agriculture.

Freshman Year				Sophomore Year			
Eng. 101, 102, 103	3	3	3	Phys. 115	0	0	5
Chem. 101, 102, 103	4	4	4	Bot. 101, 102, 203	4	4	3
Math. 111, 112	0	4	4	Chem. 221	0	0	4
Zool. 101, 102	4	4	0	Econ. 205	3	0	0
Geol. 120	0	0	4	Agr. Econ. 212	0	3	0
Hist. 101, 102, 103	3	3	3	Eng. 231	3	0	0
Zool. 111	1	0	0	Zool. 222, 223	0	4	4
Mil. 101, 102, 103 or alt.	2	2	2	F. C. 202	0	3	0
Phys. Ed. 101, 102, 103	1	1	1	Zool. 251, 252, 253	2	2	2
	18	21	21	C. E. 221, 222	3	3	0
				C. E. 225	1	0	0
				For. 111	3	0	0
				Mil. 201, 202, 203 or alt.	2	2	2
				Phys. Ed. 201, 202, 203	1	1	1
					22	22	21

2. In Engineering. (For complete curricula see pages 97-130.)

Architecture,—leading to the degree of Bachelor of Architecture.

Freshman Year				Sophomore Year			
Math. 101, 102, 103	6	6	6	Math. 201, 202, 303	4	4	4
Eng. 101, 102, 103	3	3	3	Phys. 201, 202	4	4	0
French, or M. L. 101, 102, 201, or equiv.	3	3	3	Arch. 205	2	0	0
Arch. 100	1	1	1	E. M. 301, 302	0	3	3
Hist. 104	2	2	2	Arch. 201, 202, 203	3	3	3
Arch. 107 (or M. E. equiv.)	3	3	0	Arch. 325	0	0	2
M. E. 107	0	0	3	Arch. 305	0	0	2
Mil. 101, 102, 103	2	2	2	Arch. 206	1	0	0
Phys. Ed. 101, 102, 103	1	1	1	Mil. 201, 202, 203 or Alt.	2	2	2
	21	21	21	Phys. Ed. 201, 202, 203	1	1	1
					20	20	20

Summer C. E. s200, 3 credits.

Freshman Year (for all other Engineering Curricula)

Eng. 101, 102, 103	3	3	3
Math. 101, 102, 103	6	6	6
Chem. 101, 102, 103	4	4	4
M. E. 105, 106, 107	3	3	3
Mil. 101, 102, 103 or Hist. 104	2	2	2
Phys. Ed. 101, 102, 103	1	1	1
	19	19	19

Summer—C. E. s200, 3 credits.

(a) Leading to the degree of Bachelor of Aeronautical Engineering

Sophomore Year			
Math. 201, 202, 303	4	4	4
*Eng. 211, 231, and one of the following: Eng. 261-267	3	3	3
Phys. 201, 202, 203	4	4	4
M. E. 211, 212, 213	2	2	2
M. E. 121, 122, 123	1	1	1
E. M. 311, 312	0	3	3
Aero. E. 210	3	0	0
Mil. 201, 202, 203 or Alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	20	20	20

(b) Leading to the degree of Bachelor of Architectural Engineering.

Sophomore Year

Math. 201, 202, 303	4	4	4
*Eng. 211, 231, and one of the following: Eng. 261, 262, 263, 265, 266, 267	3	3	3
Phys. 201, 202, 203	4	4	4
E. M. 311, 312	0	3	3
Arch. 201, 202, 203	3	3	3
Arch. 100	1	1	1
Arch. 205	2	0	0
Arch. 206	1	0	0
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	21	21	21

(c) Leading to the degree of Bachelor of Ceramic Engineering.

Sophomore Year

Math. 201, 202, 303	4	4	4
Chem. 211, 212	4	4	0
Phys. 201, 202, 203	4	4	4
Geol. 220, 230	3	0	3
*Eng. 211, 231, 261	3	3	3
Cer. Eng. 102, 103	0	3	3
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	21	21	20

(d) Leading to the degree of Bachelor of Chemical Engineering.

Sophomore Year

Math. 201, 202, 303	4	4	4
*Eng. 211, 231 and any one of Eng. 261-267	3	3	3
Chem. E. 201, 202, 203	1	1	2
Phys. 201, 202, 203	4	4	4
Chem. 211, 212, 213	4	4	4
M. E. 122, 123	1	1	0
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	20	20	20

(e) Leading to the degree of Bachelor of Civil Engineering.

Sophomore Year

Math. 201, 202, 303	4	4	4
*Eng. 211, 231 and one of Eng. 261-267	3	3	3
Phys. 201, 202, 203	4	4	4
C. E. 221, 222, 223	3	3	3
C. E. 225, 226, 227	1	1	1
Geol. 220	3	0	0
E. M. 311, 312	0	3	3
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	21	21	21

(f) Leading to the degree of Bachelor of Electrical Engineering.

Sophomore Year

Math. 201, 202, 303	4	4	4
Phys. 201, 202, 203	4	4	4
*Eng. 211, 231 and one of Eng. 261, 221 or 337	3	3	3
Econ. 201, 202, 203	3	3	3
E. E. 201, 202	3	3	0
M. E. 128	0	0	3
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	20	20	20

(g) Leading to the degree of Bachelor of Geological Engineering.

Sophomore Year

Math. 201, 202, 303	4	4	4
*Eng. 211, 231 and one of Eng. 261-267	3	3	3
Chem. 211, 212	4	4	0
Phys. 201, 202, 203	4	4	4
Geol. 220, 222, 230	3	3	3
Geol. 223	0	0	3
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	21	21	20

(h) Leading to the degree of Bachelor of Industrial Engineering.

Sophomore Year

Math. 201, 202, 303	4	4	4
*Eng. 211, 231, and one of Eng. 261-267	3	3	3
Phys. 201, 202, 203	4	4	4
Econ. 201, 202, 203	3	3	3
M. E. 124, 125, 126	2	2	2
I. E. 101, 102, 103	3	3	3
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	22	22	22

(i) Leading to the degree of Bachelor of Mechanical Engineering.

Sophomore Year

Math. 201, 202, 303	4	4	4
Eng. 211, 231, elective	3	3	3
Phys. 201, 202, 203	4	4	4
M. E. 211, 212, 213	2	2	2
M. E. 124, 125, 126	2	2	2
E. M. 311, 312	0	3	3
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	18	21	21

(j) Leading to the degree of Bachelor of Science in Engineering.

Sophomore Year

Math. 201, 202, 303	4	4	4
Phys. 205, 206, 207	5	5	5
*English or Modern Language	3	3	3
†Elective	4	4	4
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	19	19	19

3. **In Teacher Education.** (For complete curricula see pages 131-140.)

(a) Leading to the degree of Bachelor of Science in Agricultural Education.

Freshman Year

Eng. 101, 102, 103	3	3	3
Chem. 101, 102, 103	4	4	4
Bot. 102	0	4	0
Zool. 101	4	0	0
Math. 111, 112	0	4	4
Hist. 101, 102, 103	3	3	3
Geol. 120	0	0	4
Mil. 101, 102, 103 or alt.	2	2	2
Phys. Ed. 101, 102, 103	1	1	1
	17	21	21

Sophomore Year

Agr. Eng. 202	0	3	0
Soils 201	0	0	4
Econ. 201, 202	3	3	0
Agr. Econ. 202	0	0	3
Phys. 115	5	0	0
Zool. 202 or Bot. 221	0	0	5
Zool. 102	0	4	0
Bot. 101	4	0	0
Chem. 221	0	4	0
A. H. 202	0	3	0
Poul. 201	3	0	0
For. 111	3	0	0
Hort. 203	0	0	3
F. C. 202	0	0	3
Mil. 201, 202, 203 or alt.	2	2	2
Phys. Ed. 201, 202, 203	1	1	1
	21	20	21

* Students who do not make an average grade of B or better in Freshman English will be required to continue English in the Sophomore year.

† Free electives.—except that not more than 15 term credits may be chosen from the technical or special technical courses in the School of Engineering.

(b) Leading to the degree of Bachelor of Science in Industrial Arts Education,
also

(c) Leading to the degree of Bachelor of Science in Industrial Arts or Industrial Education.

Freshman Year				Sophomore Year			
Eng. 101, 102, 103	3	3	3	Eng. 211, 231, elective	3	3	3
Math. 111, 112, 113	4	4	4	Phys. 105, 106, 107	4	4	4
Chem. 101, 102, 103 or optional science	4	4	4	Hist. 101, 102, 103	3	3	3
Ed. 105 a, b, c	3	3	3	Ed. 205	0	0	3
Ed. 106 a, b, c	3	3	3	Soc. 202, 203	3	3	0
Mil. 101, 102, 103 or alt.	2	2	2	Ed. 206 a, b, c	3	3	3
Phys. Ed. 101, 102, 103	1	1	1	Mil. 201, 202, 203 or Elect.	2	2	2
	20	20	20	Phys. Ed. 201, 202, 203	1	1	1
					19	19	19

(d) Leading to the degree of Bachelor of Science in Vocational Guidance.

Freshman Year				Sophomore Year			
Eng. 101, 102, 103	3	3	3	Eng. 211, 231, elective	3	3	3
Math. 111, 112, 113	4	4	4	Science	4	4	4
Science	4	4	4	Econ. 201, 202, 203	3	3	3
Hist. 101, 102, 103	3	3	3	Hist. 201, 202, 203	3	3	3
Ed. 103	0	0	3	Geol. 303	0	0	3
Soc. 202, 203	3	3	0	Mil. 201, 202, 203, or Elect.	2	2	2
Mil. 101, 102, 103 or Hist. 104	2	2	2	Phys. Ed. 201, 202, 203	1	1	1
Phys. Ed. 101, 102, 103	1	1	1	*Electives	3	3	3
	20	20	20		19	19	19

4. **In Textiles.** (For complete curricula see pages 146-149.)

(a) Leading to the degree of Bachelor of Science in Textiles in one of the following: Textile Manufacturing, Textile Chemistry and Dyeing, Textile Management, Weaving and Designing, and Yarn Manufacturing.

Freshman Year				Sophomore Year			
Eng. 101, 102, 103	3	3	3	Hist. 101, 102, 103	3	3	3
Phys. 111, 112, 113	4	4	4	Arch. 106 or Phys. 311	3	0	0
Math. 111, 112, 113	4	4	4	Phys. 311 or Arch. 106	0	0	3
M. E. 121, 122, 123	1	1	1	Chem. 101, 102, 103	4	4	4
M. E. 101, 102, 103	2	2	2	F. C. 201, 212	3	3	0
Tex. 101, 102, 103	1	1	1	Tex. 201, 203, 205	1	0	4
Tex. 104	0	1	0	Tex. 231, 232, 234	1	3	0
Tex. 131	0	0	2	Tex. 236, 237	0	2	2
Mil. 101, 102, 103 or Hist. 104	2	2	2	Tex. 207, 208, 209, 211	3	1	1
Phys. Ed. 101, 102, 103	1	1	1	Mil. 201, 202, 203 or alt.	2	2	2
	18	19	20	Phys. Ed. 201, 202, 203	1	1	1
					21	19	20

* Electives to be selected with aid of adviser to meet special needs of individual students.

THE SCHOOL OF AGRICULTURE AND FORESTRY

Ira Obed Schaub, Dean and Director of Extension

Zeno Payne Metcalf, Director of Instruction

Robert Mundhenk Salter, Director of the Agricultural Experiment Station

Organization.—The School of Agriculture and Forestry is organized in three divisions, Resident Instruction, Agricultural Extension and the Agricultural Experiment Station, to carry on the functions of instruction, extension and research. These divisions are organized as departments of: (a) Agricultural Economics, including Farm Marketing and Farm Management; (b) Agricultural Engineering, including Farm Structures and Farm Machinery; (c) Agronomy, including Field Crops, Soils, and Plant Breeding; (d) Animal Industry, including Animal Production, Animal Nutrition, Dairy Production, and Dairy Manufacturing; (e) Botany, including Bacteriology, Plant Physiology, and Plant Diseases; (f) Chemistry; (g) Experimental Statistics; (h) Forestry, including Silviculture, Utilization, and Management; (i) Horticulture, including Pomology, Small-Fruit Culture, Floriculture, Truck Farming, and Landscape Architecture; (j) Poultry Science, including Poultry Diseases, Poultry Breeding, Poultry Feeding, and Poultry Management; (k) Rural Sociology; (l) Zoölogy, including Genetics, Entomology, Animal Physiology, and Wild Life Management.

Purpose.—The purpose of the School of Agriculture and Forestry is threefold: (1) To obtain through scientific research, experimentation, and demonstration accurate and reliable information relating to soils, plants, and animals, and to obtain from every available source reliable statistical, technical, and scientific data relating to every phase of agriculture that might be of advantage to the State; (2) to provide instruction in the College for young men who desire to enter the field of general agriculture, or wish to become professionals in agricultural education or specialists in any field of science related to agriculture; (3) to disseminate reliable information through publications and through extension agents, and by a wise use of this information to give instruction to agricultural workers in the scientific, experimental, and practical progress in the various lines of agriculture.

All effective instruction in agriculture is based on research and investigation; and the curricula are so organized that not only the subject matter for classroom instruction and extension work may be drawn from research, experimentation, and demonstration, but that the students themselves shall have the opportunity to work under the direction of research specialists.

The vocations open to young men well trained in agriculture and the opportunities afforded for distinct service to the State are now greater than ever before. In order that the more important vocations in agriculture may be presented to the youth of the State, the courses of study are so organized as to give specific training for the following major vocations:

General Farming
Agricultural Extension Agents
Agricultural Specialists in
State or Federal Departments
Stock Raising and Dairying
Poultrymen
Specialists in the Manufacture
of Dairy Products
Foresters
Fruit Growers
Truck Farming

Agricultural Specialists in Foreign Lands

In addition to these major vocations, the School of Agriculture gives instruction in Beekeeping, Floriculture, and the basic instruction for teachers of Agriculture.

Admission; Advanced Standing.—Regulations for admission and for advanced standing are stated under Information for Applicants. (See pages 23-28.)

Graduates in Liberal Arts.—Selected courses leading to the degree of Bachelor of Science in Agriculture are offered to graduates of universities and standard colleges. These are arranged in accordance with the vocational aim of the individual student, and in the light of credits presented from the institution by which the student has been graduated, subject to the approval of his adviser and the Director of Instruction. In cases where the student presents enough credits which may be used for courses required in his curriculum, he may be graduated with a B.S. degree in one year. In no case should it take more than two years to complete the work for this degree.

Graduation.—The requirement for graduation is the satisfactory completion of one of the curricula outlined below.

A minimum of 230 term credits with at least 230 honor points is required for graduation by the School of Agriculture. The term credits should be distributed as follows: A maximum of 60 in the major Department, and a minimum of 18 in Language, 24 in Physical Science, 18 in Social Science, 12 in Military Science or alternative, and 6 in Physical Education.

Students entering with advanced standing are required, in the remainder of their course, to earn at least as many points as the number of term credits remaining necessary for graduation.

Degrees. The degrees of Bachelor of Science in Agriculture and Bachelor of Science in Forestry are conferred upon the satisfactory completion of one of the curricula in this School.

The degree of Master of Science in Agriculture is offered for the satisfactory completion of one year of graduate study in residence. Candidates for this degree are enrolled as students in the Graduate School.

The professional degree of Master of Agriculture may be conferred upon graduates of State College after five years of service in agriculture, and upon the acceptance of a satisfactory thesis.

Curricula.—The curricula in Agriculture offer a combination of practical and theoretical work. About half of the time is devoted to lectures and recitations, the other half to work in shops, laboratories, greenhouses, dairy, poultry yards, and on the College farm.

In order that every graduate of the School of Agriculture shall acquire a liberal education in lieu of specializing too narrowly, and shall become a leader having breadth of vision, the curricula in Agriculture contain broadening subjects, such as language, literature, history, and the social sciences.

The School of Agriculture and Forestry offers the following curricula:

A. In General Agriculture with opportunities to specialize during junior and senior years in any of the following:

1. Farm Business Administration
2. Farm Marketing and Farm Finance
3. Rural Sociology
4. Animal Production
5. Dairy Manufacturing
6. Entomology
7. Field Crops and Plant Breeding
8. Floriculture
9. Plant Pathology
10. Pomology
11. Poultry Science
12. Soils
13. Vegetable Gardening
14. Agricultural Chemistry

B. In Agricultural Engineering
C. In Forestry
D. In Landscape Architecture
E. In Wildlife Management

GENERAL AGRICULTURE

First Two Years. The freshman and sophomore years for all courses are outlined on a following page. This curriculum is intended to train students in broad basic fields of agriculture. For junior and senior years, the curriculum of each student is arranged in accordance with his vocational aims, subject to the approval of his adviser and the Director of Instruction.

Professional Opportunities.—Students who specialize in General Agriculture may look forward to any of the following professions.

Specialists in State or Federal Departments, or in Agriculture Colleges.—The School of Agriculture is equipped to train men as specialists in the various fields as indicated by the curricula outlined below.

Inspectors.—Most States now maintain inspection of fertilizers, seeds, nurseries, and insecticides. Most cities have special inspectors for their milk supplies. Students seeking vocational opportunities in these fields may elect appropriate subjects in their junior and senior years.

Extension Specialists.—Students in this group will find employment as agricultural agents for railroads, and for commercial firms dealing in agricultural products; as specialists in the various fields of agriculture in the extension departments of agricultural colleges, and as county agricultural agents.

County Agents. The growing importance of marketing agricultural products and the need for better organization of farms has given rise to a strong demand for county agents who have had special training in Agricultural Economics.

Specialists and Commercial Agricultural Agents.—The School of Agriculture is well equipped to train men for agricultural industries, such as manufacturing fertilizers, livestock and poultry feeds, farm machinery, and dairy and horticultural products. These concerns are usually anxious to obtain men who have had actual agricultural experience, and who, in addition, have had special training in agricultural economics, accounting, and statistics. This field is developing rapidly and offers an attractive opportunity for students who wish to enter the purely commercial field.

Agricultural Specialists in Foreign Lands.—The School of Agriculture is well equipped to train men as experts in cotton and tobacco production in foreign lands.

Junior Agriculture Economist.—A position as a junior agricultural economist involves research in Agricultural Economics. Such positions are usually available in the governmental departments, such as United States Department of Agriculture and in various State institutions.

Farm Manager. There is a growing demand for men who have had practical farm experience and who have special training in farm organization and management. This field is practically a new one, and there have been many requests for men with special training in farm management.

Marketing Specialists. There is a growing demand for men who can manage coöperative marketing and other farmers' business associations.

FOR ALL CURRICULA IN AGRICULTURE

(Except Agricultural Chemistry, Agricultural Engineering, Forestry, Landscape Architecture, and Wildlife Conservation and Management.)

Freshman Year

COURSES	CREDITS First Term	Second Term	Third Term
Composition, Eng. 101, 102, 103	3	3	3
General Inorganic Chemistry, Chem. 101, 102, 103	4	4	4
General Botany, Bot. 102	0	4	0
General Zoology, Zool. 101	4	0	0
Physical Geology, Geol. 120	0	0	4
Economic History, Hist. 101, 102, 103	3	3	3
Mathematical Analysis, Math. 111-112	0	4	4
Military Science I, Mil. 101-2-3, or alternate	2	2	2
Fundamental Activities and Hygiene, P.E. 101, 102, 103	1	1	1
	17	21	21

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Farm Equipment, Agr. Eng. 202	0	3	0
Soils, Soils 201	0	0	4
General Economics, Econ. 201, 202	3	3	0
Agricultural Economics, Agr. Econ. 202	0	0	3
Physics for Agricultural Students, Phys. 115	5	0	0
Animal Physiology, Zool. 202, or Plant Physiology, Bot. 221	0	0	5
Economic Zoology, Zool. 102	0	4	0
General Botany, Bot. 101	4	0	0
Introduction to Organic Chemistry, Chem. 221	0	4	0
Animal Nutrition I, A. H. 202	0	3	0
General Poultry, Poul. 201	3	0	0
Principles of Forestry, For. 111	3	0	0
General Horticulture, Hort. 203	0	0	3
General Field Crops, F.C. 202	0	0	3
Military Science II, Mil. 201-2-3, or alternate	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	21	20	21

AGRICULTURE ECONOMICS

Professor G. W. Forster, Head of the Department
Professors C. Horace Hamilton, Marc C. Leager; Associate Professors S. L. Clement, R. E. L. Greene; Instructors R. C. Barnes, H. A. Patton.

Facilities.—The Department of Agricultural Economics has available for its use 15 offices, a seminar room, a document room, a workshop, and a Departmental classroom. The Department is supplied with various calculating devices. In addition, by special arrangement of one of the large calculating-machine companies, a supply of calculators and tabulating devices is adjusted to the need for them. Charts on practically every phase of agricultural economics are at hand or are available through the courtesy of the U. S. Department of Agriculture. A large number of maps of farms located in various parts of the state are used as a basis for studying and for illustrating the principles and practices of farm management. The results of research in marketing, agricultural finance, taxation, insurance, and soil conservation practices have made a large volume of statistical information constantly available for undergraduate and graduate students. Maintained for reference is an up-to-date file of bulletins and documents covering all phases of agricultural economics.

The State a Laboratory.—The State of North Carolina is a laboratory for the Department. Studies are in progress on all important phases of agricultural economics: marketing of cotton, tobacco, fruits and vegetables; farm credit, taxation of agriculture, farm prices, farm organization and management, land classification and land use. It is significant to the student in agricultural economics that much of the research is done in coöperation with the various agencies of the Federal Government.

Statistical Laboratory.—All students in the department will have access to the facilities and personnel of the new Statistical Laboratory established at State College in coöperation with the U. S. Department of Agriculture, through formal courses and informal conferences.

CURRICULA IN AGRICULTURAL ECONOMICS

Farm Business Administration

For Freshman and Sophomore years refer to page 54.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
English	3	3	3
Farm Management I, Agr. Econ. 303	0	0	3
Principles of Accounting, Econ. 301, 302, 303	3	3	3
Woodworking, M.E. 127	0	3	0
Economics	3	3	3
Technical Agricultural Courses	3	3	3
Electives	3	0	0
**Electives	3	3	3
	18	18	18

Senior Year

Agricultural Finance, Agr. Econ. 432	0	3	0
Farm Management II, Agr. Econ. 423	0	0	3
Farm Buildings, Agr. Eng. 322	0	3	0
Farm Cost Accounting, Agr. Econ. 402, 403	0	3	3
Agr. Marketing, Agr. Econ. 411	3	0	0
Terracing and Drainage, Agr. Eng. 303	0	0	3
Social Aspects of Land Tenure, Rur. Soc. 422 or Land Economics, Agr. Econ. 412	0	3	0
Agr. Drawing, Agr. Eng. 222	0	3	0
Survey of Statistical Methods, Agr. Econ. 408	3	0	0
Statistics	0	3	3
Technical Agricultural Courses	6	0	3
Electives	3	0	0
**Electives	3	3	3
	18	21	18

Farm Marketing and Farm Finance

For Freshman and Sophomore years refer to page 54.

Junior Year

English	3	3	3
Marketing Methods, Econ. 311, 312	3	3	0
Rural Sociology, Rur. Soc. 302	0	3	0
Agr. Marketing, Agr. Econ. 411	3	0	0
Principles of Accounting, Econ. 301, 302, 303	3	3	3
Economics	3	3	3
Electives	0	0	6
**Electives	3	3	3
	18	18	18

Senior Year

Marketing Methods and Problems, Agr. Econ. 421	3	0	0
Cotton and Tobacco Marketing, Agr. Econ. 442	0	3	0
Agricultural Finance, Agr. Econ. 432	0	3	0
Agricultural Cooperation, Agr. Econ. 422	0	3	0
Rural Population Problems, Rur. Soc. 411	3	0	0
Farm Management I, Agr. Econ. 303	0	0	3
Community Organization, Rur. Soc. 413	0	0	3
Survey of Statistical Methods, Agr. Econ. 408	3	0	0
Statistics	0	3	3
Economics	3	3	3
Technical Agricultural Courses	3	0	3
**Electives	3	3	3
	18	18	18

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

AGRICULTURAL ENGINEERING

Professor D. S. Weaver, Head of the Department

Assistant Professor G. W. Giles

Purpose.—This curriculum has been arranged to give its graduates fundamental training in engineering, basic training in the agricultural sciences, and a specialized study in courses involving the application of engineering knowledge to agricultural problems.

Breadth of Training.—Because of the great variety of work required of agricultural engineers, a number of subjects peculiar to other curricula are included, so that the student receives a considerable breadth of training. Engineering principles applied to agriculture have played an important part in the advancement and development of agricultural practices. Agricultural engineering as a profession, although of comparatively recent development, is rapidly becoming recognized as one of the more important of the engineering professions, since it is identified with the most important of industries—agriculture. This course is especially suited to the boy brought up on the farm, as it prepares him for a professional business, or farming career, and enables him to capitalize on his farm training.

Divisions.—Subdivided on the basis of engineering technique, Agricultural Engineering embraces three general fields: (1) Power and Machinery, including Rural Electrification; (2) Rural Structures, including Sanitation, Materials of Construction and Equipment; (3) Land Improvement, which includes Irrigation, Drainage, Soil-Erosion Control, and other forms of mechanical improvement of agricultural lands.

Occupations Open to Graduates.—Teaching, experiment station and extension-service positions with colleges and the Government; engineers in land reclamation, drainage, or irrigation enterprises; designing, advertising, sales and production work with manufacturers of farm machinery, equipment, and building materials; rural electrification work; editorial work with publishers; appraisal, and agricultural-engineering consultant service.

Equipment.—The offices, classrooms, and shops used in Agricultural Engineering are in the Agricultural Engineering Building. The laboratories are equipped with the latest labor-saving farm equipment for seedbed preparation, planting, cultivating, harvesting, and crop preparation. These machines are furnished by the leading farm-machinery manufacturers, and are replaced from time to time as improvements are developed. Special effort is made to have on hand all types of equipment for use in the best practices in the production of farm crops.

The Farm Buildings Laboratory is equipped with drawing tables, supply cabinets, and models of various types of farm buildings construction.

Laboratory Equipment for Soil Conservation, such as that for terracing and gully control, consists of sets of surveying and leveling instruments.

Practice.—Field areas in crops, vineyards, orchards, and pastures are available for practice in the use of farm equipment, and in drainage and erosion control.

A Bulletin Library of Agricultural Engineering is maintained for student reference.

CURRICULUM IN AGRICULTURAL ENGINEERING

Freshman Year

COURSES	CREDITS First Term	Second Term	Third Term
Algebra, Trigonometry, and Analytical Geometry, Math. 101, 102, 103	6	6	6
Composition, Eng. 101, 102, 103	3	3	3
General Inorganic Chemistry, Chem. 101, 102, 103	4	4	4
Engineering Drawing II, M.E. 105, 106	3	3	0
Descriptive Geometry, M.E. 107	0	0	3
Military Science I, Mil. 101-2-3, or alternate	2	2	2
Fundamental Activities and Hygiene, P.E. 101, 102, 103	1	1	1
	19	19	19

Summer requirement: Surveying, C. E. s.200.

Sophomore Year

Engineering Geology, Geol. 220	0	0	3
Calculus I, II, III, Math. 201, 202, 303	4	4	4
Business English, Public Speaking, Eng. 211, 231	3	0	3
Physics for Engineers, Phys. 201, 202, 203	4	4	4
Farm Equipment, Agr. Eng. 202	0	3	0
General Botany, Bot. 102	0	4	0
General Zoology, Zool. 101	4	0	0
Economic History, Hist. 101, 102, 103	3	3	3
Military Science II, Mil. 201-2-3, or alternate	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	21	21	20

Junior Year

Required for all Options

General Economics, Econ. 201, 202	3	3	0
Agricultural Econ., Ag. Econ. 202	0	0	3
Terracing and Drainage, Agr. Eng. 303	0	0	3
Farm Shop, Agr. Eng. 331, 332	3	3	0
General Field Crops, F.C. 202	0	3	0
General Horticulture, Hort. 203	0	0	3
Farm Buildings, Agr. Eng. 322	0	3	0
	6	12	9

Choice must be made of one of the following options:

General Option

Animal Nutrition I, A.H. 202	0	3	0
Extension Methods, Ag. Econ. 450	3	0	0
Engineering Mechanics, E.M. 301, 302	3	3	0
Strength of Materials, E.M. 320	0	0	3
Soil Fertility, Soils 221	3	0	0
**Electives	3	3	6
	12	9	9

** Three credits per term to be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

Rural Structures Option

COURSES	CREDITS First Term	Second Term	Third Term
Materials of Construction, C.E. 321	3	0	0
Engineering Thermodynamics II, M.E. 307-8-9	3	3	3
Perspective Drawing Arch. 206	1	0	0
Engineering Mechanics, E.M. 311-12-13	3	3	3
Strength of Materials, E.M. 321	0	0	3
**Electives	3	3	3
	13	9	12

Land Improvement Option

Soil Fertility, Soils 221	3	0	0
Fertilizers, Soils 302	0	3	0
Soil Management, Soils 303	0	0	3
Int. to Organic Chemistry, Chem. 221	4	0	0
Engineering Mechanics, E.M. 301, 302	3	3	0
Pastures and Forage Crops, F.C. 443	0	0	4
**Electives	3	3	3
	13	9	10

Power & Machinery Option

Mechanical Drawing, M.E. 211-12-13	2	2	2
Foundry, M.E. 122	1	0	0
Forging and Welding, M.E. 126	2	0	0
Elementary Mechanism, M.E. 215-16-'7	1	1	1
Metallurgy, M.E. 222, 223	0	3	3
**Electives	6	3	3
	12	9	9

Senior Year

Required for all Options

Rural Electrification, Agr. Eng. 432	0	3	0
Special Problems in Agr. Eng., Agr. Eng. 481	3	0	0
Senior Seminar, Agr. Eng. 491, 492, 493	1	1	1
Farm Management I, Ag. Econ. 303	0	0	3
Technical Writing I, Eng. 321	0	3	0
Rural Sociology, Rur. Soc. 302	0	3	0
	4	10	4

Choice must be made of one of the following Options

General Option

Dairy Machinery, A.H. 362	0	1	0
Dairy Cattle and Milk Production, A.H. 321	3	0	0
Farm Machinery and Tractors, Agr. Eng. 313	0	0	3
Erosion Prevention, Ag. Eng. 403	0	0	3
Farm Structures, Agr. Eng. 423	0	0	3
Soil Conservation and Land Use, Soils, 433	0	0	3
Principles of Foresting, For. 111	3	0	0
Cereal Crops, F.C. 302	0	3	0
General Poultry, Poul. 201	3	0	0
**Electives	6	6	3
	15	10	15

** Three credits per term to be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

Rural Structures Option

COURSES	CREDITS First Term	Second Term	Third Term
Graphic Statics, C.E. 423	1	0	0
Electrical Equipment for Building, E.E. 343	0	0	3
Construction Engineering I, C.E. 361, 362, 363	3	3	3
General Poultry, Poul. 201	3	0	0
Farm Structures, Agr. Eng. 423	0	0	3
Dairy Cattle and Milk Production, A.H. 321	3	0	0
Heating and Air Conditioning I, M.E. 404	0	3	0
Refrigeration, M.E. 405	0	0	3
**Electives	3	3	3
	13	9	15

Land Improvement Option

Hydraulic Structures, C.E. 443	0	0	3
Soil Conservation and Land Use, Soils 433	0	0	3
Erosion Prevention, Agr. Eng. 403	0	0	3
Soils of North Carolina, Soils 312	0	3	0
Farm Machinery and Tractors, Agr. Eng. 313	0	0	3
Land Economics, Ag. Econ. 212	0	3	0
Principles of Forestry, For. 111	3	0	0
Fluid Mechanics, E.M. 330	3	0	0
**Electives	9	3	3
	15	9	15

Power & Machinery Option

Farm Machinery and Tractors, Agr. Eng. 313	0	0	3
Dairy Machinery, A.H. 362	0	1	0
Special Problems, Agr. Eng. 481, 483	3	0	3
Engineering Mechanics, E.M. 311, 312, 313	3	3	3
Elements of Electrical Eng. I, E.E. 320, 321	3	3	0
Electrical Equipment of Buildings, E.E. 343	0	0	3
**Electives	6	3	3
	15	10	15

AGRONOMY

Professor L. D. Baver, Head of the Department

Professor Emeritus C. B. Williams

The teaching work of this department is divided into two sections: Field Crops section and Soils section. Its objective is to provide a well-rounded practical as well as technical training for students in field crops, plant breeding, soils, fertilizers and other closely related subjects.

The combined facilities of the Greater University and of the Experiment Station provide excellent opportunities for advanced training leading to the M.S. and Ph.D. degrees in Agronomy.

The advanced courses offered fulfill the needs of graduate work in all phases of Agronomy.

** Three credits per term to be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

FIELD CROP SECTION

Professor G. K. Middleton, Head of Section
Associate Professors Paul H. Harvey, R. L. Lovvorn, J. A. Rigney
Assistant Professors E. Y. Floyd, B. W. Smith, A. D. Stuart
Instructors S. W. Holman, L. T. Weeks

Approximately eighty per cent of the farm income in North Carolina is from field crops, and their annual value is such that the State ranks third in the Nation in cash income from this source. The curriculum in this Section was set up to give definite instruction on the crops produced in the State and in plant breeding.

This curriculum is flexible, making it possible for students to elect sufficient courses in other departments for a general training in Agriculture, or for specialization in preparation for graduate work in Agronomy. The more general training will prepare them for work in the Agricultural Extension or Soil Conservation services or other general fields of agricultural work. Students are advised against too much specialization except in preparation for specific advanced training in a chosen field.

CURRICULUM IN FIELD CROPS

For Freshman and Sophomore years refer to page 54.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
English	3	3	3
Soil Fertility, Soils 221	3	0	0
Fertilizers, Soils 302	0	3	0
Soil Management, Soils 303	0	0	3
Cereal Crops, F.C. 302	0	3	0
Pastures and Forage Crops, F.C. 443	0	0	4
Diseases of Field Crops, Bot. 301	3	0	0
Major Options	6	6	4
Electives	3	3	4
	18	18	18

Senior Year

Genetics, Zool. 411	4	0	0
Plant Breeding, F.C. 463	0	0	3
Major Option	4	3	0
Tech. Agr.	6	6	6
Elective	4	9	9
	18	18	18

SOILS SECTION

Professor L. D. Baver, Head of Section
Professor C. B. Clevenger; Associate Professors E. R. Collins,
J. F. Lutz; Assistant Professor J. R. Piland

The soil is a natural body composed of mineral and organic matter, air, water, and living micro-organisms. The reactions of and changes in these components extend into the fields of chemistry, geology, physics and biology, which sciences are fundamental to soils. No state in the Union offers better opportunities for soil and fertilizer studies than North Carolina for within her borders are soils derived from a large variety of parent materials and developed under climatic conditions varying from a subtropical climate in the southeastern part of the state to the cooler climates of the mountains. This state has been one of the few which has steadily pushed forward her soil survey-work so that now county soil-survey reports and maps are available for practically all the counties of the entire state.

The importance of soils in North Carolina agriculture is evidenced by the fact (1) that more fertilizer is used in North Carolina than in any other state in the Union and (2) that North Carolina ranks third among the states in cash income derived from farm crops.

Students are given practical training in the properties and management of soils which equips them for general agricultural work, such as farmers, county agents, and vocational teachers. Advanced training is provided for those who desire to go into the more technical phases of soils, such as teaching or research in State or Federal institutions. The flexibility of the curriculum in soils, through a sufficient number of optional courses, permits the student to choose the type of training he desires.

CURRICULUM IN SOILS

For Freshman and Sophomore years refer to page 54.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
English or Modern Language	3	3	3
Soil Fertility, Soils 221	3	0	0
Fertilizers, Soils 302	0	3	0
Soil Management, Soils 303	0	0	3
Cereal Crops, F.C. 302	0	3	0
Pasture and Forage Crops, F.C. 443	0	0	4
Qualitative and Quantitative Analysis, Chem. 211, 212, 213	4	4	4
Major Options	4	0	3
Electives	3	6	3
	17	19	20

Senior Year

Genetics, Zool. 411	4	0	0
*Plant Breeding, F.C. 463	0	0	3
Major Options	6	6	6
Technical Agriculture	6	6	6
Electives	3	6	3
	19	18	18

* F.C. 312, Tobacco Production or F.C. 323, Cotton Production or F.C. 461, Taxonomy of Field Crops, may be substituted for Plant Breeding.

ANIMAL HUSBANDRY AND DAIRYING

Professor R. H. Ruffner, Head of the Department
Professors E. H. Hostetler, W. L. Clevenger, F. M. Haig
Associate Professors C. D. Grinnells, J. E. Foster
Instructor C. D. Swaffar

The Department of Animal Husbandry and Dairying is housed in Polk Hall, a three-story building which was designed to meet the needs of college instruction, research, and extension work in Animal Husbandry and Dairying.

In the basement of Polk Hall are two wings, one of which is devoted to Dairy Manufacturing and the other to Farm Meats. The Dairy wing has recently been equipped with new dairy machinery, including direct-expansion ice cream freezer, churn, pasteurizer, milk bottler, and milk-cooling and storage equipment. This equipment is used daily by students who bottle milk, and manufacture ice cream and other dairy products used in the College Cafeteria. The other wing is used for slaughtering beef cattle, sheep, and swine, and for the aging and curing of the meats produced from these animals. Sufficient equipment is provided in the Meat Laboratory to do the necessary work in the time allotted, yet the courses are so adapted that the students can apply both theory and practice to conditions on the farm. Both the dairy and the meat wings have their own individual mechanical refrigeration units so that the courses can be taught at any season of the year.

The upper floors of the building contain offices, classrooms, library, milk-testing laboratory, farm-dairy laboratory, animal-nutrition laboratories, and beef cattle, sheep, and swine research laboratories. Extension specialists in swine, dairy, beef, and sheep have offices in this building.

In addition, the Department of Animal Husbandry and Dairying maintains two livestock farms located a few miles from the College.

The Dairy Farm contains 400 acres. Two large fire-proof, completely equipped dairy barns house 100 registered Jerseys, Guernseys and Holsteins. A herd of registered Ayrshires is maintained at the College Experiment Station nearby. A milk house, designed for convenience in handling milk in the most efficient and sanitary manner, connects the two barns. Other buildings located on the dairy farm are horse and calf barns.

The Animal Husbandry farm adjoins the Dairy farm and consists of 500 acres. Here registered breeds of swine, sheep, and beef cattle are maintained for research work and college teaching.

The Department of Animal Husbandry and Dairying is equipped to instruct students in the feeding, breeding, and management of farm animals. Students feed and milk cows; conduct research; manufacture dairy products; feed and prepare animals for exhibition and the block, actually doing the slaughtering, and the cutting of the meat for market and home use.

Well-trained young men in the various fields of Animal Husbandry and Dairying have greater opportunities for service and success than ever before.

This fact is demonstrated by the following responsible positions held by graduates in Animal Husbandry and Dairying:

1. Livestock and dairy farmers.
2. County agents and extension specialists in livestock.
3. Livestock research investigators.
4. Superintendents and owners of dairy manufacturing plants.
5. Teachers in agricultural colleges.
6. Managers and salesmen in commercial livestock and feed companies.
7. Milk inspectors.
8. Livestock breed association work.
9. Advisory work for banks and corporations in livestock industries.
10. Supervisors of dairy herd improvement associations.

CURRICULUM IN ANIMAL PRODUCTION

For Freshman and Sophomore years refer to page 54.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
Dairying, A.H. 341	0	3	0
Swine Production, A.H. 331	3	0	0
Farm Meats I, A.H. 301	0	3	0
Animal Nutrition II, A.H. 361	3	0	0
History of Breeds, A.H. 322, 323	0	3	3
Herd Improvement, A.H. 413	0	0	3
Business English, Eng. 211	0	0	3
Public Speaking, Eng. 231	0	3	0
†Southern Writers, Eng. 275	3	0	0
Genetics, Zool. 411	4	0	0
Pastures and Forage Crops, F.C. 443	0	0	4
Chemistry of Vitamins, Chem. 462	0	3	0
Market Grading of Field Crops, F.C. 451	3	0	0
Animal Hygiene and Sanitation, A.H. 353	0	0	3
Electives	3	3	3
Or any one of English courses 261 to 267.	19	18	19

Senior Year

Animal Breeding, A.H. 421	4	0	0
Sheep Production, A.H. 313	0	0	3
Beef Cattle, A.H. 372	0	3	0
Pure Bred Livestock Production, A.H. 432	0	3	0
Stock Farm Management, A.H. 433	0	0	3
Horse and Mule Production, A.H. 351 or Dairy Cattle and Milk Production, A.H. 321	3	0	0
Senior Seminar, A.H. 391-392-393	1	1	1
Incubation and Brooding, Poul. 303	0	0	3
Terracing and Drainage, Agr. Eng. 303	0	0	3
General Bacteriology, Bot. 402	0	4	0
Fruit Growing, Hort. 331	4	0	0
Agricultural Marketing, Agr. Econ. 411	3	0	0
Testing of Milk Products, A.H. 332	0	4	0
Business Law, Econ. 307	0	0	3
Electives	3	3	3
	18	18	19

CURRICULUM IN DAIRY MANUFACTURING

For Freshman and Sophomore years refer to page 54.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
Creamery Buttermaking, A.H. 371	4	0	0
Testing of Milk Products, A.H. 332	0	4	0
Ice Cream Making, A.H. 381	4	0	0
Cheese Making, A.H. 333	0	0	3
Dairy Manufacturing Practice, A.H. 342	0	3	0
City Milk Supply, A.H. 343	0	0	4
Business English, Eng. 211	0	0	3
Public Speaking, Eng. 231	0	3	0
†Southern Writers, Eng. 275	3	0	0
Chemistry of Vitamins, Chem. 462	0	0	3
Animal Breeding, A.H. 421	4	0	0
Food and Nutrition, Chem. 482	0	3	0
Animal Hygiene and Sanitation, A.H. 353	0	0	3
Farm Engines, Agr. Eng. 212	0	3	0
Electives	3	3	3
	18	19	19

† Or any one of English courses 261 to 267.

Senior Year

Dairy Machinery, A.H. 362	0	1	0
Dairy Products Judging, A.H. 394	0	0	1
Dairy Manufactures, A.H. 401-402-403	3	3	3
Senior Seminar, A.H. 391-392-393	1	1	1
General Bacteriology, Bot. 402	0	4	0
Swine Production, A.H. 331	3	0	0
Animal Nutrition II, A.H. 361	3	0	0
Farm Meats I, A.H. 301	0	3	0
Business Law, Econ. 307	0	0	3
Herd Improvement, A.H. 413	0	0	3
Food Products and Adulterants, Chem. 441	3	0	0
Stock Farm Management, A.H. 433	0	0	3
Agricultural Marketing, Agr. Econ. 411	3	0	0
Farm Accounting, Agr. Econ. 313	0	0	3
Pure Bred Livestock Production, A.H. 432	0	3	0
Electives	3	3	3
	19	18	20

BOTANY

Professor B. W. Wells, Head of Department
Professors D. B. Anderson, S. G. Lehman, L. Shaw
Associate Professor I. V. Shunk
Assistant Professors M. F. Buell, L. A. Whitford

Equipment and Facilities

Location.—The Department of Botany occupies the second floor of Winston Hall.

Laboratories.—The laboratories are all equipped with projection lanterns. A well-organized herbarium supports the work in systematic botany and dendrology.

Purpose.—The Department emphasizes those phases of plant science which are foundational for the work in Agriculture and Forestry.

CURRICULUM IN PLANT PATHOLOGY

For Freshman and Sophomore years refer to page 54.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
Business English, Eng. 211	0	0	3
Public Speaking, Eng. 231	0	3	0
Technical Writing II, Eng. 323	0	0	3
Bacteriology, Bot. 402	0	4	0
Diseases of Field Crops, Bot. 301	3	0	0
Diseases of Fruit and Vegetable Crops, Bot. 303	0	0	3
Plant Ecology, Bot. 441	3	0	0
Economic Entomology, Zool. 213	0	0	4
Plant Morphology, Bot. 411, 412	3	3	0
Genetics, Zool. 411	4	0	0
Electives	6	8	5
	19	18	18

Senior Year

Plant Microtechnique, Bot. 451	3	0	0
Advanced Plant Pathology, Bot. 401	0	5	0
Pathogenic Fungi, Bot. 481-2-3	3	3	3
Soil Microbiology, Bot. 443	0	0	3
Plant Breeding, F.C. 463	0	0	3
Microanalysis of Plant Tissue, Bot. 442	0	3	0
Qualitative Analysis, Chem. 211	4	0	0
Quantitative Analysis, Chem. 233	0	0	4
Electives	8	7	5
	18	18	18

CHEMISTRY

Professor A. J. Wilson, Head of Department
Professors L. F. Williams, G. H. Satterfield
Associate Professors W. E. Jordan, M. F. Showalter
Assistant Professors H. L. Caveness, A. D. Jones, R. H. Loeppert
Instructors W. A. Reid, P. P. Sutton, R. C. White.

Curriculum.—The Department of Chemistry does not offer a Bachelor of Science degree in Chemistry. However, a student may register in the School of Agriculture with a major in Agricultural Chemistry. This curriculum affords extended courses of chemical training which will fit a graduate for positions such as those in State Experiment Stations, and in State and Federal laboratories for the inspection and control of fertilizers, feeds, foods, and other commodities, and as chemist in industrial plants.

Instruction.—Instruction in the Department of Chemistry embraces the courses of lectures and the related courses of laboratory work which are described in detail under the appropriate heading of each individual course included in the curricula of the Department.

New Building.—The Chemistry Department is now housed in a new four-story brick building. This building provides adequate and modern laboratories for general chemistry, for qualitative and quantitative analysis, and for organic, physical, and biological chemistry. Numerous recitation rooms are provided, besides the large main lecture room.

Library.—Part of one wing of the building has been set aside for the General Science Library, supervised by a full-time trained librarian.

Future.—The building is planned to fulfill the needs of the Chemistry Department for the next ten years, and also with a view to later expansion to approximately twice the present size.

CURRICULUM IN AGRICULTURAL CHEMISTRY

For Freshman and Sophomore years refer to page 54.

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
General Botany, Bot. 101	4	0	0
Economic Zoology, Zool. 102	0	4	0
Animal Physiology, Zool. 202, or Plant Physiology, Bot. 221	0	0	5
Qualitative Analysis, Chem. 211	4	0	0
Quantitative Analysis, Chem. 212, 213	0	4	4
Soils, Soils 201	4	0	0
Bacteriology, Bot. 402	0	4	0
Animal Nutrition I, A.H. 202	0	0	3
General Economics, Econ. 201, 202	3	3	0
Agricultural Economics, Agr. Econ. 202	0	0	3
Military Science II, Mil. 201, 202, 203, or alternate	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	18	18	18

Junior Year

Organic Chemistry, Chem. 421, 422, 423	4	4	4
Physics for Textile Students, Phys. 111, 112, 113	4	4	4
French or German	3	3	3
Elective Chemistry	3	3	3
Elective Agriculture	3	3	3
Electives	3	3	3
	20	20	20

Senior Year

Chemistry Major	7	7	7
French or German	3	3	3
Electives	9	9	9
	19	19	19

EXPERIMENTAL-STATISTICS

Professor Gertrude M. Cox, Head of the Department

C. H. Hamilton, Professor of Rural Sociology; J. M. Clarkson, Associate Professor of Mathematics; J. A. Rigney, Associate Professor of Field Crops and Plant Breeding; United States Department of Agriculture, Resident Collaborators A. L. Finkner and Robert Monroe.

The Department of Experimental-Statistics does not offer a major leading to a degree. Its courses are designed to furnish students in other majors with the necessary training to plan and carry on agricultural research problems, as well as the proper assembling and interpretation of data.

FORESTRY

Professor J. V. Hofmann, Director of the Division
Professor L. Wyman, Associate Professor W. D. Miller,
Associate Professor G. K. Slocum

Areas for Field Work.—Some of the field work of the Department of Forestry is now carried on at the **Camp Polk Prison Farm**, near the State Fair Grounds, which has a thousand acres of timber land.

The George Watts Hill Demonstration Forest, near Durham, is a tract of 1,400 acres. It contains stands of short leaf and loblolly pine, oaks, gum, tulip, dogwood, and all of these species in different associations. A rolling terrain, it serves admirably for the study of forest problems in the Piedmont Section.

The MacLean Forest located in Hyde County, in the eastern part of the State, is typical of the Coastal Plain. It contains 1,554 acres and is used for demonstration in the east-coast type.

The Hofmann Forest.—A large tract of land has recently been acquired in Jones and Onslow Counties, in the southeastern part of the State, which consists of more than 84,000 acres and has the various types of timber found in this region. The large areas of virgin timber make a very complete laboratory for studying forest development and succession.

Total Areas.—In all, the Forestry Department has available about 87,000 acres on which to do field work, demonstration, and research. These areas include the various types found in North Carolina except those of the Mountain Region.

The Arboretum area of seventy acres near Raleigh is being developed to contain all of the tree species and associated shrubs that grow in this climatic condition. It contains swamp and upland which adapts it for this use. More than a hundred species have been planted in this area.

The Wood Technology Laboratory contains a representative collection of the more common woods and will be gradually extended.

The Timber-Testing Laboratory, in connection with the Engineering Experiment Station, contains the machines for its work.

Greenhouse space is available for special problems in forest research.

Purposes of the Curriculum.—The aims of the curriculum in Forestry are: (1) to train young men for work in the technical and applied fields of forestry on public or private forest land; (2) to give special training in fields of research; (3) to advance the knowledge of the entire profession.

Forestry as a Profession.—The profession of forestry is comparatively young in North Carolina. It began some thirty years ago and has made remarkable progress during its first quarter century of existence. The next decade promises more advancement and achievement than all the past, as the foundation has been laid: the building of the superstructure will depend upon the expertness of the builders. In the ranks of the builders are included the United States Forest Service; State Forest Departments in a large

number of States; corporations and lumber companies; individual landowners; last but by no means least, the farm woodlands.

Occupations.—Students completing the Forestry course may look to the following fields of employment: United States Forest Service, the State Service, including not only North Carolina but especially the Southern States, and other State organizations; the lumber companies, timber-holding companies, corporations, and individuals. The forestry program in the State of North Carolina is very materially strengthened by the presence of the national forests and the Appalachian Forest Experiment Station. These will be of direct aid in the study of forest-research problems, management problems and the organization and work of the National Forest Service.

Forest Management aims to make a forest property a permanent producing unit. All forestry is now being built on this basis.

Forest Utilization requires special courses dealing with the value and various uses of the products of the forest. During the third term of the senior year, field studies of woodworking industries, logging operations, paper and pulp mills and problems in forest management take up most of the time.

Silviculture deals with the problems of producing a forest, such as selection of species, methods of reproduction, cutting systems, etc. The work is becoming increasingly important as our virgin timber supply is depleted.

Research in Forestry is being recognized as important by all agencies in the fields of forestry. Men trained in research methods are needed in the Government Experiment Stations, State Experiment Stations, and private laboratories.

Graduation.—A minimum of 236 term credits with at least 236 honor points are required for graduation in Forestry.

A Field Trip through the Southeastern and the Gulf States is required for the senior class to study Applied Forestry under field and factory conditions. Local field trips are also required of other classes. A nominal fee is charged to cover the expense of these trips.

CURRICULUM IN FORESTRY

Freshman Year

COURSES	CREDITS First Term	Second Term	Third Term
Drawing, C.E. 101, 102, 103	1	1	1
Botany, General and Systematic Bot. 101, 102, 203	4	4	3
Mathematical Analysis, Math. 111, 112	0	4	4
Composition, Eng. 101, 102, 103	3	3	3
General and Economic Zoology, Zool. 101, 102	4	4	0
Economic Entomology, Zool. 213	0	0	4
Elementary Forestry, For. 101, 102, 103	1	1	1
Introductory Sociology, Soc. 202	3	0	0
Military Science I, Mil. 101, 102, 103, or Human Relations, Soc. 101, 102, 103	2	2	2
Fundamental Activities and Hygiene, P.E. 101, 102, 103	1	1	1
	19	20	19

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Math. of Finance, Math. 113	0	0	4
Introduction to Economics, Econ. 205	3	0	0
Land Economics, Agr. Econ. 212	0	3	0
Plant Physiology, Bot. 221	5	0	0
Dendrology, Bot. 211, 213	3	0	3
General Inorganic Chemistry, Chem. 101, 102, 103	4	4	4
Wood Technology, For. 202	0	3	0
Physical Geology, Geol. 120	0	4	0
Surveying, Theoretical, C.E. 221, 222	0	3	3
Field Surveying, C.E. 225	0	1	0
Topographical Drawing, C.E. 224	0	0	1
Introduction to Psychology, Psychol. 200	0	0	3
Military Science II, Mil. 201, 202, 203, or World History, Hist. 104	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	18	21	21

Summer Camp

Surveying and Mapping, C.E. s300	0	0	3
Dendrology, For. s214	0	0	3
Mensuration, For. s304	0	0	3
Silviculture, For. s204	0	0	3
			12

Junior Year

Forest Protection and Improvements, For. 342	0	3	0
Nursery Practice, For. 313	0	0	1
Soils, Soils 201	4	0	0
Mensuration I, II, For. 402, 403	0	3	3
Silviculture I, II, For. 311, 312	3	3	0
English	3	0	3
Forest Entomology, Zool. 302	0	3	0
Plant Ecology, Bot. 441	3	0	0
Meteorology, Phys. 322	0	3	0
Forest Finance, For. 442	0	3	0
Survey of Statistical Methods, Econ. 408	3	0	0
Elective in Social Science Group	0	0	6
Electives	3	3	6
	19	21	19

Senior Year

Logging, For. 421	3	0	0
Diseases of Forest Trees, Bot. 311	3	0	0
Silviculture III, IV, For. 411, 412	3	3	0
Forest Management, For. 431, 432	3	3	0
Seminar, For. 452	0	2	0
Forest Products, For. 321	3	0	0
Forest Utilization, For. 323	0	0	2
Timber Appraisal, For. 443	0	0	2
English	0	3	0
Senior Field Trip, For. 453	0	0	3
Electives	3	6	5
	18	17	12

HORTICULTURE

Professor M. E. Gardner, Head of the Department
Associate Professor G. O. Randall; Assistant Professor J. G. Weaver

Equipment.—The Department of Horticulture is well prepared in classrooms and in laboratory and field equipment to offer instruction in its several important and diverse fields.

Pomology and Small-Fruit Culture. The College orchards and vineyards, the laboratories, a nursery plot, and other facilities are available to treat every phase of fruit-growing from the selection and propagation of varieties to the details of orchard management.

Olericulture and Floriculture. Four modern greenhouses, forming an important part of the equipment of the Department, are used primarily for experimental and instructional work in these two important and growing fields of horticulture. Potting rooms, propagation benches, and other more specialized equipment are used for both undergraduate and graduate instruction. Land and equipment to demonstrate and study details of commercial olericulture are convenient to the greenhouses.

Special Study and Research.—A Physiological and a Cytological Laboratory, calculating machines, library, greenhouses, and land are available to graduate and undergraduate students to carry on special studies. Projects conducted by the Experiment Station Staff are also available for study and observation.

Library.—The Departmental library contains approximately twenty thousand technical and popular bulletins covering all phases of horticulture, and complete bound volumes of the Proceedings of the American Society for Horticultural Science and many other periodicals pertaining to horticultural subjects.

CURRICULUM IN FLORICULTURE

For Freshman and Sophomore years refer to page 54.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
Public Speaking, Eng. 231	2	0	0
Business English, Eng. 211	3	0	0
Bacteriology, Bot. 402	0	4	0
Systematic Botany, Bot. 203	0	0	3
Diseases of Fruit and Vegetable Crops, Bot. 303	0	0	3
Genetics, Zool. 411	4	0	0
Economic Entomology, Zool. 213	0	0	4
Plant Propagation, Hort. 301	0	3	0
Soil Fertility, Soils 221	3	0	0
Soils of North Carolina, Soils 312	0	3	0
Fertilizers, Soils 302	0	3	0
Plant Materials: Woody Plants, L.A. 201, 202, 203	2	2	2
Terracing and Drainage, Agr. Eng. 303	0	0	3
Plant Materials Herbaceous Plants, L.A. 303	0	0	2
Electives	3	3	3
	18	18	20

Senior Year

COURSES	CREDITS First Term	Second Term	Third Term
Plant Ecology, Bot. 441	3	0	0
Technical Writing II, Eng. 323	0	0	3
Commercial Floriculture, Hort. 341	4	0	0
Horticultural Problems, Hort. 421, 422, 423	2	2	2
Seminar, Hort. 431, 432, 433	1	1	1
Experimental Horticulture, Hort. 412	0	3	0
Agricultural Cooperation, Agr. Econ. 422	0	3	0
Rural Sociology, Rural Soc. 302	0	3	0
Agricultural Chemistry, Chem. 481	3	0	0
Plant Breeding, F.C. 463	0	0	3
Applied Psychology, Psychol. 302	0	3	0
Landscape Gardening, L.A. 403	0	0	3
Floral Design, Hort. 312	0	1	0
Electives	5	3	6
	18	19	18

CURRICULUM IN POMOLOGY

For Freshman and Sophomore years refer to page 54.

Junior Year

Public Speaking, Eng. 231	3	0	0
Business English, Eng. 211	0	3	0
Systematic Botany, Bot. 203	0	0	3
Plant Ecology, Bot. 441	3	0	0
Small Fruits and Grapes, Hort. 311	3	0	0
Plant Propagation, Hort. 301	0	3	0
Vegetable Gardening, Hort. 303	0	0	4
Soil Fertility, Soils 221	3	0	0
Fertilizers, Soils 302	0	3	0
Terracing and Drainage, Agr. Eng. 303	0	0	3
Ornamental Plants, L.A. 402	0	2	0
Landscape Gardening, L.A. 403	0	0	3
Genetics, Zool. 411	4	0	0
Economic Entomology, Zool. 213	0	0	4
Applied Psychology, Psychol. 302	0	3	0
Electives	3	3	3
	19	17	20

Senior Year

Bacteriology, Bot. 402	0	4	0
Diseases of Fruit and Vegetable Crops, Bot. 303	0	0	3
Technical Writing, Eng. 323	0	0	3
Systematic Pomology, Hort. 401	2	0	0
Fruit Growing, Hort. 331	4	0	0
Horticultural Problems, Hort. 421, 422, 423	2	2	2
Seminar, Hort. 431, 432, 433	1	1	1
Experimental Horticulture, Hort. 412	0	3	0
Farm Management I, Agr. Econ. 303	0	0	3
Plant Breeding, F.C. 463	0	0	3
Farm Meats I, A.H. 301	0	3	0
Agricultural Chemistry, Chem. 481	3	0	0
Rural Sociology, Rur. Soc. 302	0	3	0
Poultry Elective	3	0	0
Electives	3	3	3
	18	19	18

CURRICULUM IN VEGETABLE GARDENING

For Freshman and Sophomore years refer to page 54.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
Public Speaking, Eng. 231	3	0	0
Business English, Eng. 211	0	3	0
Plant Ecology, Bot. 441	3	0	0
Bacteriology, Bot. 402	0	4	0
Systematic Botany, Bot. 203	0	0	3
Diseases of Fruit and Vegetable Crops, Bot. 303	0	0	3
Fruit Growing, Hort. 331	4	0	0
Plant Propagation, Hort. 301	0	3	0
Vegetable Forcing, Hort. 302	0	3	0
Vegetable Gardening, Hort. 303	0	0	4
Soil Fertility, Soils 221	3	0	0
Fertilizers, Soils 302	0	3	0
Genetics, Zool. 411	4	0	0
Economic Entomology, Zool. 213	0	0	4
Terracing and Drainage, Agr. Eng. 303	0	0	3
Electives	3	3	3
	20	19	20

Senior Year

Technical Writing II, Eng. 323	0	0	3
Systematic Olericulture, Hort. 411	2	0	0
Small Fruits and Grapes, Hort. 311	3	0	0
Horticultural Problems, Hort. 421, 422, 423	2	2	2
Seminar, Hort. 431, 432, 433	1	1	1
Experimental Horticulture, Hort. 412	0	3	0
Home Floriculture, Hort. 313	0	0	3
Agricultural Chemistry, Chem. 481	3	0	0
Plant Breeding, F.C. 463	0	0	3
Ornamental Plants, L.A. 402	0	2	0
Landscape Gardening, L.A. 403	0	0	3
Agriculture Cooperation, Agr. Econ. 422	0	3	0
Dairying, A.H. 341	3	0	0
Soils of North Carolina, Soils 312	0	3	0
Rural Sociology, Rur. Soc. 302	0	3	0
Electives	6	3	3
	20	20	18

LANDSCAPE ARCHITECTURE

Professor J. P. Pillsbury, Head of the Division
Associate Professor G. O. Randall; Assistant Professor J. G. Weaver

A comparative study of Landscape Architecture with Architecture, the oldest art of design, will disclose the fact that distinct parallelism exists between these two fields of human endeavor. Not only in the character and extent of the training required in each case is this shown, but also in the division of work which takes place, and in the relationships existing among those responsible for various parts of the work in the practice of these two closely associated professional fields.

Training in Landscape Architecture is a composite derived from the fine arts, certain branches of engineering, and ornamental horticulture. Properly it is dominated by the principles of design, and therefore may be correctly classified as a fine art. Its province is the design of landscapes, the preparation of plans and specifications for them, and supervision during construction.

The Curriculum in Landscape Architecture is strictly undergraduate. Its purpose is to provide a broad and thorough foundation for the additional postgraduate training which the profession requires of those desiring to enter its ranks. It also presents an open door to the professional fields of city or regional planning as the student may elect when undertaking graduate work. The soundness of the curriculum here presented is attested not only by the fact that at no time has the demand for the services of its graduates been fully satisfied, but also by the successes of those who have pursued graduate training and attained to full rank in the professional field of Landscape Design.

Training in Landscape Construction is similar to that in Landscape Architecture, but with emphasis upon materials and methods of construction employed in engineering and ornamental horticulture.

Training in Landscape Gardening is essentially ornamental horticulture. In neither case is graduate work required, since their provinces will not include the design of landscape, but only the execution of plans under supervision, in the one case, and maintenance of the constructed landscape, in the other. Students electing either of these two lines of study will during their first two years pursue the **Basic Curriculum in General Agriculture**, with two or three appropriate substitutions from other curricula, as indicated.

General Equipment and Special Facilities for instruction are ample in the combined resources of Civil and Architectural Engineering, Horticulture, and Landscape Architecture.

Plant Materials in extensive collections on the College grounds and at various points elsewhere within a short distance, furnish an ample supply of all kinds for both study and use. In addition, several notable collections are available for occasional visits and study.

The Material for **Landscape Design and Construction** available on College grounds, private properties, and numerous public and semi-public areas and institutions in and about Raleigh, provide a wide range of subjects for study and practice. The City of Raleigh itself is a most interesting city-planning study, since it is one of the very few existing examples of a capital city which was planned in advance of its building.

CURRICULUM IN LANDSCAPE ARCHITECTURE

Freshman Year

COURSES	CREDITS First Term	Second Term	Third Term
Algebra, Trigonometry, Analytical Geometry, Math. 101, 102, 103	6	6	6
Composition, Eng. 101, 102, 103	3	3	3
Botany, General and Systematic, Bot. 101, 102, 203	4	4	3
Engineering Drawing II, and Descriptive Geometry, M.E. 105, 106, 107	3	3	3
Arboriculture, L.A. 101, 102, 103	1	1	2
Drawing, C.E. 101, 102, 103	1	1	1
Military Science I, Mil. 101, 102, 103, or Human Relations, Soc. 101, 102, 103	2	2	2
Fundamental Activities and Hygiene, P.E. 101, 102, 103	1	1	1
	21	21	21

Sophomore Year

Business English and Public Speaking, Eng. 211, 231	3	0	3
Plant Physiology, Bot. 221	0	0	5
Plant Propagation and Nursery Practice, Hort. 301	3	0	0
Physical Geology, Geol. 120	0	4	0
Introduction to Economics, Econ. 205	0	3	0
Introduction to Psychology, Psychol. 200	3	0	0
Introduction to Architecture, Arch. 201	3	0	0
Elements of Architecture, Arch. 202, 203	0	3	3
Surveying, Theoretical, C.E. 221, 222	3	3	0
Field Surveying, C.E. 225, 227	1	0	1
Plant Materials, Woody Plants, L.A. 201, 202, 203	2	2	2
Theory of Landscape Design, L.A. 212, 213	0	3	3
Military Science II, Mil. 201, 202, 203, or World History, Hist. 104	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	21	21	20

Surveying, C.E. s310, concurrent with Summer School, 3 credits.

Junior Year

Plant Materials: Herbaceous Plants, L.A. 303	0	0	2
Plant Ecology: Bot. 441	3	0	0
History of Landscape Design, L.A. 311, 312	3	3	0
Landscape Design I, L.A. 321, 322, 323	4	4	4
Technical Writing, Eng. 321	0	0	3
Shade and Shadows, Arch. 205	2	0	0
Freehand Drawing I, Pen and Pencil Drawing, Arch. 101	2	0	0
Freehand Drawing II, Water Color, Arch. 102	0	2	0
Freehand Drawing III, Charcoal, Arch. 103	0	0	2
Perspective Drawing, Arch. 206	0	2	0
Economic Zoology and Entomology, Zool. 102, 213	0	4	4
History of Architecture, Arch. 321, 322	3	3	0
*Electives	3	3	3
	20	21	18

* Elective credit must include 12 credits in Social Science.

Senior Year

COURSES	CREDITS First Term	Second Term	Third Term
Planting Design, L.A. 411, 412, 413	3	3	3
Landscape Design II, L.A. 421, 422, 423	4	4	4
City Planning, L.A. 432	0	3	0
Landscape Construction, L.A. 451, 452, 453	2	2	2
Pencil Sketching, Arch. 100	3	0	0
Accounting for Engineers, Econ. 212	0	3	0
Appreciation of Fine Arts, Arch. 111, 112, 113	3	3	3
*Electives	3	3	3
	18	21	15

POULTRY SCIENCE

Professor R. H. Dearstyne, Head of the Department

Assistant Professor N. W. Williams; Instructors H. C. Gauger, R. E. Greaves, F. W. Cook.

Research Coöperators: Zoölogy Department, Associate Professor C. H. Bostian; Zoölogy Department, Assistant Professor R. Harkema.

Laboratories: The Poultry Department is housed on the second floor of Ricks Hall. It embraces the Disease Diagnostic, the Anatomy-Hematology, and the Disease Research Laboratories, the Incubator Room, and two Live Bird Laboratories. The laboratories are well equipped for teaching and research.

The Seminar Room: Affording access to technical and to popular publications, to preserved pathological specimens, is open to the students at all times.

Purpose and Scope: The Poultry Department, as a major division of the School of Agriculture and Forestry, serves North Carolina through teaching, research, and extension. Its research personnel embraces the field of avian genetics, parasitology, sero-bacteriology, histology, pathology and hematology. It has two poultry farms (chickens and turkeys) near the campus and two Experiment Station farms in the eastern and western parts of the state. The staff devotes its full time to poultry problems of the student, poultryman and the industry. It serves a chicken and turkey farm industry of nearly 10,000,000 birds valued in North Carolina at approximately $30,000,000. It coöperates with the commercial concerns allied with poultry.

Central Poultry Plant: It consists of forty buildings located on seventeen acres. Six laying houses and sixteen mating pens house approximately 250 breeders and 1,500 layers. All layers of three breeds of chickens are pedigreed and trap-nested. About 4,000 chicks are produced each year, all of these being pedigreed. An 18,000 capacity incubator is used for teaching commercial incubation.

Central Turkey Plant: It consists of five new buildings located on twenty-five acres. One laying house and six mating pens house approximately 250 large Bronze Turkeys, all pedigreed and trap-nested. One 1,500 capacity incubator is used.

* Elective credit must include 12 credits in Social Science.

These two Plants provide abundant material for teaching and demonstrating principles of poultry management, breeding, judging and sanitation.

Disease Diagnostic Laboratory: It serves directly and indirectly the poultrymen of the state. Approximately 25,000 birds have been autopsied since 1923 and 1,500 to 2,000 are now autopsied annually. One thousand or more poultrymen are contacted each year by correspondence and 250 receive personal attention in the laboratory. The birds received serve as excellent material for teaching, for laboratory material in the courses in anatomy and poultry diseases, and for investigational work in avian bacteriology, serobacteriology, anatomy, histology, pathology, hematology and parasitology.

Curriculum: It is designed to broaden and to balance the training of undergraduate and graduate students in poultry husbandry. Emphasis is placed on those phases of biology, production, management and sanitation which will enable the student to enter the fields of plant management, extension or graduate research.

Research: A substantial research program is pursued in genetics, serobacteriology, histology, pathology, hematology and parasitology.

CURRICULUM IN POULTRY SCIENCE

For Freshman and Sophomore years refer to page 54.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
English Elective	0	3	0
Technical Writing II, Eng. 323	0	0	3
Public Speaking, Eng. 231	0	0	3
Poultry Anatomy, Poul. 311, 312	3	3	0
Poultry Judging, Poul. 301	4	0	0
Poultry Nutrition, Poul. 333	0	0	4
Preparation and Grading of Poultry Products, Poul. 332	0	3	0
Incubation and Brooding, Poul. 303	0	0	3
Bacteriology, Bot. 402	0	4	0
Genetics, Zool. 411	4	0	0
Vertebrate Embryology, Zool. 461	5	0	0
Cereal Crops, F.C. 302	0	3	0
Farm Management I, Agr. Econ. 303	0	0	3
Electives	3	3	3
	19	19	19

Senior Year

Poultry Diseases, Poul. 401, 402	4	4	0
Sero-Diagnosis in Poultry Diseases, Poul. 403	0	0	3
Commercial Plant Management, Poul. 412	0	3	0
Selecting and Mating Poultry, Poul. 413	0	0	3
Senior Seminar, Poul. 423	0	0	3
Swine Production, A.H. 331	2	0	0
Dairy Cattle and Milk Production, A.H. 321	3	0	0
Fruit Growing, Hort. 331	4	0	0
Turkey Production, Poul. 342	0	3	0
Rural Sociology, Rur. Soc. 302	0	3	0
Agr. Marketing, Agr. Econ. 411	3	0	0
Terracing and Drainage, Agr. Eng. 303	0	0	3
Chemistry of Vitamins, Chem. 462	0	3	0
Electives	3	3	6
	20	19	18

RURAL SOCIOLOGY

Professor C. Horace Hamilton, Head of the Department
Professors G. W. Forster, Sanford Winston
Assistant Professors Selz C. Mayo, L. Walter Seegers, William McGehee

Objectives: The principal objectives of this department are: (1) To give all students an appreciation of the human and social values in agriculture and rural life. (2) To give the future farmer and rural citizen an understanding of the social problems of the rural community. (3) To train rural leaders in methods of group organization and social control. (4) To train a few exceptional young men in rural sociological research and extension methods.

Relation to Other Departments. The Department of Rural Sociology is closely related to and dependent upon other social science departments in the College and in the Greater University. Students specializing in rural sociology will be expected to take courses in such departments as: Sociology, Psychology, Statistics, Agricultural Economics, History, and Political Science. The Department of Rural Sociology functions also in a service capacity to technical agricultural departments. Students taking courses in technical agriculture may take one or more courses in rural sociology as an elective social science.

Laboratory and Research Facilities. The Department of Rural Sociology is constantly engaged in statistical and sociological studies of rural population, rural standards of living, rural communities, and related problems. Funds, laboratory equipment and other facilities for this work are provided by the Agricultural Experiment Station and are available for the use of advanced students specializing in the field of rural sociology.

In a broader sense the entire state is a laboratory for the study of rural social problems. Field trips and extended surveys may be carried out by advanced students during the summer months.

CURRICULA IN RURAL SOCIOLOGY

For Freshman and Sophomore years refer to page 54.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
English (to be selected)	3	3	3
General Sociology, Soc. 202, 203	3	3	0
Rural Sociology, Rur. Soc. 302	0	0	3
Introduction to Psychology, Psy. 200	3	0	0
Psychology of Personality, Psy. 291	0	3	0
History of American Agriculture, Hist. 319	0	0	3
American Political Parties, Pol. Sc. 203 or American National Gov't., Pol. Sc. 200	3	0	0
State Government and Administration, Pol. Sc. 201	0	3	0
Municipal Government and Administration, Pol. Sc. 202	0	0	3
Principles of Accounting, Econ. 301, 302, 303	3	3	3
Electives	3	3	3
	18	18	18

Senior Year

The Family Organization, Soc. 406	3	0	0
Rural Poverty and Relief, Rur. Soc. 432	0	3	0
Community Organization, Rur. Soc. 413	0	0	3
Rural Population Problems, Rur. Soc. 411	3	0	0
Social Aspects of Land Tenure, Rur. Soc. 422 or Problems of Land Economics, Agr. Econ. 412	0	3	0
Farm Management I, Agr. Econ. 303	0	0	3
Agricultural Cooperation, Agr. Econ. 422	0	3	0
Agricultural Marketing, Agr. Econ. 411	3	0	0
Social Psychology, Psy. 290	0	0	3
Survey of Statistical Methods, Econ. 408	3	0	0
Statistical Methods, Stat. 412	0	3	0
Statistical Analysis of Social Data, Stat. 451	0	0	3
Technical Agriculture	3	3	3
Electives	3	4	3
	18	19	18

ZOOLOGY AND ENTOMOLOGY

Professor Z. P. Metcalf, Head of the Department

Professors T. B. Mitchell, B. B. Fulton; Associate Professors, C. H. Bostian, R. O. Stevens; Assistant Professors, F. B. Meacham, F. H. McCutcheon, R. Harkema, C. F. Smith.

Teaching and Research. The space devoted to Zoölogy is equipped to present the various subjects and to carry on research on its own and related fields. The Entomology Laboratory has a large Insectary with the usual equipment, and has an especially large collection of breeding animals for research and instruction in their field.

Beekeeping.—The Beekeeping Laboratory is well provided with apparatus to illustrate all phases of beekeeping. A small Apiary is maintained on the College grounds.

Graduate Work. The Technique and Graduate Laboratories are especially well equipped for the teaching of graduate work. The Museum contains a synoptic collection illustrating most groups of animals.

Curricula.—The Department of Zoölogy offers curricula in Entomology and in Wildlife Conservation and Management set forth as follow.

CURRICULUM IN ENTOMOLOGY

For Freshman and Sophomore years refer to page 54.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
Systematic Zoology, Zool. 421, 422, 423	3	3	3
Genetics, Zool. 411	4	0	0
Comparative Anatomy, Zool. 222, 223	0	4	4
Modern Language	3	3	3
Systematic Botany, Bot. 203	0	0	3
Physiological Chemistry, Chem. 451, 452	3	3	0
Public Speaking, Eng. 231	0	3	0
Technical Writing II, Eng. 323	0	0	3
Electives	6	3	3
	19	19	19

Senior Year

Vertebrate Embryology, Zool. 461	5	0	0
Field Zoology, Zool. 433	0	0	4
Applied Entomology, Zool. 401, 402, 403	3	3	3
Modern Language	3	3	3
Beekeeping, Zool. 243	0	0	3
Plant Ecology, Bot. 441	3	0	0
Histology, Zool. 442	0	3	0
Bacteriology, Bot. 402	0	4	0
Electives	3	4	4
	17	17	17

WILDLIFE CONSERVATION AND MANAGEMENT

Principles. The Wildlife Management Curriculum is based on the following fundamental principles: (1) All forms of wild animal life must be considered in any extensive system of wildlife management; (2) the animal life of any given area is in close relationship to the vegetation existing in that area; (3) in favorable environment, the species of wildlife will normally produce a surplus, a part of which can be harvested each year in a manner similar to the harvesting of other crops.

Conservative Approach.—Since wildlife management is just getting under way in this country, it would not seem advisable to encourage too rapid an expansion of this profession at the present time, although there is a distinct need for a moderate number of well-trained men to promote and supervise wildlife management in the many sections of the country.

Positions.—The curriculum is designed to furnish a technical and practical background for the following types of positions: (1) Wildlife-Management technicians in State Game and Fish Departments; (2) Biologists in the United States Biological Survey, Forest Service, Soil Conservation Service, National Park Service, and other Federal Land-Use Departments; (3) Game Managers on private preserves or leased areas, State game refuges, and on other land areas which are being developed primarily for wildlife.

Research.—Because of the great need for research and experimental work in this field, the required courses in the curriculum are also designed to give the basic technique necessary to students who may desire to enter this phase of wildlife management. Several elective courses will be available for junior and senior students to enable them to specialize in some particular phase of the work.

State Advantages.—Unusual advantages are offered to competent students by the wide range of natural environments in the North Carolina Coastal Plain, Piedmont, and Mountain Regions. Further advantages are available by reason of close coöperation with the State Division of Game and Inland Fisheries, and the opportunity to observe developments in wildlife management on the following areas: Mount Mitchell Game Preserve, Sandhill Land Use Project, Soil Conservation Service Projects, Mattamuskeet Water Fowl Preserve, The Nantahala and Pisgah National Forests; The Great Smoky Mountain National Park, and preserves in the Piedmont and on the Coastal Plain.

CURRICULUM IN WILDLIFE CONSERVATION AND MANAGEMENT

Freshman Year

COURSES	CREDITS First Term	Second Term	Third Term
Composition, Eng. 101, 102, 103	3	3	3
General Inorganic Chemistry, Chem. 101, 102, 103	4	4	4
Mathematical Analysis, Math. 111, 112	0	4	4
General Zoology, Zool. 101	4	0	0
Economic Zoology, Zool. 102	0	4	0
Physical Geology, Geol. 120	0	0	4
Economic History, Hist. 101, 102, 103	3	3	3
Elementary Wildlife Management, Zool. 111	1	0	0
Military Science I, Mil. 101, 102, 103, or alternate	2	2	2
Fundamental Activities and Hygiene, P.E. 101, 102, 103	1	1	1
	18	21	21

Sophomore Year

Agricultural Physics, Phys. 115	0	0	5
Botany, General and Systematic, Bot. 101, 102, 203	4	4	3
Introduction to Organic Chemistry, Chem. 221	0	0	4
Introduction to Economics, Econ. 205	3	0	0
Land Economics, Agr. Econ. 212	0	3	0
Public Speaking, Eng. 231	3	0	0
Comparative Anatomy, Zool. 222, 223	0	4	4
General Field Crops, F.C. 202	0	3	0
Ornithology, Zool. 251, 252, 253	2	2	2
Surveying, Theoretical, C.E. 221, 222	3	3	0
Surveying, Field, C.E. 225	1	0	0
Principles of Forestry, For. 111	3	0	0
Military Science II, Mil. 201, 202, 203, or alternate	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	22	22	21

Junior Year

Plant Propagation and Nursery Practice, Hort. 301	3	0	0
Dendrology, Bot. 211, 213	3	0	3
Plant Ecology, Bot. 441	3	0	0
Field Zoology, Zool. 433	0	0	4
General Bacteriology, Bot. 402	0	4	0
Economic Entomology, Zool. 213	0	0	4
Animal Physiology, Zool. 202	0	5	0
Wildlife Conservation, Zool. 321, 322, 323	3	3	3
Technical Writing II, Eng. 323	0	0	3
Soils, Soils 201	4	0	0
Electives	3	6	3
	19	18	20

Senior Year

Aquatic Biology, Bot. 473	0	0	2
Elective Social Science	3	0	0
Elective English	3	0	0
Wildlife Management, Zool. 451, 452, 453	3	3	3
The Soils of North Carolina, Soils 312	0	3	0
Advanced Animal Ecology, Zool. 462, 463	0	3	3
Parasitology, Zool. 492, 493	0	3	3
Electives	9	6	7
	18	18	18

THE AGRICULTURAL EXPERIMENT STATION

Robt. M. Salter, Director

Establishment.—The Agricultural Experiment Station was established in accordance with an Act of the General Assembly of 1877. Its progress has been enhanced by different Acts of Congress giving to the Station additional funds in 1887, 1906, 1925, and 1935. These are known as the Hatch, the Adams, the Purnell, and the Bankhead-Jones acts, respectively. The General Assembly has allocated to the Station annually certain funds from the general fund and from revenue collected by the State Department of Agriculture from taxes on fertilizers and feeds.

Purpose.—The purpose of the Agricultural Experiment Station is to study methods for economic production of the highest grades of livestock, poultry, and plants on the many soil types and varied conditions existing throughout the commonwealth; to study methods for the control of parasitic insects and organisms that cause serious economic losses of animals, poultry, and plants; to find and develop varieties of animals, poultry, and plants, new, and resistant to diseases and the changeable conditions prevailing in this State; and to perfect better marketing for all agricultural products.

Work.—The staff of the Agricultural Experiment Station conducts experiments throughout the State on areas owned by farmers, on six strategically located test farms, on farms rented for short periods, and in the greenhouses and laboratories of the College.

Research.—The agricultural research aims, through the discovery of new facts, to improve the well-being of farmers throughout the State; to strengthen the regulatory work of the State Department of Agriculture; to develop new and necessary facts for the teaching of sound agricultural principles by vocational agricultural instructors, agricultural extension agents, and agricultural instructors in the College.

Experts.—The Agricultural Experiment Station staff brings to the College many experts, whose teachings in many specialized fields of agriculture assure the maintenance of curricula of high standards. It contributes much to the advanced training of students who are destined to become the leaders, teachers, and investigators so necessary in the maintenance of agriculture on sound and economic planes.

Publications.—The Agricultural Experiment Station publishes many bulletins and scientific papers on results of research conducted by the staff. These are free and sent upon request of anyone in the State.

Problems.—The staff diagnoses and interprets many problems for the farmers of this State; holds council with farmers and others interested in the agricultural industry; discusses farming procedures over the radio, and writes many letters on the more specific problems of agriculture at the request of farmers, members of garden clubs, and of fertilizer, fungicide, and insecticide manufacturers. It takes part in many of the administrative functions of the College.

COOPERATIVE AGRICULTURAL EXTENSION WORK

Dr. I. O. Schaub, Director
John W. Goodman, Assistant Director
Dr. Jane S. McKimmon, Assistant Director
Ruth Current, State Home Demonstration Agent

Support.—The Agricultural Extension Service of State College is conducted coöperatively with the United States Department of Agriculture and the one hundred counties of the State. The work is supported by Federal funds derived from the Smith-Lever Act of 1914, the Capper-Ketcham Act of 1928, and the Bankhead-Jones Act of 1935, from State appropriations and county appropriations. The Federal and State appropriations are used to maintain an administrative and specialist staff, and to supplement salaries and travel expenses of county Extension agents.

Purpose.—The purpose of the Extension Service is to teach by demonstration. In carrying out this purpose, the College maintains a staff of trained specialists, a system of county agents and assistant agents, and a corps of home-demonstration agents. Instruction is given at group meetings by method and result demonstrations, and by the written word, by training leaders, and through organized effort with clubs of men, women, and young people. In all of these activities, the plan is to carry to the rural people of North Carolina the latest and best information obtainable for building a more prosperous and satisfying life on the farm. The Extension Service holds a number of short courses, both on the College campus and elsewhere over the State, that the greatest number of rural leaders may be trained for building better homes and better farms, in the use of more efficient practices, thus creating a more satisfying way of life.

THE SCHOOL OF ENGINEERING

Blake R. Van Leer, M.E., Dean of Engineering
Wallace C. Riddick, C.E., LL.D., Dean Emeritus of Engineering
William L. Mayer, M.S., Director of Registration

Organization

The School of Engineering of the North Carolina State College of Agriculture and Engineering of the University of North Carolina is organized for purposes of administration into the following Departments:

Line Departments

	Administrative Officer
Aeronautical Engineering	Professor L. R. Parkinson
Architectural Engineering	Professor Ross Shumaker
Ceramic Engineering	Professor A. F. Greaves-Walker
Chemical Engineering	Professor E. E. Randolph
Civil Engineering	Professor C. L. Mann
Electrical Engineering	Professor William Hand Browne, Jr.
General Engineering	Professor G. Wallace Smith
Geological Engineering	Professor J. L. Stuckey
Industrial Engineering	Professor H. B. Shaw
Mechanical Engineering	Professor L. L. Vaughan

Service Departments

Engineering Experiment Station	Professor Harry Tucker
Engineering Mechanics	Professor G. Wallace Smith
Mathematics	Professor H. A. Fisher
Physics	Professor C. M. Heck

The School of Engineering is organized to offer technical and professional engineering instruction on the higher levels, undergraduate and graduate, vocational and professional, to meet the needs of the people of North Carolina. It is also organized and equipped to conduct research in the basic fundamentals of Engineering, and it coöperates with the College Extension Division in offering extension courses in Engineering and its allied fields.

Effective July 1, 1938, the consolidation of Engineering instruction at the University Unit in Raleigh was consummated, and the instructional staff and laboratory facilities were enhanced by additions from the Engineering College formerly maintained by the Unit at Chapel Hill. This gives the School of Engineering in Raleigh the largest and most extensive engineering staff and equipment in this section of the country, and offers to the young men of North Carolina excellent facilities for securing an undergraduate education in Engineering.

The excellence of the instruction in the School of Engineering is attested by the fact that the Engineers' Council for Professional Development has accredited its curricula in Ceramic, Civil, Electrical, and Mechanical Engineering. It is the policy of the School of Engineering to have all of its curricula meet the standards of this nationally recognized accrediting agency. Engineering education requires extensive laboratory facilities, and as rapidly as funds are available all of its laboratories are being brought into shape to meet the highest standards attained in any technological institution of higher learning.

Location and Facilities

Raleigh is a particularly favorable place for the study of Engineering. It is not only the State Capital where are located many State Departments of interest to engineers, such as the State Highway Commission, State Board of Health, State Geologist, Department of Conservation and Development, and important State institutions, but it is a rapidly growing city marked by modern developments in residential, commercial, and municipal construction. The local building and engineering go on the year round and afford excellent opportunities for observation and study. Raleigh is also so situated geographically that it is within easy distance for inspection trips to commercial chemical works, woodworking mills, railway shops, machine shops, airports, and manufacturing industries.

Raleigh is also a center from which electric power is distributed to a large section of the State. A transformer and meter substation adjoins the campus, and from it high-tension lines radiate in four directions. Hydro-electric and steam-electric plants on the Cape Fear River are within easy reach. The important systems of highways centering in Raleigh are exceptionally valuable for the observation and study of the construction, use, and maintenance of roads.

On the State College campus are five large buildings devoted exclusively to engineering instruction and research. These buildings contain much laboratory equipment which can be inspected at any time, but is best seen during the Engineers' Fair, which is held each year in March or April.

Purposes of the School

The purposes of the School of Engineering are: to educate men for professional service in Aeronautical, Architectural, Ceramic, Chemical, Civil, Construction, Electrical, Geological, Highway, Industrial, Mechanical, and Sanitary Engineering; to equip them to participate in commercial and public affairs; to develop their capacities for intelligent leadership; to aid in the development of commerce and industry through research and experimentation; to investigate natural resources and demonstrate their value to the people of the State; to coöperate with private companies, municipalities, public authorities, and commercial and industrial organizations through scientific research, thus increasing technical skill, improving the value of manufactured products, and eliminating waste.

Occupations Open to Graduates

Those who graduate and receive a bachelor's degree in some specialized branch of engineering are equipped to assume at once the duties and responsibilities usually given Junior Engineers. The graduates of the School of Engineering are found in many technical fields, but most of them find employment in some one of the following: Aviation, Architectural and Structural Engineering; the Ceramic, the Chemical industries; and Private Professional Practice, Consulting Engineers; Hydro-electric Engineering, Electrical Manufacturing, Contracting, Central Electric Station Design and Construction, Telephone Service, Maintenance and Operation of Electrically-driven Mill Equipment, Lighting, Illumination, and Railway Signaling; Construction, Maintenance, and Operation of Steam and Electrical Railways; the Design and Manufacture of Machinery, the Operation of Shops, and the Furniture Industry; Geological Engineering, Highway Engineering, Industrial Engineering, and the Management of Industries, Municipal Engineering, Sanitary Engineering; as City Managers, Public-Utility and Health-Service Officials; Sales Engineering, Research Engineering.

Curricula

Besides a curriculum leading to the Bachelor of Science degree in General Engineering, the School of Engineering offers curricula which lead to the Bachelor's degree in the following specialized fields of Engineering:

Aeronautical Engineering
Architectural Engineering
Architecture
Ceramic Engineering
Chemical Engineering
Civil Engineering, with options in:
- (a) Construction
- (b) General Civil
- (c) Highway
- (d) Sanitary

Electrical Engineering, with options in:
- (a) Power Generation and Distribution
- (b) Electrical Communication

Geological Engineering
Industrial Engineering
Mechanical Engineering, with options in:
- (a) General
- (b) Furniture Manufacturing
- (c) Heating and Air Conditioning

All of the curricula contain courses of general educational value which prepare students for the duties of citizenship in a democracy. However, the curricula are primarily technical and practical, and designed to prepare

young men for professional practice and for definite vocations as well as for leadership in the industrial advancement of the State.

The instruction is such as will foster the individual talent, imagination, and initiative of students, and instill in them ideals of accomplishment, service, and good citizenship, while assuring to them that scientific education and practical training which will prepare them for professional service and leadership in engineering and in industry. In this way the School of Engineering aids in the advancement of commerce and industry and furthers the development and economic utilization of the State's resources for the general welfare.

All the engineering curricula emphasize thoroughness in the study of English and of the sciences Mathematics, Physics, and Chemistry—with a thorough drill in the application of fundamental principles to engineering and industrial problems. Engineering is taught as a profession, and the students come to realize that it is both honorable and learned, and that it offers exceptional opportunities for service.

The several engineering curricula have a common freshman year and differ only slightly in the sophomore year, in which years the students study English, Mathematics, Drawing, Shopwork, Physics, and Chemistry. In the junior and senior years the students are directed definitely to the professional aims in carefully considered and well-balanced curricula.

Summer Work. At least six weeks of summer employment, approved by the Head of the Department in which the student is enrolled, preferably in the summer following the junior year, is a specific requirement for graduation in Engineering.

The purpose of this is to have every student before graduation acquire the valuable experience of actual work with responsibility and pay in the field of his vocation. Departmental advisers will aid students in getting summer employment.

Inspection Trips.—In order to familiarize himself with the practice of his profession, each senior in Engineering is required as a part of his curriculum to take the departmental inspection trips. None will be excused except for grave reasons.

These inspection trips are arranged by the Head of the Department in which the student takes his major work. The cost of such trips vary from $25.00 to $60.00 per student, depending on the time and distance traveled.

Degrees.—Six different types of degrees may be secured through the School of Engineering. These are:

1. **Bachelor of Science** (B.S). This degree can be obtained only through completion of the curriculum in General Engineering. This is a course of study founded upon the basic fundamentals of engineering with no specialized courses but with liberal allowances for electives in the cultural courses. It is an earned undergraduate degree and can be obtained by four years of undergraduate work.

2. **Bachelor of a Specialized Branch of Engineering,** for example, (B.C.E.) Bachelor of Civil Engineering. This is an earned undergraduate degree which includes in the last two years some specialized courses in the particular branch of engineering in which the student is studying. This course is planned for four years of study but due to the fact that it is very heavy and difficult only the very best prepared and most diligent students can successfully complete it in four years.

3. **Master of Science** (M.S.) in a specialized branch of engineering. This is an earned graduate degree which can be obtained only after the Bachelor's degree. It requires at least one year of graduate work, a reading knowledge of at least one foreign language, and a thesis showing ability to pursue independent research. The core of graduate courses taken must emphasize a scientific objective. Further information concerning the requirements for this degree may be obtained by addressing Dr. Z. P. Metcalf, **Chairman, Graduate Committee, State College, Raleigh.**

4. **Master of a Specialized Branch of Engineering,** for example, (M.C.E.) Master of Civil Engineering. This is an earned graduate degree which can be obtained only after the specialized Bachelor's degree and requires one year of graduate work which emphasizes the technical and specialized professional engineering courses, and a thesis along professional engineering lines indicating ability to carry on independent professional investigations. For further information concerning this degree address Dr. Z. P. Metcalf, **Chairman, Graduate Committee, State College, Raleigh, N. C.**

5. **The Professional degree,** for example, Architectural Engineer, Ceramic Engineer, Chemical Engineer, Civil Engineer, Electrical Engineer, Mechanical Engineer.

This is an earned degree which is conferred only upon the graduates of some branch of the University of North Carolina, after five years of professional engineering practice in responsible charge of important work, the acceptance of a thesis on a subject related to the professional engineering practice in which the applicant is engaged, and the passing of an examination upon the candidate's professional experience. For further information concerning this degree address Dr. Z. P. Metcalf, **Chairman, Graduate Committee, State College, Raleigh.**

6. **The Honorary Degree of Doctor of Engineering** (D.Eng.). This degree is purely an honorary degree conferred upon men of extraordinarily high professional engineering attainments who are graduates of one of the branches of the University of North Carolina, or upon professional engineers who have rendered distinguished services to the State of North Carolina.

Graduation.—The requirements for graduation in a specialized branch of Engineering are the satisfactory completion of all the courses in one of the prescribed curricula (see tabulations of curricula on the pages following), a total of not less than 240 term credits, with not less than 240 honor points.

Of the minimum of 240 term credits required for graduation in Engineering, 117 are common to all curricula: 30 term credits in Mathematics, 18

in Language, 9 in Economics, 12 in Chemistry, 12 in Physics, 9 in Mechanics, 9 in Drawing and Descriptive Geometry, 12 in Military Training and 6 in Hygiene and Physical Education.

Each of the curricula permits election of at least 18 term credits and contains not more than 72 special technical term credits.

Graduates in Liberal Arts. An increasing number of graduates of liberal-arts colleges and universities are seeking an engineering degree. The policy of the School of Engineering is to allow as liberal an arrangement of courses as possible to suit the individual student's needs so that the degree in engineering may be obtained in the briefest time possible. However, the liberal-arts courses are distinctly different from those offered in an engineering school even when they have the same name and deal with the same subject matter. Students are therefore advised that the best economy of their time and money will be attained if they enroll at the beginning of their college careers as freshmen in an engineering curriculum.

A graduate with an A.B. degree will normally require two years additional work to obtain a Bachelor's degree in engineering.

A graduate with a B.S. degree may obtain a degree in engineering with from one to two years of additional study. A final decision in each case can be made only after an evaluation of the transcript of the student's record in the college from which he has received his degree.

Short Courses: Institutes.—The School of Engineering coöperates with the College Extension Division in offering short courses and institutes for adults and graduate engineers. These courses vary in length from one day to one week; each year the courses covered are different and vary according to the public demand. The faculty of the School of Engineering usually furnishes a large portion of the instruction offered in these courses, which in the past have been for Electrical Metermen, Gas Plant Operators, Waterworks Operators, Heating and Plumbing Contractors, Surveyors and Engineers. These short courses are usually held in Raleigh because the School of Engineering has unusual laboratory and classroom facilities which offer a decided advantage to those who desire to "brush up" on their specialty and bring themselves abreast of the times by attending such short courses. For information concerning any short course, address inquiry to Mr. Edward Ruggles, Director, Extension Division, State College, Raleigh.

ENGINEERING DEFENSE TRAINING

Since July 1940 the School of Engineering has been coöperating with the Office of Education of the Federal Government in offering Engineering Defense Training courses on a college level, designed to equip men as rapidly as possible to enter the defense industries. At present the following courses are being offered: Aircraft Inspection; Chemical Testing and Inspection; Diesel Engineering; Engineering Drawing; Experimental Electronics; Instrument Men and Topographers; Materials Inspection and Testing; Production Engineering; Production Supervision; Spectroscopy in Industry and Archi-

tectural Drafting. It is contemplated that many of the above courses will be repeated and courses along the following lines will be added during the coming year. Fabric Testing and Inspection; Electrical Distribution; Welding Engineering and Electrical Meter Engineering. Those who desire further information concerning these courses, please address their inquiries to: Edward W. Ruggles, Director, College Extension Division, N. C. State College, Raleigh, North Carolina. While these courses do not give college credit, they do train men for specific tasks in which the salaries are attractive. Normally there is no cost to the student except room and board while attending. The average length of these courses is from ten to twelve weeks.

Admission: Advanced Standing.—Regulations for admission and advanced standing are stated under Information for Applicants.

SERVICE DEPARTMENTS

An explanation of the purposes, and a listing of the personnel engaged in the five Service Departments in the School of Engineering follow.

ENGINEERING MECHANICS

Professor G. Wallace Smith, Head of the Department

Associate Professor N. W. Conner; Assistant Professor C. E. Feltner*; Instructor J. T. Massey; Teaching Fellows, G. A. Gillenwater, J. F. Gilmore; W. T. Hunt.

The Department of Engineering Mechanics, which is housed in the Civil Engineering Building, teaches and administers the courses in theoretical and applied mechanics, strength of materials, and fluid mechanics. These courses have been grouped under an independent Department, which is the custom in most large engineering schools, for two reasons: first, to economize by preventing duplications and overlapping; second, because the mechanics courses are basic, required courses in all the engineering curricula, and here all engineering students meet on an equal footing. The best and most uniform results are thus obtained when such courses are taught in a department completely separated from the bias of any particular type of specialization.

FLIGHT TRAINING

In coöperation with the Civil Aeronautics Administration, the School of Engineering is offering to young men between the ages of 19 and 25 an opportunity to become licensed pilots.

Students wishing to receive flying instruction must pass a physical examination comparable to the standards required by the United States Army Air Corps.

It is necessary that all flying students attend the ground school being offered. Navigation, Meteorology, and the Civil Air Regulations are sub-

* On leave to U. S. Army.

jects which must be mastered before the student may obtain a private flying license. Approximately two hours of ground instruction to every hour in the air is required. The 35 to 45 hours of flying is divided into stages so that about half of the time is dual instruction while the other half is solo practice under the instructor's supervision.

Those students who successfully complete the Civil Pilot Training Course and receive a Private Pilot's Certificate may apply for advanced instruction. The ground instruction required for the advanced course includes Navigation, Meteorology, Parachutes, Aerodynamics, Aircraft Engines, Instruments and Radio. Forty to fifty hours of advanced flight instruction are given in high-powered aircraft and include advanced maneuvers and aerobatics. In the advanced course, approximately 3½ hours of ground instruction to every hour in the air is required.

For detailed information, inquiries should be addressed to Professor L. R. Parkinson, North Carolina State College, Raleigh, North Carolina.

THE DEPARTMENT OF MATHEMATICS

Professor H. A. Fisher, Head of the Department

Associate Professors H. P. Williams, C. G. Mumford, J. M. Clarkson, J. W. Cell, R. C. Bullock, J. Levine; Assistant Professors L. S. Winton, H. V. Park, H. M. Nahikian; Instructors R. E. Lake, A. Gelbart, W. P. Seagraves, E. P. Miles, F. E. Mask, H. C. Cooke, J. C. Bunn.

Mathematics is one of the basic sciences in Engineering. At State College the large and competent Mathematics Department not only teaches the subject as a science but gives also a large amount of drill and practice to the students so that, upon completion of the courses, the students not only know the subject matter but are skilled and rapid in its use when applied to the problems of technology.

THE PHYSICS DEPARTMENT

Professor C. M. Heck, Head of the Department

Professor J. B. Derieux; Associate Professors J. S. Meares, F. W. Lancaster; Assistant Professor R. F. Stainback; Instructors G. W. Bartlett, J. I. Hopkins, W. H. Bessey.

Physics is another of the basic sciences upon which Engineering and Agriculture are founded.

Facilities.—The Department of Physics occupies the northern half of Daniels Hall—three floors, with six laboratories and six lecture rooms. The basement is devoted to research laboratories, shops, dark rooms, battery room, and power center. The two floors above comprise laboratories, lecture rooms, offices, and apparatus rooms.

Equipment.—The Department is equipped with laboratory apparatus in a sufficient number of sets to permit all students in a laboratory to work

during the same period on the same experiment. All lectures are demonstrated with a large assortment of equipment and apparatus collected through many years.

On the roof of the building is located the astronomical observatory and the radio research laboratory. The five-inch telescope is equatorially mounted and driven by clock work.

The Department is equipped for research so that engineering students desirous of using Physics as a minor in their work for an advanced degree may do so.

THE ENGINEERING EXPERIMENT STATION

Professor Harry Tucker, B.A., B.S., C.E., Director

Room 207, Civil Engineering Building, State College Station, Raleigh

Establishment.—The Engineering Experiment Station of State College was established in 1923, as provided by the General Assembly of that year. It is an integral part of the School of Engineering, and is engaged in an organized program of research consisting of individual projects carefully defined and approved, which are carried on by engineering teachers. The Station fits uniquely into the program of instruction, research, and extension of State College.

Purpose.—The efforts of the Engineering Experiment Station are directed along the following lines:

(a) The investigation of resources and processes, through experimentation and tests, with the object of opening and developing wider fields for the use of the natural resources of the State.

(b) Coöperation with industrial organizations in the solution of technical problems, which require such facilities and equipment as are available at State College.

(c) The coördination of research undertaken by the Engineering School.

(d) The publication of the results of experimental and research projects made by the Engineering Experiment Station and the several Engineering Departments of State College.

Publications. The Experiment Station has, since its organization, coöperated with various organizations and industries in the State in the investigation of problems peculiar to North Carolina. The results of such investigations have, from time to time, been issued in the form of Bulletins. The following is at present a complete list of the publications of the Station:

Bulletin No. 1. "County Roads: Organization, Construction and Maintenance," by Harry Tucker, James Fontaine, and L. D. Bell.

Bulletin No. 2. "Tests of Face and Common Brick Manufactured in North Carolina," by A. F. Greaves-Walker and James Fontaine.

Bulletin No. 3. "Poles from North Carolina Forests," by Wm. Hand Browne, Jr., and James Fontaine.

Bulletin No. 4. "Motor Vehicle Accidents in North Carolina," by Harry Tucker.

Bulletin No. 5. "Occurrence and Physical Properties of North Carolina Marble," by Jasper L. Stuckey and James Fontaine. Price twenty cents.

Bulletin No. 6. "The Occurrence, Properties, and Uses of the Commercial Clays and Shales of North Carolina," by A. F. Greaves-Walker, N. H. Stolte, and W. L. Fabianic. Price fifty cents.

Bulletin No. 7. "Highway Grades and Motor Vehicle Costs," by Howard Burton Shaw and James Fontaine. Price twenty cents.

Bulletin No. 8. "Financial Management for Highways," by Marc C. Leager. Price one dollar.

Bulletin No. 9. "Highway Accidents in North Carolina and Guides to Safety," by Harry Tucker. Price fifty cents.

Bulletin No. 10. "North Carolina Building Code," by the North Carolina Building Code Council. Price one dollar.

Bulletin No. 11. "The Production of an Insulating Brick Using North Carolina Shales," by A. F. Greaves Walker, W. C. Cole, Jr., and S. C. Davis. Price twenty cents.

Bulletin No. 12. "The Development of Pyrophyllite Refractories and Refractory Cements," by A. F. Greaves-Walker, C. W. Owens, Jr., T. L. Hurst, and R. L. Stone. Price fifty cents.

Bulletin No. 13. "The Preparation of Concrete Using North Carolina Materials," by Harry Tucker and W. G. Geile.

Bulletin No. 14. "The Location and Distribution of the Ceramic Mineral Deposits of North Carolina," by A. F. Greaves-Walker and S. G. Riggs, Jr. Price twenty-five cents.

Bulletin No. 15. "A Study of Courses in Technical Writing," by A. M. Fountain. Price one dollar.

Bulletin No. 16. "The Production of Unfired and Fired Forsterite Refractories from North Carolina Dunites," by A. F. Greaves-Walker and R. L. Stone. Price fifty cents.

Bulletin No. 17. "Papers Presented at School for Street Superintendents, 1939," compiled by Harry Tucker.

Bulletin No. 18. "Net Revenue Method of Comparing Distribution Transformers," by R. R. Brown.

Bulletin No. 19. "The Origin, Mineralogy and Distribution of the Refractory Clays of the United States," by A. F. Greaves-Walker.

Bulletin No. 20. "Papers Presented at School for Street Superintendents, 1940," compiled by Harry Tucker.

Bulletin No. 21. "Drafting Room Practices," by T. C. Brown and P. E. Moose. Price twenty-five cents.

Current Activities.—The Experiment Station is now assisting in the following investigations that are being conducted by the several Departments of the Engineering School:

1. In coöperation with the Department of Chemistry of the College and the Medical School of Duke University: A study of night blindness in relation to automobile accidents.
2. In coöperation with the United States Geological Survey: The geology of Wake County, North Carolina.
3. In coöperation with the North Carolina State Highway and Public Works Commission: Investigation of steel beam bridges with concrete floors.
4. In coöperation with the North Carolina State Board of Health: The efficiency of small sewage treatment plants.
5. In coöperation with the Carolina Power and Light Company: Insulation drying with refrigerated air.
6. In coöperation with the Rural Electrification Administration: The effects of varying voltages on single phase motors.
7. In coöperation with the Testing Division of the North Carolina Department of Revenue: The testing of motor fuels.
8. In coöperation with the Tennessee Valley Authority: An investigation of the uses of vermiculite in building construction.
9. In coöperation with the United States Bureau of Mines: The development of forsterite refractories.
10. In coöperation with the Tennessee Valley Authority: An investigation of the mineralogical composition of olivine.
11. The development of an unfired aluminous refractory.
12. In coöperation with the City of Raleigh, North Carolina: An investigation of the design and capacity of gutter intakes.
13. In coöperation with the Carolina Power and Light Company: Annealing of copper conductors by fault currents.

THE N. C. STATE COOPERATIVE PLAN OF ENGINEERING EDUCATION

*Frank F. Groseclose, Director; D. E. Henderson, Acting Director

The N. C. State Coöperative Plan of Engineering Education was first announced at North Carolina State College in the spring of 1940 for the dual purpose of furnishing financial aid to worthy students during their junior and senior years, and to provide practical experience in industry, along with the regularly required technical courses, before graduation in engineering.

* On leave of absence with U. S. Army.

During the first year 12 industries, in three states, provided jobs for 40 students from five of the 10 engineering curricula now offered.

After a careful study of other successful plans now in operation, the N. C. State Coöperative Plan divides the coöperative students in two sections. One section attends college from September to March each year[1], then works with a coöperating industry for the remaining 6 month period each year. The alternate section attends college from March to September and works in industry from September to March. For the average student this will mean one additional year or a total of 5 years for graduation in engineering. During the freshman and sophomore years students interested in the coöperative plan will pursue the same schedule of full time attendance, in the Basic Division, that applies to the regular four year curricula. Another advantage of the N. C. State Plan is, that coöperative students normally take exactly the same work as non-coöperative students. Some substitutions will be allowed in preparing students for specific jobs in industry.

In order to provide for worthy persons now employed in industry, whose employers are willing to coöperate, arrangements are available which allow these men to enter as freshmen in the Basic Division, provided, of course, they meet the requirements of the Registration Office. For those in industry who have already completed some college work a transcript of college credits may be submitted to the Registration Office for evaluation, and such a person would complete at State College the necessary credits required for an engineering degree. Students from industry entering as freshmen would require six years for completing the work for an engineering degree. Others with some college credit would need a proportionately shorter time. Those already employed in industry will be recommended to the college by their employers as suitable persons for pursuing or continuing college grade work. Normally the college does not recommend its students below the junior year for jobs in industry, for the reason that it will not have accumulated sufficient information on the student to be able to make an honest and intelligent recommendation. Students who have not maintained a "C" average grade at the end of their sophomore year are required to drop out. The maintenance of this policy avoids college recommendation to industry of a student who would have to be suspended on account of poor scholarship, with consequent interruption of his employment with industry.

Employment under the coöperative plan is not assured, but every effort is made to place all worthy students whose scholarship, character, and abilities indicate that they will be successful in pursuing the coöperative plan.

Placement in industry is generally made by furnishing to the industry concerned a few applications of the students selected by the Director as most likely to fit the particular needs of the industry. In some cases the industries have authorized the Director to make assignment of students to them based on specifications submitted by the particular industry.

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[1] Tentative plans have been proposed for establishing the Cooperative Plan on a yearly basis, the exchange periods to coincide with the college terms.

College fees, under the coöperative plan, are the same as those listed in the catalog for other students, except for coöperative students in college attendance during the winter quarter. A reduction in the January payment will be made on pro rata basis on account of non-attendance in the spring quarter.

Applications for admittance to the coöperative plan may be made at any time, preferably on or before April 1 of the sophomore year.

Those interested should communicate directly with Mr. D. E. Henderson, Acting Director, N. C. State Coöperative Plan of Engineering Education, State College Station, Raleigh, N. C. The Director's Office is Room 129-1911 Dormitory.

CURRICULA OFFERED IN THE SCHOOL OF ENGINEERING

Each of the following curricula is not only well balanced, but offers a liberal course of study in a technical and professional field. They conform to what is regarded by engineering educators as the best modern practice.

Also offered in the School of Engineering is a curriculum leading to the Bachelor of Science degree in Engineering (see page 114). This curriculum has no specialization and requires but 231 term credits with at least 231 honor points. It is recommended to those who desire a broad general training in the basic principles of Engineering but who do not have the time or desire to specialize in some particular branch.

FRESHMAN YEAR of ALL CURRICULA in ENGINEERING

COURSES	CREDITS First Term	Second Term	Third Term
Algebra, Trigonometry, Analytical Geometry, Math. 101, 102, 103	6	6	6
Composition, Eng. 101, 102, 103	3	3	3
General Inorganic Chemistry, Chem. 101, 102, 103	4	4	4
Engineering Drawing II, M.E. 105, 106	3	3	0
Descriptive Geometry, M.E. 107	0	0	3
Military Science I, Mil. 101, 102, 103, or World History, Hist. 104	2	2	2
Fundamental Activities and Hygiene, P.E. 101, 102, 103	1	1	1
	19	19	19

Summer requirement following the freshman year in Architectural, Ceramic, and Electrical Engineering: Surveying, C.E. s200, 3 credits.

AERONAUTICAL ENGINEERING

Associate Professor L. R. Parkinson, Head of Department
Assistant Professor C. N. Sanford; Instructors in Flight Training
W. R. Mann, W. G. Friedrich

Buildings and Equipment.—The Department of Aeronautical Engineering is housed temporarily in Page Hall pending the completion of its own building centrally located on the campus, which will contain the offices of the aeronautical faculty and the aeronautical laboratory. The Aeronautical

Engineering Department operates the University-owned Horace Williams Airport at Chapel Hill. This airport is now being enlarged and will be the finest college airport in the country and capable of handling aircraft of any size. The Department offers flying instruction in the University aircraft under the supervision of the department personnel. A certificated mechanic and two helpers maintain the equipment in airworthy condition. A five room house on the airport serves as office and living quarters for the pilots, thus insuring day and night service. An airport near the State College Campus, which will serve the School of Engineering, is under survey.

The Aeronautical Laboratory is equipped with a new twenty-inch wind tunnel capable of speeds in excess of 100 miles per hour. The tunnel is equipped with automatic electric balances. A wing testing unit is provided for static load tests. A full complement of flight instruments is available for study, experiment, and test. The laboratory is equipped with the major components of several airplanes and a complete monoplane of recent design. A smokebox is provided for flow analysis work.

The Internal Combustion Engine Laboratory in Page Hall is equipped with air and liquid cooled aircraft engines of modern design and are available for study and test. An electric dynamometer and two torque stands are used for the test work.

Curriculum.—The trend of airplane design changes quite rapidly and for this reason no attempt is made to produce specialists in any phase of aeronautical engineering. The course of study is designed to give the student a well rounded knowledge of aeronautics with special emphasis on the basic fundamentals. Because of the experience in airport construction, the department is especially qualified to offer a course in Air Transportation which includes such important phases as airport design, construction, and operation. Graduates readily find positions with the various aircraft and engine manufacturing companies, the National Advisory Committee for Aeronautics, and the Army and Navy Air Services.

CURRICULUM IN AERONAUTICAL ENGINEERING

Freshman Year

For Freshman year, refer to page 97.

Summer requirement following the freshman year: Surveying, C.E. s200, 3 credits.

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Calculus I, II, III, Math. 201, 202, 303	4	4	4
†Business English, Pub. Speaking, Lit., Eng. 211, 231, 261, 267	3	3	3
Physics for Engineers, Phy. 201, 202, 203	4	4	4
Mechanical Drawing, M.E. 211, 212, 213	2	2	2
Shopwork, M.E. 121, 122, 123	1	1	1
Engineering Mechanics, E.M. 311, 312	0	3	3
General Aeronautics, Aero. E. 210	3	0	0
*Military Science, Mil. 201, 202, 203	2	2	2
Physical Education, P.E. 201, 202, 203	1	1	1
	20	20	20

Junior Year

Engineering Mechanics, E.M. 313	3	0	0
Thermo., M.E. 307, 308, 309	3	3	3
Thermo. Lab., M.E., 313, 314, 315	1	1	1
Elem. Mechanism, M.E. 215, 216, 217	1	1	1
Elem. Aeronautics, Aero. E. 310	0	0	3
Materials of Construction, C.E. 321	3	0	0
Metallurgy, M.E.	0	3	3
Str. of Materials, E.M. 321, 322	0	3	3
Fluid Mechanics, E.M. 330	0	3	0
Tech. Writing, Eng. 321	0	0	3
Business Law, Econ. 307	3	0	0
Elements of E.E.I., E.E. 320, 321	3	3	0
**Electives	3	3	3
	20	20	20

Summer requirement: 6 weeks industrial employment or 10 hours solo flying.

Senior Year

General Economics, Econ. 201, 202, 203	3	3	3
Internal Comb. Engines, M.E. 421, 422, 423	3	3	3
Airplane Design, Aero. E. 421, 422, 423	3	3	3
Aerodynamics, Aero. E. 431, 432, 433	3	3	3
Aero. Lab., Aero. E. 441, 442, 443	1	1	1
Aircraft Engines, Aero. E. 451, 452	3	3	0
Air Transportation, Aero. E. 332, 333	0	3	3
**Electives	3	3	3
	19	22	19

All Seniors are required to go on the inspection trip as part of their curriculum.

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† Students who have been certified by the Department of English as proficient in English may substitute for the courses listed Spanish, or other Modern Language.

* Or 6 credits in one or two of the following departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

ARCHITECTURE AND ARCHITECTURAL ENGINEERING

Professor Ross Shumaker, Head of Department
Associate Professor J. D. Paulson; Assistant Professor F. Carter Williams;
Assistant Professor W. L. Baumgarten

The courses in Architecture and Architectural Engineering have been arranged after careful study of the best curricula offered by the leading educational institutions in the United States. These studies and many years of practical experience on the part of the faculty, both in the profession and in teaching, enable this department to offer two allied courses of merit, proved by the very high proportion of graduates of this department who successfully follow the profession of architect.

The first three years of study in Architecture and in Architectural Engineering are very similar—so arranged that a student may transfer from one curriculum to the other until the end of the junior year, with a minimum loss of credits. After the third year, however, there is a wide divergence in the courses.

Architecture is one of the most valuable and constructive professions in modern civilization. While an art, it must be firmly rooted in science, and the greater the project, the more positively this is true. Consequently, a student who is ambitious to be a great architect must master the artistic scope of architecture and also such science as is pertinent. To compress such a course into four years would necessarily eliminate some essential studies, or reduce the content of all. Therefore the curriculum in Architecture is presented as a five-year course of study.

Architectural Engineering is designed to prepare students for the pursuit of engineering as allied with architecture. Modern architecture has so many engineering aspects as in construction, fabrication and use of materials, provision of conveniences, that a student may well plan to specialize in some one of these fields. This four-year course provides a thorough training in the theoretical engineering of architecture and a sufficient knowledge of architecture as an art to enable the graduate to pursue any specialized branch he may select. Also it is possible for him to continue in the field of architecture and eventually obtain registration as a licensed architect.

Equipment. The Department of Architecture and Architectural Engineering occupies the third floor of Daniels Hall, an excellent location providing adequate space in well lighted and comfortable rooms. Large drawing rooms, library, lecture rooms, photographic dark room, and offices, overlooking the entire State College Campus, constitute an ideal physical layout for the Department. Drawing tables, stools, lockers, and essential furniture are all provided.

Alumni. Graduates of this department have little difficulty in normal times in finding employment and experience such that in a few years they can obtain registration as licensed architects. Many graduates have been conspicuously successful and it is worthy of note that a very large proportion remain in the State of North Carolina or adjacent territory.

CURRICULUM IN ARCHITECTURAL ENGINEERING

Freshman Year

For the Freshman year, refer to page 97.

Surveying, C.E. s200, 3 credits, is required in the summer immediately following the freshman year.

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Calculus I, II, III, Math. 201, 202, 203	4	4	4
*Business English, Public Speaking and English or American Literature, Eng. 211, 231, (261 or 262 or 263) or (265 or 266 or 267)	3	3	3
Physics for Engineers, Phys. 201, 202, 203	4	4	4
Engineering Mechanics, E.M. 311, 312	0	3	3
Elements of Architecture I, II, III, Arch. 201, 202, 203	3	3	3
Shades and Shadows, Arch. 205	2	0	0
Pencil Sketching, Arch. 100	1	1	1
Perspective Drawing, Arch. 206	1	0	0
Military Science II, Mil. 201, 202, 203 (or elective†)	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
Sophomore Year	21	21	21

Junior Year

Engineering Mechanics, E.M. 313	3	0	0
Strength of Materials, E.M. 321, 322	0	3	3
Materials Testing Laboratory, M.E. 322	0	1	0
Materials of Construction, C.E. 321	0	0	3
Sanitary and Mech. Equipment of Buildings, C.E. 365, 366	3	3	0
General Economics 201, 202, 203	3	3	3
Freehand Drawing 1, 2, 3, Arch. 101, 102, 103	2	2	2
Photographic Practice, Arch. 304	0	0	1
Intermediate Design B-1, B-2, B-3, Arch. 301, 302, 303	3	3	3
History of Architecture 1, 2, 3, Arch. 321, 322, 323	3	3	3
**Electives	3	3	3
Junior Year	20	21	21

Summer requirement: 6 weeks industrial employment.

Senior Year

Reinforced Concrete, C.E. 421, 422	3	3	0
Graphic Statics, C.E. 423, 424, 425	1	1	1
Theory of Structures, C.E. 431a, 432a	3	3	0
Specifications, Arch. 416	0	0	3
Building Materials I, Arch. 409	3	0	0
Electrical Equipment of Buildings, E.E. 343	0	0	3
Business Law, Econ. 307	3	0	0
Architectural Design, E-1, E-2, Arch. 351, 352	3	3	0
Architectural Office Practice, Arch. 411, 412, 413	2	2	2
Architectural Estimates, Arch. 408	0	0	2
Structural Design, C.E. 426, 427	0	3	3
History of Sculpture and Mural Decoration, Arch. 325	0	0	2
**Electives	3	3	3
Senior Year	21	18	19

Total credits required for completion of course: 243. Degree: Bachelor of Architectural Engineering.

All seniors will be required to go on the inspection trip as part of their curriculum.

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* Students who have been certified by the Department of English as proficient in English may substitute for the course listed French, M.L. 101.

† Or six credits in one or two of the following departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

CURRICULUM IN ARCHITECTURE

Freshman or First Year

COURSES	CREDITS First Term	Second Term	Third Term
Mathematics 101, 102, 103	6	6	6
Composition, Eng. 101, 102, 103	3	3	3
French, or Modern Language, M.L. 101, 102, 201, or Equiv.	3	3	3
Pencil Sketching, Arch. 100	1	1	1
World History, Hist. 104	2	2	2
Architectural Drawing, Arch. 107 (or M.E. Equivalent)	3	3	0
Descriptive Geometry, M.E. 107	0	0	3
Military Science I, Mil. 101, 102, 103 (or elective†)	2	2	2
Fundamental Activities and Hygiene, P.E. 101, 102, 103	1	1	1
Freshman or First Year	21	21	21

Summer Requirements: Surveying, C.E. s200, 3 credits.

Sophomore or Second Year

Calculus I, II, and III, Math. 201, 202, 303	4	4	4
Background for Modern Thought (or Elective)	3	3	3
Physics for Engineers, Phys. 201, 202	4	4	0
Shades and Shadows, Arch. 205	2	0	0
Engineering Mechanics, E.M. 301, 302	0	3	3
Elements of Architecture I, II, III, Arch. 201, 202, 203	3	3	3
History of Sculpture and Mural Decoration, Arch. 325	0	0	2
Working Drawings, Arch. 305	0	0	2
Perspective Drawing, Arch. 206	1	0	0
Military Science II, Mil. 201, 202, 203 (or elective†)	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
Sophomore or Second Year	20	20	20

Junior or Third Year

Business English, Pub. Speaking, Literature (or M.L.)	3	3	3
Strength of Materials, E.M. 321, 322	0	3	3
Materials Testing Laboratory, H.E. 332	0	1	0
Materials of Construction, C.E. 321	3	0	0
Sanitary and Mech. Equip. of Buildings, C.E. 364	3	0	0
Freehand Drawing 1, 2, 3, Arch. 101, 102, 103	2	2	2
Architectural Office Practice, Arch. 411, 412	2	2	2
Intermediate Design, B-1, B-2, B-3, Arch. 301, 302, 303	3	3	3
History of Architecture 1, 2, 3, Arch. 321, 322, 323	3	3	3
**Electives	3	3	3
Junior or Third Year	22	20	19

Summer Requirements: Six Weeks Industrial Employment.

Senior or Fourth Year

General Economics, Econ. 201, 202, 203	3	3	3
Reinforced Concrete, C.E. 421, 422	3	3	0
Graphic Statics, C.E. 423, 424, 425	1	1	1
Electric Equipment of Buildings, E.E. 343	0	0	3
Architectural Design B-4, B-5, B-6, Arch. 353, 354, 355	6	6	6
History of Architecture 4, Arch. 421	0	3	0
Building Materials, Arch. 409	3	0	0
Professional Practice, Arch. 414	0	0	1
Clay Modeling, Arch. 114	1	1	1
Photographic Practice, Arch. 304	0	0	1
**Electives	3	3	3
Senior or Fourth Year	20	20	19

† Or six credits in one or two of the following departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

Professional or Fifth Year

COURSES	CREDITS First Term	Second Term	Third Term
Business Law, Econ. 307	3	0	0
Specifications, Arch. 416	0	0	3
Theory of Structures, C.E. 431a, 432a	3	3	0
Architectural Design A-1, A-2, A-3, Arch. 401, 402, 403	6	6	6
Freehand Drawing 4, 5, 6, Arch. 211, 212, 213	3	3	3
Architectural Composition, Arch. 407	2	0	0
City Planning, Arch. 415	0	2	0
Architectural Estimates, Arch. 408	0	0	2
**Electives	3	6	6
Fifth Year	20	20	20

Total Credits: 306. Completion of the course to be recognized by granting the degree of Bachelor of Architecture.

All seniors will be required to go on the inspection trip as part of their curriculum.

CERAMIC ENGINEERING

Professor A. F. Greaves-Walker, Head of the Department
Assistant Professor W. W. Kriegel; Instructor W. A. Scholes
Teaching Fellow R. P. McCabe

The Department of Ceramic Engineering occupies its own building, which contains classrooms, a design room, a chemical laboratory, an equipment laboratory, and a kiln laboratory.

The Equipment Laboratory contains an adequate variety of machines for preparing and processing ceramic bodies of all kinds and making ceramic products on a laboratory scale. It also contains the necessary equipment for carrying on ceramic research, and the testing of materials and products.

The Kiln Laboratory contains eleven kilns and furnaces of different types, which provide for the firing or testing of all ceramic materials and products.

Ceramic Engineering includes those phases of engineering which have to do with the study of the nonmetallic minerals, except fuels and ores as such, and the manufacture of products therefrom. The nonmetallic minerals compose over 90 per cent of the earth's suface, and the industries based on them rank above the automobile, and the iron and steel industries, in value of product. Principal among these products are those made of clay and associated minerals, such as building brick, hollow tile, sewer pipe, refractories, wall and floor tile, tableware, pottery, electrical porcelain, chemical and sanitary stoneware, flat glass, chemical and table glassware, enameled iron and steel, portland and hydraulic cements, and limes.

North Carolina has enormous deposits of shale, clay, kaolin, feldspar, sand, limestone, and other ceramic minerals, equal in quality to any others in the United States, and with the introduction of modern processes and

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

methods will produce in future quantities of ceramic products and adequately develop its ceramic industries.

The demand for ceramic engineers has far exceeded the supply for a number of years past, there being fewer than 100 ceramic engineers graduated in the United States each year. It is with the idea of supplying this demand and developing the latent resources of North Carolina that a four-year curriculum in Ceramic Engineering, leading to the degree of Bachelor of Ceramic Engineering, is offered.

The instruction in Ceramic Engineering is enriched by the intensive investigation of ceramic resources and manufactures constantly under way in connection with the Engineering Experiment Station. Students will have the great advantage of these investigations along with their other instruction.

Courses in advanced subjects for graduate students are offered in Advanced Refractories and Furnaces, Industrial Adaptability of Clays, Designing of Ceramic Equipment and Plants, Advanced Silicate Technology, Glass Technology, and Ceramic Research.

The curriculum in Ceramic Engineering, which has been accredited by the Engineers Council for Professional Development, contains fundamental courses, and courses in Ceramic, Geological, Civil, Electrical, and Mechanical Engineering, as well as in Economics, to provide for the general training in engineering with the particular study of Ceramic Engineering. The Ceramic Engineering courses consist of the theoretical and practical study of the mining, manufacturing, and testing of ceramic materials and products as well as the design of ceramic equipment and plants.

Graduates in Ceramic Engineering are employed in the ceramic industries as plant executives, research engineers, plant-control engineers, sales engineers, product-control engineers, plant designers and constructors, equipment manufacturers, consulting engineers and ceramic chemists and technologists. Graduates of the Department at State College, which ranks fourth in registration in the United States, are successfully holding positions in all of these branches.

CURRICULUM IN CERAMIC ENGINEERING

Freshman Year

For Freshman year, refer to page 97.

Surveying, C.E. s200, 2 credits, is required in the summer immediately following the freshman year.

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Calculus I, II, III, Math. 201, 202, 303	4	4	4
Qualitative Analysis, Chem. 211	4	0	0
Quantitative Analysis, Chem. 212	0	4	0
Physics for Engineers, Phys. 201, 202, 203	4	4	4
Engineering Geology, Geol. 220	3	0	0
Mineralogy, Geol. 230	0	0	3
*Business English, Public Speaking, and English Literature, Eng. 211, 231, 261	3	3	3
Ceramic Materials, Cer.E. 102	0	3	0
Ceramic and Mining Processes, Cer.E. 103	0	0	3
†Military Science II, Mil. 201, 202, 203	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	21	21	20

Junior Year

Engineering Mechanics, E.M. 301, 302	3	3	0
Strength of Materials, E.M. 321	0	0	3
General Economics, Econ. 201, 202, 203	3	3	3
Mechanical Drawing, M.E. 212, 213	0	2	2
Drying Fundamentals and Practice, Cer.E. 201	3	0	0
Firing Fundamentals and Practice, Cer.E. 252	0	3	0
Ceramic Calculations, Cer.E. 253	0	0	3
Ceramic Products, Cer.E. 203	0	0	3
Engineering Thermodynamics I, M.E. 305, 306	3	3	0
Mechanical Engineering Laboratory I, M.E. 311, 312	1	1	0
Materials Testing Laboratory, H.E. 332	0	0	1
Thermal Mineralogy, Geol. 338	0	3	0
Physical Chemistry, Chem. 331	5	0	0
Business Law, Econ. 307	0	0	3
**Electives	3	3	3
	21	21	21

Summer requirements: Six weeks industrial employment.

Senior Year

Refractories, Cer.E. 403	0	0	3
Silicates, I and II, Cer.E. 303, 304	3	3	0
Ceramic Laboratory, Cer.E. 311, 312, 313	3	3	3
Ceramic Designing, Cer.E. 314, 315	0	4	4
Pyrometry, Cer.E. 305	1	0	0
Technical Writing I, Eng. 321	3	0	0
Elements of Electrical Engineering I, E.E. 320, 321	0	3	3
Strength of Materials, E.M. 322	3	0	0
Optical Mineralogy, Geol. 431, 432, 433	3	3	3
**Electives	3	3	3
	19	19	19

All seniors are required to go on the inspection trip as part of their curriculum.

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* Students who have been certified by the Department of English as proficient in English may substitute for the courses listed Elementary German, M.L. 102.

† Or 6 credits in one or two of the following departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

CHEMICAL ENGINEERING

Professor E. E. Randolph, Head of the Department

Associate Professor B. E. Lauer; Assistant Professors F. C. Johnson, W. A. Bain; Instructor T. C. Doody; Teaching Fellows L. F. Drum, J. F. Seely

Facilities.—The laboratories of the Department of Chemical Engineering are in Winston Hall. They consist of a unit operations laboratory; an exhibit room; Water and Engineering-Materials Laboratory; Electrochemical Engineering Laboratory; Fuel- and Gas-Technology Room; Oil and Hydrogenation Laboratory; Experimental Rayon Plant; Destructive Distillation Installation; Dark Room for metallographic and micro-photographic study; the Graduate Research Laboratory; Unit Processes Laboratory; Plant and Equipment-Design Laboratory; Cellulose Laboratory.

The Chemical Engineering laboratories have suitable equipment, much of it specially designed, for the study of the main processes and plant problems of the chemical engineering industries. They are supplied with direct and alternating current, gas, water, steam, compressed air, electric motors, generators, and storage batteries. They are equipped with precision and control instruments, such as refractometer, surface-tension apparatus, polariscope, potentiometer, microscopes, colorimeter, calorimeters, tint-photometer, thermocouples, and optical pyrometer. They are equipped also with filter presses, centrifuges, crushers, grinders and pulverizers, vacuum pan, stills, autoclave, jacketed kettle, gas, water, and electrical meters, equipment designed and built, such as double-effect evaporators, heat exchangers, flow-of-fluid experimental equipment for orifice, venturi, pitot, weir gauges, column still, absorption tower, crystallizer, rotary and tunnel driers, gas furnace, resistance and arc electric furnace, and humidifier. An experimental refinery and hydrogenation plant for vegetable and other oils has been installed. A complete permutit softening equipment forms a unit of an experimental water-purification and -treatment system. In addition, the nearby industrial plants offer opportunity for study of plant operation and problems.

Recently added to the Department of Chemical Engineering is a valuable exhibit room, where products of many chemical engineering industries are exhibited. These exhibits, used for instruction, serve to give the student very valuable training. They are arranged in the form of flow sheets showing the various steps in manufacturing processes.

The Department Shop is supplied with machines and tools for building and repairing equipment.

Curriculum.—This curriculum provides thorough training in unit operations and unit processes, and in the methods of manufacturing industrial chemical products on a large scale. It includes basic courses in Chemistry, Physics, Mathematics, and fundamental Engineering as a background for the professional Chemical Engineering training of this department, so that

the graduate is prepared to enter any field of applied chemical work as a junior engineer.

The Chemical Engineer is expected to determine the process, the material, the design, and the economic capacity of the equipment needed. Efficient production requires exact control in every stage of the process. He must devise efficient and economical methods, discover sources of loss and the remedy, recover by-products, convert waste products, and make industrial calculations of input, output, efficiency, quality, and cost.

North Carolina is a center of chemical industries in the South, with an annual output estimated at approximately one-fourth billion dollars. Some of the largest chemical industries of the country are located in this State, manufacturing such products as paper, fertilizers, vegetable oils, food products, leather, bromine, aluminum, metallurgical products, paints and varnishes. Such industries require properly trained Chemical Engineers. Chemical Engineering offers therefore inviting opportunities to render distinct service to the welfare and comfort of the people.

Graduates find employment in such fields as control work and industrial research; as technologists, superintendents of chemical industries, municipal engineers, engineers in the State and Federal health service, consulting chemical engineers, manufacturers of chemicals and of chemical equipment, chemical salesmen and representatives, developers of new chemical industries.

Ninety-three per cent of the graduates of this Department are successfully engaged in Chemical Engineering work. Because chemical problems are intricate, and scientific chemical-control work in industries is required, salaries for Chemical Engineering graduates are inviting. Many graduates of this Department now hold very responsible positions.

The Department coöperates with the State Departments in their chemical problems. Facilities are available for graduate work, upon which emphasis is placed.

CURRICULUM IN CHEMICAL ENGINEERING

Freshman Year

For the Freshman year, refer to page 97.

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Calculus I, II, III, Math. 201, 202, 303	4	4	4
*Business English, Public Speaking, and English or American Literature, Eng. 211, 231, any one of (261-267)	3	3	3
Introduction to Chemical Engineering, Chem.E. 201, 202, 203	1	1	2
Physics for Engineers, Phys. 201, 202, 203	4	4	4
Qualitative Analysis, Chem. 211	4	0	0
Quantitative Analysis, Chem. 212, 213	0	4	4
Shopwork, M.E. 122, 123	1	1	0
†Military Science II, Mil. 201, 202, 203	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	20	20	20

Junior Year

Engineering Mechanics, E.M. 301, 302	3	3	0
Strength of Materials, E.M. 320	0	0	3
Organic Chemistry, Chem. 421, 422, 423	4	4	4
Chemical Engineering I, Chem.E. 311, 312, 313	3	3	3
Industrial Stoichiometry, Chem.E. 331	0	0	3
Chemical Engineering Laboratory I, Chem.E. 321, 322, 323	1	1	1
Physical Chemistry, Chem. 431, 432	4	4	0
Fluid Mechanics, E.M. 330	0	0	3
Elements of Electrical Engineering I, E.E. 321, 322	3	3	0
Machine Shop I, M.E. 225, 226	1	1	0
Electives	3	3	3
	22	22	20

Summer requirement: Six weeks industrial employment.
** Pilot Plant Practice—3 credits.

Senior Year

Principles of Chemical Engineering, Chem.E. 411, 412, 413	3	3	3
Water Treatment, Chem.E. 421	3	0	0
Chemistry of Engineering Materials, Chem.E. 422	0	3	0
Electrochemical Engineering, Chem.E. 423	0	0	3
Chemical Engineering Lab. and Design II, Chem.E. 431, 432, 433	2	2	2
Heat Engineering II, M.E. 301, 302	3	3	0
Mineralogy, Geol. 230	0	0	3
General Economics, Econ. 201, 202, 203	3	3	3
Elementary Modern Physics, Phys. 307	3	0	0
‡Technical Writing I, Eng. 321	0	3	0
‡Business Law, Econ. 307	0	0	3
Electives	3	3	3
	20	20	20

All seniors are required to go on the inspection trip as part of their curriculum.

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* Students who have been certified by the Department of English as proficient in English may substitute for the courses listed German, M.L. 102.

† Or 6 credits in one or two of the following Departments: Economics, Psychology, History, Modern Language, Sociology.

‡ With the approval of the adviser, courses in Education, English, History and Political Science, German, Advanced Mathematics, Botany, may be substituted for Technical Writing, and Business Law.

** Elective Summer of 1941.

CIVIL ENGINEERING

Professor C. L. Mann, Head of the Department

Professors B. R. Van Leer, W. C. Riddick, Harry Tucker, T. S. Johnson; Associate Professor C. R. Bramer; Assistant Professors James Fontaine, C. M. Lambe; Instructor W. F. Babcock.

The Department of Civil Engineering is located in the Civil Engineering Building in which the offices, classrooms, laboratories, and instrument rooms were designed and built to provide suitable facilities for efficient teaching and laboratory demonstrations.

The equipment common to general civil engineering includes surveying instruments, transits, levels, plane tables, current meters, sextants, planimeters, calculating machines, blueprint apparatus, lantern slides, and moving-picture machine. Special equipment includes precise surveying instruments, etc., and such equipment as Beggs deformeter and others of this class.

The equipment in the Materials-Testing Laboratory, in the Cement- and Bituminous-Materials-Testing Laboratory, and in the Sanitary Laboratory, fully meet the present-day requirements for laboratory instruction.

Soil mechanics is a new course in the curriculum. A laboratory for this course has been furnished and equipped with the newest apparatus now in use by laboratories engaged in the study of the action of soils relative to engineering problems dealing with structures, foundations, and highway subgrades.

Civil Engineering is the oldest and most general of all the branches of modern engineering; in fact, from it all of the others have developed. The usefulness of Civil Engineering is so well recognized that a student who does not have a strong predilection for some other special branch may be safely advised to study Civil Engineering.

The Civil Engineering curriculum in the School of Engineering has been accredited by the Engineers' Council for Professional Development and is a well-balanced course of study, upon the completion of which a young man is equipped to assume the duties of junior engineer in any of the following important fields: design, construction, operation, or testing of water-power developments, railroads, highways, water supplies, sewerage systems.

The Civil Engineering Department offers a student the choice of the following four options:

(a) General Civil
(b) Construction
(c) Highway
(d) Sanitary

The first two years of these curricula are the same. They begin to differentiate slightly in the junior year and more decidedly in the senior year; essentially, however, they are the same and are designed to develop in the student engineer a well-trained mind, one which reasons logically, accurately,

quickly. This is accomplished by a thorough training in applied mathematics and physics, which is supplemented with practical work in the field, drafting rooms, and laboratories.

More men are practicing Civil Engineering in North Carolina than any other branch of engineering, and it is to train young men to serve under those already in the profession and subsequently to follow in their footsteps that the Civil Engineering curricula are offered.

City Management.—Students in Civil Engineering may by proper selection of their electives during the junior and senior years prepare themselves for work eventually leading to the position of City Manager.

CONSTRUCTION ENGINEERING

Professor C. R. Bramer, Faculty Adviser

North Carolina's progress indicates great increase in building and general construction. Construction needs more and better-trained men to meet the immediate demands as well as to anticipate the increased demands of the future. The contractor, to be successful, must conduct his business systematically and economically. Therefore he must learn not only general engineering technique, but also something of architecture and business methods and practices; he must delve further into construction, and learn the principles involved, the methods, practices, and successful policies in use.

Combined into this curriculum are the fundamental courses in the Civil Engineering curriculum, courses in Architecture, courses dealing with business, and special courses in Construction Engineering in the junior and senior years.

The theory in the Construction Engineering courses is supplemented by frequent inspection trips to projects under construction; particular emphasis is placed upon estimating, modern methods, and management of operations.

This curriculum is designed to prepare the students to enter the work of actual construction of modern buildings and to lay a foundation for future work as owners, managers, or executives in the construction industry.

The equipment available for instruction in Construction Engineering consists of a large file of complete plans and specifications for various types of structures, many samples of different building materials, lantern slides illustrating methods of construction, and a comprehensive file of trade literature and publications. The equipment of the entire Department of Civil Engineering is available for instruction.

HIGHWAY ENGINEERING

Professor Harry Tucker, Faculty Adviser

North Carolina has during the past twenty years, made remarkable progress in the building of good roads. Most of the counties and cities in the State have also spent large sums in road construction and maintenance.

The building of roads and their proper maintenance are engineering problems to be handled by technically trained men. Since Highway Engineering is, fundamentally, a special division of the broad field of Civil Engineering, the curriculum for the first three years is identical with the regular Civil Engineering curriculum. In the fourth year, however, the student who specializes in Highway Engineering is given more specific instruction in those subjects pertaining to Highway Engineering.

State College offers unusual opportunities to young men to study Highway Engineering. Not only are the necessary facilities available for theoretical instruction, but there are in and near Raleigh many opportunities for studying the practical application of the principles of highway construction. Raleigh and Wake County have built most of the different types of road surfaces; the laboratories of the State Highway and Public Works Commission are available for inspection, and numerous experimental sections of road periodically being constructed by the Commission near Raleigh can be examined.

The equipment at the College for instruction in Highway Engineering is fairly complete, and is constantly being added to and enlarged. The Materials-Testing Laboratory in the Civil Engineering Building is well-equipped for testing all materials used in road building; there is full field equipment for surveys, and modern drawing rooms provided with the necessary furniture and instruments. There is also a large lecture room fitted for the use of lantern slides and motion pictures.

SANITARY ENGINEERING

Professor T. S. Johnson, Faculty Adviser

Because Sanitary Engineering so vitally concerns the health of the people, and because of the progress in North Carolina in this field, the demand for men trained in Sanitary Engineering has increased.

The Sanitary Engineering option is offered to meet this need. In the main it is the curriculum in General Civil Engineering with selected courses in Bacteriology, Chemical Engineering, and Sanitary Engineering.

As there is a large demand in this State for men familiar with the design and operation of water and sewage plants, special attention is given to the actual design and practical operation of water-purification and sewage-disposal plants.

The Sanitary Engineering Laboratory equipment is similar to that used in water- and sewage-plant laboratories; the student makes the same tests, using standard methods, as are made in water- and sewage-plant laboratories.

The City of Raleigh water-purification plant and the College gymnasium swimming-pool filter plant are available for practical demonstration and instruction. Through the coöperation of the Bureau of Sanitary Engineering, State Board of Health, located in Raleigh, the student has an opportunity to study all phases of its work, not only in Sanitary Engineering, but also in the broad field of public health.

Upon graduation, students are prepared to hold positions as water- and sewage-plant operators, assistant resident engineers with private consulting engineers, junior engineers with State boards of health, and with the United States Public Health Service. After a few years of experience, graduates may be expected to advance to positions as superintendents of waterworks, city engineers and city managers, consultant engineers, State sanitary engineers, and senior engineers with the United States Public Health Service.

CURRICULUM IN CIVIL ENGINEERING

General Civil Engineering — **Construction Engineering**
Highway Engineering — **Sanitary Engineering**

Freshman Year

For the Freshman year, refer to page 97.

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Calculus I, II, and III, Math. 201, 202, 303	4	4	4
*Business English, Public Speaking, Eng. 211, 231, and one term English or American Literature	3	3	3
Physics for Engineers, Phys. 201, 202, 203	4	4	4
Engineering Geology, Geol. 220	3	0	0
Theoretical Surveying, C.E. 221, 222, 223	3	3	3
Field Surveying, C.E. 225, 227	1	0	1
Mapping, C.E. 226	0	1	0
Engineering Mechanics, E.M. 311, 312	0	3	3
†Military Science II, Mil. 201, 202, 203	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	21	21	21

Surveying, C.E. s310, concurrent with Summer School, 3 credits.

Junior Year

Required

Elements of Electrical Engineering I, E.E. 321, 322	3	3	0
Engineering Mechanics, E.M. 313	3	0	0
Strength of Materials, E.M. 321, 322	0	3	3
Materials of Construction, C.E. 321	3	0	0
Highway Engineering I, H.E. 322, 323	0	3	3
General Economics, Econ. 201, 202, 203	3	3	3
	12	12	9

* Students who have been certified by the Department of English as proficient in English may substitute for the courses listed French, M.L. 101.

† Or 6 credits in one or two of the following Departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

Choice must be made of one of the following:

GENERAL CIVIL OPTION

COURSES	CREDITS First Term	Second Term	Third Term
Fluid Mechanics, E.M. 330	0	3	0
Hydraulics, C.E. 443	0	0	3
Heat Engineering III, M.E. 303	0	0	3
Technical Writing I, Eng. 321	3	0	0
Electives	3	6	3
	18	21	18

HIGHWAY OPTION

Fluid Mechanics, E.M. 330	0	3	0
Hydraulics, C.E. 443	0	0	3
Heat Engineering III, M.E. 303	0	0	3
Electives	6	6	3
	18	21	18

CONSTRUCTION OPTION

Fluid Mechanics, E.M. 330	0	0	3
Sanitary and Mechanical Equipment of Buildings, C.E. 365	3	0	0
Materials Testing Laboratory, H.E. 332, 333	0	1	1
Construction Engineering I, C.E. 361, 362, 363	3	3	3
Electrical Equipment of Buildings, E.E. 343	0	0	3
Electives	3	3	3
	21	19	22

SANITARY OPTION

Fluid Mechanics, E.M. 330	0	3	0
Hydraulics, C.E. 443	0	0	3
General Bacteriology, Bot. 402	0	4	0
Aquatic Biology, Bot. 473	0	0	2
Sanitary Engineering, C.E. 383	0	0	3
Treatment of Water and Sewage, Chem. E. 308	3	0	0
Electives	3	3	3
	18	22	20

Senior Year

Required

Reinforced Concrete, C.E. 421, 422	3	3	0
Soil Mechanics, C.E. 435	3	0	0
Theory of Structures, C.E. 431, 432	3	3	0
Structural Design, C.E. 426, 427	0	3	3
Graphic Statics, C.E. 423	1	0	0
	10	9	3

Choice must be made of one of the following options:

GENERAL CIVIL OPTION

COURSES	CREDITS First Term	Second Term	Third Term
Railroad Economics, C.E. 442	0	3	0
Transportation, H.E. 423	0	0	3
Applied Astronomy, C.E. 453	0	0	4
Materials Testing Laboratory, H.E. 332, 333	0	1	1
Waterworks, C.E. 485	3	0	0
Sanitary Engineering Laboratory, C.E. 481, 482	1	1	0
Sewerage, C.E. 486	0	3	0
Business Law, Econ. 307	0	0	3
Electives	6	3	6
	20	20	20

HIGHWAY OPTION

Transportation, H.E. 423	0	0	3
Applied Astronomy, C.E. 453	0	0	4
Materials Testing Laboratory, H.E. 332, 333	0	1	1
Highway Engineering II, H.E. 421, 422	3	3	0
Highway Office Practice and Design, H.E. 425, 426	1	1	0
Business Law, Econ. 307	0	0	3
Electives	6	6	6
	20	20	20

CONSTRUCTION OPTION

Construction Engineering II, C.E. 461, 462, 463	3	3	3
Construction Methods, C.E. 469	0	0	3
Specifications, C.E. 467	0	0	3
Economics or Social Sciences	3	3	3
Electives	3	3	3
	19	18	18

SANITARY OPTION

Materials Testing Laboratory, H.E. 332, 333	0	1	1
Sanitary Engineering Laboratory, C.E. 481, 482	1	1	0
Waterworks, C.E. 485	3	0	0
Water Purification, C.E. 488	0	3	0
Sewerage, C.E. 486	0	3	0
Sewage Disposal, C.E. 489	0	0	3
Financing of Sanitary Utilities, C.E. 483	0	0	3
Technical Writing I, Eng. 321	0	0	3
Business Law, Econ. 307	3	0	0
Electives	3	3	6
	20	20	19

All seniors are required to make the official engineering inspection trip.

DEPARTMENT OF ELECTRICAL ENGINEERING

Professor William Hand Browne, Jr., Head of the Department

Professors J. E. Lear, R. S. Fouraker; Associate Professors R. R. Brown, L. M. Keever; Assistant Professors R. J. Pearsall, K. B. Glenn, E. W. Winkler; Laboratory Assistant J. H. Nichols; Teaching Fellow J. F. Mynes.

Buildings and Equipment. The Department is housed in Daniels Hall. This is an L-shaped building, the main part of which is four stories of brick, stone and steel construction, with a two-story wing of shop construction, the sides of which are almost entirely of glass.

Laboratories.—The laboratories can be classified as follows: Dynamo, Communications and Transmission; Photometric, Measurements, Standards, High-Tension, and Electronics. The Dynamo, High-Tension, and Electronics Laboratories are located in the wing; all the others are in the basement of Daniels Hall.

The Dynamo Laboratory.—This room is sixty by eighty feet in area. Here the characteristics and operating conditions of representative types of machines are studied. This laboratory has a total of approximately 300 kva of motors and generators (about 50 in all). There are about 150 kilowatts available in motor-generator sets, and rotary converters.

There are also available approximately 150 kva of transformers for tests.

The laboratory is well supplied with accessory equipment, such as load units, field rheostats, starting boxes, prony brakes, inductances, capacitors, and other devices.

The Communications and Transmission Laboratory.—The Communications and Transmission laboratory is equipped for measurements and tests on communication and power-transmission circuits. It contains an outstanding artificial power-transmission line on which power-transmission-line characteristics can be duplicated for study and testing. A complete long-line telephone system, with two two-way repeaters and associated apparatus, arranged for all usual and several special tests, is another feature of this laboratory. Other equipment for study and test includes an artificial line for the study of corona effects, artificial telephone lines, telephone central-station equipment, telegraph equipment, teletypewriter equipment, and a complete 100-line private automatic exchange with its associated appliances. Test equipment includes standard oscillators, transmission-measuring sets, noise-measuring sets, power-level instruments, audibility meters, attenuators, and apparatus for measuring distortion.

Photometric Laboratory.—This laboratory is housed in a room especially fitted up for the purpose. The equipment includes photometric standard lamps, two 300-cm. Leeds & Northrup photometer bars, a 36" Ulbrecht spherical photometer, two Macbeth-Evans Illuminometers, several Weston foot-candle meters, and other portable photometers. There is also the usual

list of accessories, such as sight boxes of the Lummer-Brodhun and flicker types, rotating disks, and screens.

Measurements Laboratory. The Measurements Laboratory is arranged for making standard and special tests and measurements on the fundamental electrical units. The apparatus includes standards of resistance, inductance and capacitance, with special bridges for the measurement of each, Fahy permeameter and Epstein core-loss test sets for magnetic measurements on iron and steel, a special double-bridge and oil-bath arrangement for conductivity measurements, and other special test appliances.

The Standards Laboratory.—The Standards Laboratory is arranged for making accurate calibration tests on all types of electrical instruments. There are two specially designed test tables equipped with convenient means of controlling current and voltage. A large number of high-quality instruments of all types is provided. These include standard cells, a Leeds-Northrup Type-K and a Queen-Gray Potentiometer, standard voltmeters, ammeters, wattmeters, watt-hour meters, transformers, resistances, condensers and inductances. Certificates of accuracy from the National Bureau of Standards in Washington, D. C., have been secured for many of these instruments. Special equipment used includes a sine-wave generator, a constant-speed frequency set, Silsbee current and potential transformer test sets, and others.

High-Tension Laboratory.—The High-Tension Laboratory has a 7½-kva 50,000-volt, and a 10-kva, 100,000-volt transformer. The induction regulators which go with these transformers make it possible to vary the voltage from zero to 150,000 volts. There is also standard oil-testing equipment for testing transformer oil, a standard spark gap, and numerous insulators of various types for carrying on routine tests. Frequent use is made of the cathode-ray oscillograph in studying surges and other disturbances.

The Electronics Laboratory.—The Electronics Laboratory is arranged for testing electronic devices and their associated equipment and circuits. It is supplied with the various types of electron tubes, including vacuum tubes, gaseous tubes, phototubes, mercury-vapor tubes, cathode-ray tubes, and apparatus for operating and testing them. The test equipment includes vacuum-tube bridge and test sets, oscilloscopes, and the various sensitive instruments required for electronic measurements. Television equipment is being provided through a recent gift to the Department.

Instrument Room and Shop.—A centrally located Instrument Room serves all of the laboratories. Instruments are issued upon requisition, and returned at the end of the laboratory period. They are kept in repair by a competent man who divides his time between the care of the instruments and the Departmental Shop, which adjoins the Instrument Room. The Shop is fitted up with sufficient tools for making all minor repairs to laboratory equipment, as well as apparatus for special research.

Storage-Battery Room.—This room contains two 120-volt, 100-ampere-hour batteries; two 12-volt, 200-ampere hour batteries, the complete battery

and counter emf cells for operating the automatic telephone station, and portable cells of various types. Motor-generator sets, and mercury-vapor and tungar rectifiers are provided for charging the batteries.

Purposes of the Curriculum. The training of young men for active work in a field as wide and diversified as the electrical industry demands, above all else, a thorough preparation in the sciences underlying all branches of engineering, a broad foundation in fundamental electrical theory, and a clear understanding of the characteristics of electrical machinery and systems. These factors are essential for success, whether it be in the design and manufacture of electrical equipment, in power production and utilization, or the fields of communication and signaling, as in all these branches of the industry technical advances are being made with increasing rapidity. With this object in view, the curriculum in Electrical Engineering includes comprehensive training in mathematics, physics, and chemistry the fundamental sciences and adequate training in allied branches of engineering. All courses are accompanied by coördinated work in the laboratory and intensive drill in the applications of theory by means of carefully planned problems. In the senior year, the student is offered two options, one in the fundamentals of communication, the other in the field of industrial applications.

The curriculum includes a thorough drill in the preparation of technical reports. There is a decided trend in industry to select for high administrative positions men who have had good technical training and have in addition developed executive ability. The electives included in the curriculum in Electrical Engineering enable a student inclined toward executive work to take nonprofessional courses which deal with the economic and sociological problems of the day. On the other hand, those students who prefer the more technical phases of engineering can select scientific electives specially helpful in that particular branch of the profession into which they wish to go. Students are urged to plan as early as possible a worth-while group of elective courses so chosen as to round out their curriculum.

Each student is also required to spend at least six weeks in satisfactory industrial employment before receiving his degree, and, during the the senior year, to make an inspection trip to a number of modern electric installations and submit a report upon these.

Close coördination in the work of the American Institute of Electrical Engineers is effected through a student branch at the College, which meets twice a month, through the State Section of the Institute, which meets several times during the year, and through the regional meetings of the Institute, one section of which is organized as a student-activities conference.

CURRICULUM IN ELECTRICAL ENGINEERING

Freshman Year

For the Freshman year, refer to page 97.

Surveying, C.E. s200, 3 credits, is required in the summer immediately following the freshman year.

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Calculus I, II, III, Math. 201, 202, 303	4	4	4
Physics for Engineers, Phys. 201, 202, 203	4	4	4
*Business English, Public Speaking and English or American Literature, Eng. 211, 231, 261 or 221 or 337	3	3	3
General Economics, Econ. 201, 202, 203	3	3	3
Metal Work, M.E. 128	0	0	3
†Electrical Engineering Fundamentals, E.E. 201, 202	3	3	0
‡Military Science II, Mil. 201, 202, 203	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	20	20	20

Junior Year

Engineering Mechanics, E.M. 311, 312, 313	3	3	3
Elementary Mechanism, M.E. 215, 216, 217	1	1	1
Engineering Thermodynamics, M.E. 307, 308, 309	3	3	3
Mechanical Engineering Laboratory II, M.E. 313, 314, 315	1	1	1
Technical Writing, Eng. 321	0	3	0
Differential Equations, Math. 401a	3	0	0
Elementary Modern Physics, Phys. 307	0	0	3
Electrical Engineering, E.E. 301, 302, 303	4	4	4
Electrical Engineering Laboratory, E.E. 311, 312, 313	2	2	2
Electives	3	3	3
	20	20	20

Summer requirement: Six weeks industrial employment.

Senior Year

Business Law, Econ. 307	0	0	3
Accounting for Engineers, Econ. 212	0	3	0
Engineering Economics, I.E. 301	3	0	0
Strength of Materials, E.M. 320	3	0	0
Electrical Industry, I.E. 402	0	3	0
Fluid Mechanics, E.M. 330, 331	3	3	0
Illumination, E.E. 437	0	0	2
Electric Transmission, E.E. 403	0	0	4
Electric Distribution, E.E. 433	0	0	3
Alternating Current Machinery, E.E. 401, 402	4	4	0
Electrical Engineering Laboratory, E.E. 411, 412, 413	2	2	2
First Option			
Electric Communication, E.E. 425, 426, 427	3	3	3
Second Option			
Electric Power Application, E.E. 421, 422, 423	3	3	3
Electives	3	3	3
	21	21	21

All seniors are required to go on the inspection trip as part of their curriculum.

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* Students who have been certified by the Department of English as proficient in English may substitute for the courses listed French, M.L. 101.

† Sophomore class is divided into two sections, one half taking Fundamentals and Metal Shop as scheduled, the other half taking the Metal Shop during the Fall Term and the Electrical Engineering Fundamentals the second and third terms.

‡ Or 6 credits in one or two of the following Departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

GENERAL ENGINEERING

The Curriculum in Engineering Leading to the Bachelor of Science in Engineering

Professor G. Wallace Smith, Administrative Officer

Today we live in a world of applied science, and for that reason the cultured gentleman of the twentieth century must know something of Engineering; otherwise, he is not well informed.

Engineering is not only a means of earning a livelihood; it is also a culture, a manner of thinking and living. It is founded upon the pure sciences of Mathematics, Physics, and Chemistry. It deals largely with Materials, Methods, Men, and Money. There appears to be an increasing demand for a curriculum which will offer to young men the opportunity to study Engineering as a field of culture, with no specific purpose of specialization but solely with the idea of securing a well balanced, thoroughly rigorous training and discipline in the basic principles of Engineering. Largely for this reason this curriculum is here offered. It is not easy; it omits no essential foundation stone in the present recognized Engineering curricula. The freshman year is identical with that of all other Engineering curricula. The sophomore, junior, and senior years differ from the specialized curricula only in that specialized technical courses are omitted and to some extent replaced by electives which must be taken more largely in the social sciences.

The advantages of this curriculum are several:

The student acquires a better, broader training in the basic principles of all Engineering curricula.

He has more electives and more freedom in the choice of these electives than in the specialized curricula.

The total length of the curriculum is nine term credits shorter than any of the specialized curricula. This permits a student more time for extra-curricular activities which are an essential part of the lives of all college students, yet because of the heavily loaded condition of the specialized curricula are frequently crowded out for all but the very best and most energetic students. This curriculum leads to the degree of Bachelor of Science.

CURRICULUM IN GENERAL ENGINEERING

Freshman Year

COURSES	CREDITS First Term	Second Term	Third Term
Same as now required for all Engineering students See page 97.	19	19	19

Sophomore Year

Calculus I, II, III, Math. 201, 202, 303	4	4	4
Physics, Phys. 201, 202, 203	5	5	5
English or Modern Language[1]	3	3	3
Military Science II, Mil. 201, 202, 203, or Elective	2	2	2
Sports Activities, P.E. 201, 202, 203	1	1	1
Elective[2]	4	4	4
	19	19	19
Summer School Surveying, C.E. 102s	3		

Junior Year[3]

Engr. Mechanics, E.M. 311, 312, 313	3	3	3
Strength of Materials, E.M. 321	0	0	3
Engr. Geology, Geol. 220	3	0	0
Thermodynamics and Lab., M.E. 307, 308, 309 and M.E. 313, 314, 315	3	3	3
	1	1	1
Economics, Econ. 201, 202, 203, or other Social Science	3	3	3
Business Law, Econ. 307	0	3	0
Elective[2]	6	6	6
	19	19	19

Senior Year

Elements of Elect. Eng. II, E.E. 331, 332, 333	4	4	4
Elements of Structures, C.E. 438, 439	0	3	3
Fluid Mechanics, E.M. 330	3	0	0
Strength of Materials, E.M. 322	3	0	0
Chem. of Eng. Materials, Chem.E. 212, 213	0	3	3
Accounting I, Econ. 212	3	3	3
Elective[2]	6	6	6
	19	19	19

[1] Students who do not make an average grade of B or better in Freshman English will be required to continue English in the Sophomore year.

[2] Free electives, except that not more than 15 term credits may be chosen from the technical or special technical courses in the School of Engineering.

[3] Students who contemplate the addition of a fifth year in Engineering for the purpose of obtaining a professional degree will consult the head of the department in which he intends to major and make such substitutions for the Engineering courses offered in this curriculum as are necessary for the satisfactory completion of the technical requirements of the degree sought.

GEOLOGICAL ENGINEERING

Professor Jasper L. Stuckey, Head of the Department
Assistant Professor John M. Parker; Instructor J. F. West;
Teaching Fellow J. W. Harrington

Facilities.—The function of the Department of Geology is twofold: first, to offer service courses required as prerequisites in the Agriculture, Education, and Engineering curricula; second, to administer the curriculum in Geological Engineering.

The classrooms, laboratories, and offices of the Department are in Primrose Hall. The equipment includes a varied collection of minerals, rocks, and fossils, illustrating the materials of different parts of the earth's crust; laboratory equipment for carrying on qualitative chemical and blowpipe examination of minerals and rocks; microscopes and other optical equipment; facilities for making thin sections of rocks and minerals; geological models; a collection of topographic maps and geologic folios illustrating important and typical areas in the United States.

Curriculum.—This curriculum is designed to train young men in the fundamentals of engineering with its special application to geology. Many engineering undertakings, especially major construction projects, such as large dams and reservoirs, tunnels, and large buildings, depend for success on exact knowledge of their geological setting. On the other hand, such geological problems as the economical development of mineral resources require the use of the precise methods of engineering. The curriculum combines these two sorts of information and training so necessary to success in this important specialized field.

Well-trained geological engineers are in demand by mining and oil companies, by State and Federal Geological Surveys, in the larger industries using mineral raw materials, by leading railways, by hydro-power concerns, and by technical schools as teachers of geology. Openings in this field have increased because of the recent recognition that the geological aspects of engineering and industry have been neglected. Consequently, men with the specialized training required have been difficult to find.

The mineral resources of the State offer important possibilities for large future developments. In Western North Carolina there exist valuable deposits of copper, nickel, iron, feldspar, mica, kaolin, cyanite, barite, granite, limestone, and other minerals; in Central North Carolina are coal deposits of promising quantity and quality, and large areas of pyrophyllite, of granite and other building stone; on the Coastal Plain are deposits of phosphate and marls. The production and use of these materials will undoubtedly be expanded as their availability becomes better known. Their profitable development will require increasing skill in geology and engineering, not merely in the extraction of the ore, but more especially in controlling the direction of the work.

New discoveries are sure to be made in such a richly mineralized area, but no longer by chance or superficial hunting. The day of the old-time,

untrained prospector is gone; every resource of science must now be utilized in this increasingly difficult search. The successful prospector of the future must understand the physical and chemical processes and conditions responsible for each kind of mineral deposit, as well as the secondary alterations they may undergo. He must be capable of using the complex and sensitive instruments devised for investigating the earth's crust far below the surface.

In these related fields of major engineering projects and the economical extraction of the mineral raw materials of industry, men well trained in the fundamentals of the physical sciences and in engineering technology will occupy key positions. In a civilization such as ours, this must be an increasingly large field.

CURRICULUM IN GEOLOGICAL ENGINEERING

Freshman Year

For the Freshman year, refer to page 97.

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Calculus I, II, III, Math. 201, 202, 303	4	4	4
*Business English, Public Speaking and English or American Literature, Eng. 211, 231, or any one of 261-267	3	3	3
Qualitative Analysis, Chem. 211	4	0	0
Quantitative Analysis, Chem. 212	0	4	0
Physics for Engineers, Phys. 201, 202, 203	4	4	4
Engineering Geology, Geol. 220	3	0	0
Historical Geology, Geol. 222	0	3	0
Mineralogy, Geol. 230	0	0	3
Geomorphology, Geol. 223	0	0	3
†Military Science II, Mil. 201, 202, 203	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	21	21	20

Junior Year

Engineering Mechanics, E.M. 301, 302	3	3	0
Fluid Mechanics, E.M. 330	0	0	3
Strength of Materials, E.M. 320	0	0	3
Heat Engineering II, M.E. 303	0	0	3
Elements of Electrical Engineering I, E.E. 321, 322	3	3	0
Physical Chemistry, Chem. 331	5	0	0
Theoretical Surveying, C.E. 221, 222	3	3	0
Field Surveying, C.E. 225	1	0	0
Mapping, C.E. 226	0	1	0
Straitigraphy and Index Fossils, Geol. 361	3	0	0
Petrology, Geol. 443	0	0	4
Advanced Mineralogy, Geol. 332	0	3	0
Structural Geology, Geol. 352	0	4	0
Geophysics, Geol. 353	0	0	4
Electives	3	3	3
	21	20	20

* Students who have been certified by the Department of English as proficient in English may substitute, for the courses listed, French, M.L. 101.

† Or 6 credits in one or two of the following departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

Senior Year

COURSES	CREDITS First Term	Second Term	Third Term
General Economics, Econ. 201, 202, 203	3	3	3
Business Law, Econ. 307	0	3	0
Optical Mineralogy, Geol. 431, 432, 433	3	3	3
Soil Mechanics, C.E. 435	3	0	0
Technical Writing I, Eng. 321	3	0	0
Economic Geology, Geol. 411, 412, 413	3	3	3
Advanced Engineering Geology, Geol. 462	0	3	0
Field Methods, Geol. 463	0	0	4
Mining Engineering, Mine Design, and Ore Dressing, Geol. 471, 472, 473	3	3	3
Electives	3	3	3
	21	21	19

All seniors are required to go on the inspection trip as part of their curriculum.

INDUSTRIAL ENGINEERING

Professor H. B. Shaw, Head of the Department
Professor F. F. Groseclose; Instructor David E. Henderson

North Carolina has an abundance of natural resources, and its industries are progressing steadily, which facts mean that there are increasing needs for educated personnel and informed leaders to deal with the complexities of modern industries.

Engineers have had a surprisingly large share in America's amazing industrial progress through their engineering knowledge and the adaptation of engineering methods and approach to the solution of industrial problems. To be even more effective in industry and modern life, engineers should, to their study of engineering, add knowledge of the economic and social sciences since they must deal not only with the materials and forces of nature, but also with men, money, and affairs, in their industrial relations.

The aim of the curriculum in Industrial Engineering is to prepare students to enter the employ of industries as engineering graduates, and, through experience, to develop into positions of responsibility and service; and thus to meet the demands of industries for men educated as engineers with special preparation for the activities of industries.

The curriculum provides thorough education in the subjects fundamental to engineering basic engineering courses, courses in Psychology, Economics, and Accounting — and, besides, Industrial Engineering courses, which apply engineering methods and principles to the study of industries; so that students may learn to make engineering, economic, and social analyses concurrently, and to apply them to the conduct of enterprises.

Electives from engineering and other College courses, approved by the adviser, offer opportunity for the development of individual aptitudes.

Students in Industrial Engineering get class and laboratory instruction from other Engineering Departments and from other college courses, which are correlated and extended by the Industrial Engineering courses.

The classrooms and offices of Industrial Engineering are in rooms 125 to 132, on the first floor of 1911 Dormitory.

CURRICULUM IN INDUSTRIAL ENGINEERING

Freshman Year

For the Freshman year, refer to page 97.

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Calculus I, II, and III, Math. 201, 202, 303	4	4	4
*Business English, Public Speaking, and English or American Literature, Eng. 211, 231 and any one of courses 261 to 267	3	3	3
Physics for Engineers, Phys. 201, 202, 203	4	4	4
General Economics, Econ. 201, 202, 203	3	3	3
Shopwork, M.E. 124, 125, 126	2	2	2
Industrial Organization, I.E. 101, 102, 103	3	3	3
†Military Science II, Mil. 201, 202, 203	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	22	22	22

Junior Year

Engineering Mechanics, E.M. 301, 302	3	3	0
Strength of Materials, E.M. 320	0	0	3
Engineering Thermodynamics II, M.E. 307, 308, 309	3	3	3
Mechanical Engineering Laboratory II, M.E. 313, 314, 315	1	1	1
Machine Shop II, M.E. 227, 228, 229	1	1	1
Factory Equipment, M.E. 224	0	0	3
Principles Accounting, Econ. 301, 302, 303	3	3	3
Management Engineering, I.E. 201, 202, 203	3	3	3
Electives	6	6	3
	20	20	20

Summer requirement: Six weeks industrial employment.

Senior Year

Technical Writing I, Eng. 321	0	3	0
Business Law, Econ. 307	3	0	0
Industrial Psychology, Psychol. 338	0	0	3
Materials of Construction, C.E. 321	3	0	0
Elements of Electrical Engineering II, E.E. 331, 332, 333	4	4	4
Engineering Economics, I.E. 301	3	0	0
Electrical Industry, I.E. 402	0	3	0
Industrial Engineering Problems, I.E. 312, 313	0	3	3
Investigation and Report, I.E. 433	0	0	3
Electives	6	6	6
	19	19	19

All seniors are required to go on the inspection trip as part of their curriculum.

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* Students who have been certified by the Department of English as proficient in English may substitute for the courses listed, French, M.L. 101. These students are required to take two years of French.

† Or 6 credits in one or two of the following Departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

MECHANICAL ENGINEERING

Professor L. L. Vaughan, Head of Department

Professors H. B. Briggs, E. G. Hoefer, R. B. Rice, H. E. Satterfield, F. B. Wheeler; Assistant Professors W. S. Bridges, G. G. Fornes; Instructors W. E. Adams, F. C. Bragg, T. C. Brown, J. C. Cheatham, W. B. Clement, R. L. Cope, T. E. Hyde, R. T. Lee, C. W. Maddison, M. R. Rowland; Instructor Emeritus, C. B. Park.

Purposes.—The Mechanical Engineer is primarily a designer and builder of machines and other equipment for use in manufacturing processes, transportation, and the generation of power. He is responsible for the conservation and economical use of the power-producing resources of the world through the application of the proper equipment in each field of production. He is called upon to take charge of the executive management of the manufacturing, transportation, and power industries. For the Mechanical Engineer to be well grounded in his profession, he must be thoroughly familiar with both the science and the art of engineering.

The curriculum in Mechanical Engineering begins with a thorough training in Mathematics, Physics, and Chemistry, as a foundation for the technical work which is later developed along several parallel lines. The student is taught how these fundamental sciences are applied to the physical properties of the materials of construction, and to the transformation of heat energy into work and power. This is accomplished by means of courses in Drafting, Metallurgy, Mechanics, and Thermodynamics; by the work in the wood shop, forge shop, foundry, and machine shop, and by the tests performed in the mechanical laboratories.

Through the training offered in this curriculum it is hoped that the young graduate, after gaining some experience in industry, will be qualified to accept the responsibilities which will be imposed upon him in the professional field of Mechanical Engineering.

Buildings and Equipment.—The Department of Mechanical Engineering occupies both Page Hall and the Shops Building. In Page Hall are the office of the Head of the Department, offices for the drawing division and the laboratory division, classrooms, drafting rooms, the Internal-Combustion-Engine Laboratory, and Hydraulics Laboratory. The Shops Building contains the Mechanical Engineering Laboratory, the Heating and Air-Conditioning Laboratory, the Wood Shop, the Foundry, the Welding Shop, and the Machine Shop. It also contains the offices of the instructors in the several Shops and one classroom.

Drafting Rooms.—The drafting rooms are equipped with tables, stools, cases for boards, reference files, and models. The drafting rooms have two Universal Drafting Machines in addition to other necessary equipment. The blueprint room contains an electric blueprint machine, a sheet washer, and an ozalid printing machine, besides the usual sun frames.

Shops. The Wood Shop is equipped with a variety of modern machines: lathes, combination saw, dado saw, cut-off saw, jointer, mortisers, sanders, moulder, sticker, trimmer, shaper, boring machines, band saws, jig saw, various types of clamps, a glue room, and other essentials that go to make an up-to-date shop. The machines are motor driven with either individual or group drive. The shop includes work benches, hand tools and necessary auxiliary equipment and a modern spray gun for finishing surfaces.

The Foundry Equipment consists of a 36" cupola, a 14" cupola, brass furnace, core oven, core machine, moulding machines, cleaning mill, motor-driven elevator, emery wheel and buffer, and the necessary tools and patterns for practical moulding. Complete sand-testing equipment has been recently added.

The Forge Shop is equipped with thirty anvils and forges, the blast for the forges being produced by a large power blower and regulated by an individual control on each forge easily accessible to the operator. The shop is also equipped with a modern down-draft-type exhaust system, thereby eliminating all overhead pipes which would interfere with the efficient lighting of the shop. Other equipment consists of drill press, iron shears, vises, emery wheel, and other necessary forging equipment. Recent additions include a 300-ampere direct-current electric welder and a ten-station oxy-acetylene welding-manifold system. Both low- and medium-pressure types of torches are included in the installation.

The Machine Shop, well heated, lighted, and ventilated, is equipped with work benches, machinist's vises, and a variety of machine tools; engine lathes, bench lathes, shapers, planers, milling machines, vertical and horizontal boring mills, drill presses, slotting machines, grinders, arbor presses, and a variety of hand tools, cutters, clamps, jigs, and other equipment necessary to modern machine-shop practice. Some of the machines are group driven, others are individually driven.

Laboratories.—The Heat-Power, Heating and Air-Conditioning, and Metallurgical Laboratories are located in the Shops Building. The Heat-Power Laboratory is equipped with plain slide-valve, automatic cut-off, multiple-expansion, and uniflow engines arranged for condensing and noncondensing operation. It is provided with a turbo-generator set complete with a high-vacuum condenser. A two-stage air compressor driven by a uniflow engine supplies air for experimentation. Weighing tanks and steam pumps make possible tests in this field. This division of the laboratory is equipped with instruments and apparatus for making coal and gas analyses and tests, lubrication tests, calibration tests, heat-transfer tests, nozzle tests, and general efficiency and thermodynamic tests.

The Heating and Air-Conditioning division of the laboratory contains several heating boilers with appropriate oil-burning equipment, weighing tanks and instruments for complete tests. The laboratory is also equipped

with an air conditioner, unit heaters, radiator-testing equipment, a half-ton refrigeration machine, insulation-testing equipment and a fan-and-duct testing unit.

The Metallurgical Laboratory is equipped for work dealing with the structure and the physical and mechanical properties of metals and alloys. The equipment includes electric and gas heat-treating furnaces with controls; indicating and recording pyrometers; apparatus for polishing and etching specimens; metallurgical microscopes with complete lens combinations; dark rooms for photographic and photoelastic equipment. The laboratory is equipped with 15,000-lb. and 50,000-lb. material-testing machines.

The Hydraulic-Machinery, and Internal-Combustion-Engine Laboratories are housed in the basement of Page Hall. The Laboratories are equipped with a new twenty-inch wind tunnel capable of speeds in excess of 100 miles per hour. The tunnel is equipped with automatic balances. A smokebox is provided for flow-analysis work. Photographic equipment is provided for flow study.

The Hydraulic Testing Laboratory contains a ten-inch Francis-Type Hydraulic Turbine, of the most modern design, directly connected to an electric dynamometer, together with weir, Venturi, flume, and instruments for complete test. The laboratory has high-speed and low-speed centrifugal pumps arranged for tests, also Venturi tubes, weirs, nozzles, meters, and a hydraulic channel for the study of flow.

The Internal-Combustion-Engine Laboratory is equipped with a high-speed and low-speed compression-ignition engines, automotive and stationary spark-ignition engines, air-cooled and liquid-cooled aircraft engines, all of modern design. Each of the test engines, of which there are ten at present, is equipped with its power-absorbing device, such as club-propellers in the case of aero engines and water brakes, calibrated electric generators and electric cradle-dynamometers for the other engines. A 5-hp. electric dynamometer is provided for accessory testing and a 125-hp. dynamometer for high-speed-engine testing. Engines, carburetors, ignition equipment and accessories are provided for study. A C.F.R.-A.S.T.M. unit is available for fuel research.

All of the laboratories are designed around the unit system for instruction, whereby units in or whole divisions of the laboratory may be operated without depending on or interfering with other units or divisions.

CURRICULUM IN MECHANICAL ENGINEERING

Freshman Year

For the Freshman year, refer to page 97.

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Calculus I, II, and III, Math. 201, 202, 303	4	4	4
*Business English, Public Speaking, Eng. 211, 231 and one term English or American Literature	3	3	3
Physics for Engineers, Phys. 201, 202, 203	4	4	4
Mechanical Drawing, M.E. 211, 212, 213	2	2	2
Shopwork, M.E. 124, 125, 126	2	2	2
Engineering Mechanics, E.M. 311, 312	0	3	3
†Military Science, Mil. 201, 202, 203	2	2	2
Physical Education, P.E. 201, 202, 203	1	1	1
	18	21	21

Junior Year

Engineering Mechanics, E.M. 313	3	0	0
Machine Shop II, M.E. 227, 228, 229	1	1	1
Engineering Thermodynamics, M.E. 307, 308, 309	3	3	3
Mech. Eng. Lab. II, M.E. 313, 314, 315	1	1	1
‡Kinematics, M.E. 317, 318, 319	3	3	3
Materials of Construction, C.E. 321	3	0	0
Metallurgy, M.E. 222, 223	0	3	3
Strength of Materials, E.M. 321, 322	0	3	3
Fluid Mechanics, E.M. 330	0	0	3
Business Law, Econ. 307	3	0	0
Technical Writing, Eng. 321	0	3	0
**Electives	3	3	3
	20	20	20

Summer requirement: Six weeks of industrial employment, or ten hours solo flying in Aero. Option.

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* Students who have been certified by the Department of English as proficient in English may substitute for the courses listed French, M.L. 101.

† Or 6 credits in one or two of the following Departments: Economics, Psychology, History, Modern Language, Sociology.

‡ Furniture Option, M.E. 341, 342, 343.

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

MECHANICAL ENGINEERING I—GENERAL OPTION

Professor L. L. Vaughan, Faculty Adviser

Senior Year

COURSES	CREDITS First Term	Second Term	Third Term
General Economics, Econ. 201, 202, 203	3	3	3
Power Plants, M.E. 401, 402, 403	3	3	3
Heating and Air Conditioning, M.E. 404	0	3	0
Machine Design, M.E. 411, 412, 413	3	3	3
Refrigeration, M.E. 405	0	0	3
Mechanical Engineering Lab. III, M.E. 407, 408, 409	1	1	1
Elements of Electrical Engineering II, E.E. 331, 332, 333	4	4	4
Hydraulic Machinery, E.M. 331	3	0	0
**Electives	3	3	3
	20	20	20

All seniors are required to go on the inspection trip as part of their curriculum.

MECHANICAL ENGINEERING II—FURNITURE OPTION

Professor F. B. Wheeler, Faculty Adviser

The manufacture of furniture and of other wood products being one of the leading industries in North Carolina, the Mechanical Engineering Department offers a Furniture Option to prepare young men for this field of endeavor. In coöperation with the wood industries in the state and in the well-equipped shops, the student is given an aesthetic as well as practical and scientific insight into the art of designing and manufacturing furniture.

Freshman, Sophomore and Junior years identical with the General Mechanical Engineering Curriculum.

Summer requirement: Six weeks of industrial employment.

Senior Year

COURSES	CREDITS First Term	Second Term	Third Term
General Economics, Econ. 201, 202, 203	3	3	3
Power Plants, M.E. 401, 402, 403	3	3	3
Mech. Eng. Lab. III, M.E. 407, 408, 409	1	1	1
Furniture Design and Construction, M.E. 445, 446, 447	3	4	5
Elements of Elec. Eng. II, E.E. 331, 332, 333	4	4	4
Art Principles in Industry, Arch. 105	3	0	0
Engineering Economics, Econ., I.E. 301	0	3	0
**Electives	3	3	3
	20	21	19

All seniors are required to go on the inspection trip as part of their curriculum.

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

MECHANICAL ENGINEERING III—HEATING AND AIR-CONDITIONING OPTION

Professor R. B. Rice, Faculty Adviser

The Mechanical Engineering Department offers this option because of the increasing interest in heating and air conditioning for comfort; and furthermore because the engineering profession is largely responsible for the health and well-being of society through the effective construction and operation of heating and air-conditioning systems. Emphasis is placed on this phase of engineering through the application of fundamental principles to design, laboratory investigations and research. Through this means the student is given an opportunity to become familiar with standard practice in this field.

Freshman, Sophomore and Junior years identical with the General Mechanical Engineering Curriculum.

Summer requirement: Six weeks of industrial employment.

Senior Year

COURSES	CREDITS First Term	Second Term	Third Term
General Economics, Econ. 201, 202, 203	3	3	3
Power Plants, M.E. 401, 402, 403	3	3	3
Heating and Air Conditioning Lab., M.E. 455, 456, 457	1	1	1
Hydraulics Machinery, E.M. 331	3	0	0
Heating and Air Conditioning II, M.E. 451, 452, 453	3	3	3
Heating and Air Conditioning Design, M.E. 458, 459	0	3	3
Elements of Elec. Engr. II, E.E. 331, 332, 333	4	4	4
**Electives	3	3	3
	20	20	20

All seniors are required to go on the inspection trip as part of their curriculum.

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

DIVISION OF TEACHER EDUCATION

Professors:

T. E. Browne, M.A., Director of the Division
Leon E. Cook, M.S., Agricultural Education
Edward W. Boshart, M.A., Industrial Arts Education, and Guidance

Associate Professors:

J. K. Coggin, M.S., Agricultural Education
L. O. Armstrong, M.S., Agricultural Education
J. Warren Smith, M.S., Industrial Education
J. R. Ludington, Ph.D., Industrial Arts Education
William McGehee, Ph.D., Psychology

Instructor:

D. J. Moffie, Ph.D., Psychology

Purposes.—The Division of Teacher Education at State College, operating as a local Division of the Division of Teacher Education of the Greater University of North Carolina, has imposed upon it the responsibility of training teachers of Agriculture, of Trades and Industries, and of Industrial Arts. As further emphasizing the importance of the work, the State Board for Vocational Education has designated State College for training men as teachers of these subjects in white schools, and as counselors to students in choosing their vocations. Following this action, Federal appropriations to the State under the Smith-Hughes and the George-Deen Acts of Congress for such teacher training are allotted to the College.

Organization.—The Division offers curricula for training teachers of Agriculture, of Industrial Arts Education, of Industrial Education, and Occupational Information and Guidance. The training includes four definite objectives. The first embraces the fundamentals of general education: English, Mathematics, the natural sciences — Biology, Chemistry, Physics — Economics, Sociology, and History. These subjects are given in the Basic Division of the College. Next are the technical subjects selected according to the professional course of the student: for Agricultural Teaching, in the School of Agriculture; for Industrial Arts and Industrial Education, in the School of Engineering. In the third group are the principles and methods of teaching and of vocational guidance. Educational Psychology here is obviously essential. The last objective is practical experience. To meet the requirements of the State Department of Public Instruction for teaching certificates, students, before graduation, observe and teach under the direction of the faculty of the Division in selected high schools. Moreover, experience in the respective occupations is required for those preparing to teach agriculture, and the trades and industries.

Psychology.—General Psychology, giving an understanding of man's reactions to individual and social forces, constitutes one of the fundamentals of liberal education. Educational Psychology, applying the general prin-

ciples to the problems of instruction, learning, and character building, becomes obviously essential in the equipment of teachers. Courses in Applied, Industrial, and Social Psychology of specialized nature meet the needs of the various technological curricula. The Department of Psychology, in view of its intimate relationship to the problems of teacher training, is incorporated administratively in the Division of Teacher Education and at the same time it functions instructionally throughout the Basic Division and the Professional Schools.

Requirements for Graduation. For graduation in the Division of Teacher Education, the scholastic requirement in all curricula is the satisfactory attainment of at least 230 term credits with not fewer than an equal number of honor points.

Of the term credits required for graduation, a student must have at least 27 in Education, 18 in Language, 18 in the Natural Sciences, 18 in Social Science, 12 in Military Training or alternatives, 6 in Physical Education. Subjects must be taken as indicated in the several curricula.

Students who enter with advanced standing are allowed one point for each term credit accepted.

Further requirements consist of practice teaching in the subject and practical experience in the work to be taught as indicated above or under the several Departments.

Degrees. Upon the satisfactory completion of one of the curricula in Education, a student is awarded the degree of Bachelor of Science with the name of his special curriculum appended: in Agricultural Education, in Industrial Arts Education, in Industrial Education.

The Graduate Division of State College offers the Master's Degree to mature students of superior ability upon successful completion of its requirements. For the details, see the statement of the Graduate Division in this Catalog.

Agricultural Education

Leon E. Cook

Object.—Agricultural Education is designed to prepare students for positions as teachers of vocational agriculture in the high schools of the State, and to qualify as such under the provisions of the Smith-Hughes and George-Deen Acts of Congress.

The curriculum is comprehensive in nature. It is, of course, essential that teachers have a good foundation in English and in the sciences basic to an understanding of agriculture. They should also have a sufficient understanding of the social sciences to appreciate the developments of contemporary life, with the emphasis on those having to do with agriculture and the

rural community. Manifestly they should have a grasp of agriculture in all phases of importance in the State, including the improvement of the farm home and of the social as well as of the economic development of the rural community. Proficiency in teaching vocational agriculture depends upon comprehensive and thorough preparation in the professional field with emphasis on personal relations and guidance, procedure in teaching both youth and adults, and in handling the various responsibilities of community service.

An adequate background of farm experience is essential for students looking forward to agricultural teaching, and experience in fields related to farming is desirable. A student should be farm-reared or should have several years of farm experience as a part of his preparation for teaching vocational agriculture.

Placement of Graduates.—There has been a strong demand for teachers of vocational agriculture with little difficulty in placing students who are qualified from the standpoint of personality, character, training, and farm experience. A coöperative arrangement with the supervisory staff in agricultural education of the State Department of Public Instruction facilitates the placement of students in situations adapted to their experience and training.

Successful teachers of agriculture are in demand for higher positions in the educational service and by other agencies for positions offering higher salaries than those paid in the teaching profession.

Graduate Study. The Department provides opportunities for students, fully qualified, to do graduate work in Agricultural Education. Graduate students taking majors in this field should have completed the undergraduate work in Agricultural Education or the equivalent. Transfer students, or graduates in general agriculture who did not take the work in education, are required to complete 15 credits in education including Principles of Teaching and Methods of Teaching Agriculture, as prerequisites to graduate study.

CURRICULUM FOR TEACHERS OF AGRICULTURE

Freshman Year

COURSES	CREDITS First Term	Second Term	Third Term
Composition, Eng. 101, 102, 103	3	3	3
General Inorganic Chemistry, Chem. 101, 102, 103	4	4	4
General Botany, Bot. 102	0	4	0
General Zoology, Zool. 101	4	0	0
Algebra and Trigonometry, Math. 111, 112	0	4	4
Economic History, Hist. 101, 102, 103	3	3	3
Physical Geology, Geol. 120	0	0	4
‡Military Science I, Mil. 101, 102, 103	2	2	2
Fundamental Activities and Hygiene, P.E. 101, 102, 103	1	1	1
	17	21	21

‡ Or six credits in one or two of the following Departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

Sophomore Year

COURSES	CREDITS First Term	Second Term	Third Term
Farm Equipment, Agr. Eng. 202	0	3	0
Soils, Soils 201	0	0	4
General Economics, Econ. 201, 202	3	3	0
Agricultural Economics, Agr. Econ. 202	0	0	3
Physics for Agr. Students, Phys. 115	5	0	0
Animal Physiology, Zool. 202, or Plant Physiology, Bot. 221	0	0	5
Economic Zoology, Zool. 102	0	4	0
General Botany, Bot. 101	4	0	0
Introduction to Organic Chemistry, Chem. 221	0	4	0
Animal Nutrition I, A.H. 202	0	3	0
General Poultry, Poul. 201	3	0	0
Principles of Forestry, For. 111	3	0	0
General Horticulture, Hort. 203	0	0	3
General Field Crops, F.C. 202	0	0	3
‡Military Science II, Mil. 201, 202, 203	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	21	20	21

Junior Year

English, elective	3	0	3
Educational Psychology, Ed. 303, 304	3	3	0
Visual Aids, Ed. 308	0	0	3
Teaching Farm Shop Work, Agr. Eng. 331, 332	3	3	0
Farm Management, Agr. Econ. 303	0	0	3
Farm Accounting, Agr. Econ. 313	0	0	3
Soil Fertility, Soils 221	3	0	0
Fertilizers, Soils 302	0	3	0
Rural Sociology, Rural Soc. 302	0	3	0
*Diseases of Field Crops, Bot. 301	3	0	0
Economic Entomology, Zool. 213	0	0	4
**Electives	6	8	3
	21	20	19

Senior Year

English, elective	0	0	3
Materials and Methods in Teaching Agriculture, Ed. 412	0	5	0
Secondary Education in Agriculture, Ed. 426	0	0	3
Principles of Teaching, Ed. 406	3	0	0
Observation and Directed Teaching, Ed. 408	0	5	0
Methods of Teaching Agriculture, Ed. 407	5	0	0
Evening Classes and Directed Teaching, Ed. 411	0	5	0
***Animal Hygiene and Sanitation, A.H. 353	0	0	3
Agricultural Marketing, Agr. Econ. 411	3	0	0
Community Organization, Rural Soc. 413	0	0	3
**Electives	4	3	4
	15	18	16

* Diseases of Fruits and Vegetable Crops, Bot. 303, may be substituted for Bot. 301.

** Options and electives except Mil. Science III and IV must be chosen with the approval of the adviser.

*** Common Diseases, A.H. 352, may be substituted for A.H. 353.

‡ Or six credits in one or two of the following Departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

INDUSTRIAL ARTS EDUCATION

Edward W. Boshart, John R. Ludington

Industrial Arts comprises that area of study and experience which deals with industry as a unit of society and the manner of which industry and its related materials, processes, and problems affects and has affected other units of society. For many years North Carolina State College has had an important part in aiding individuals and groups of individuals cope with the growing complexity of problems of living in an industrial society through its program of teacher education.

The demand for competent teachers of Industrial Arts has increased year after year and the need for Industrial Arts as an essential phase of general education at the elementary and secondary school levels is being realized by progressive school communities and leaders in education.

Purposes.—The Department of Industrial Arts is organized to aid in the education of teachers and supervisors of Industrial Arts, and to provide experiences for those individuals who desire to deal more appreciatively and effectively with problems of living in a democratic-industrial society. The successful completion of this curriculum leads to the granting of the degree of Bachelor of Science in Industrial Arts Education and the fulfillment of requirements for an A-grade certificate for teaching in this field.

The first two years of work in this curriculum are in line with the basic division of the College which emphasizes work of a general and foundational nature. The junior and senior years are planned to include experiences of a specialized-professional nature.

In addition to added faculty personnel, new facilities have been provided in the Department which include: laboratories, machines, tools, benches, classrooms, and library resources. Further increases in physical setting and equipment have been planned which will make North Carolina State College one of the leading Industrial Arts teacher-education centers in the Southeast.

Graduate Program.—Opportunities are provided for students of demonstrated interest and ability to do graduate work leading to the Master's Degree. The faculty personnel and resources of the Greater University of North Carolina are used in planning a sequence of experiences on the graduate level to meet the individual interests and needs of persons interested in Industrial Arts Education. Persons interested in graduate work in this field are invited to write for detailed information and courses offered.

DIVISION OF TEACHER EDUCATION
CURRICULUM FOR TEACHERS OF INDUSTRIAL ARTS

Freshman Year

COURSES	CREDITS First Term	Second Term	Third Term
Composition, Eng. 101, 102, 103	3	3	3
Algebra, Trigonometry, and Mathematics of Finance Math. 111, 112, 113	4	4	4
General Chemistry, Chem. 101, 102, 103 or Optional Science	4	4	4
Industrial Arts Drawing, Ed. (I. A.) 105 a, b, c	3	3	3
Industrial Arts, Ed. (I. A.) 106 a, b, c	3	3	3
Military Science I, Mil. 101, 102, 103 or World History, Hist. 104	2	2	2
Fundamental Activities and Hygiene, P.E. 101, 102, 103	1	1	1
	20	20	20

Sophomore Year

Business English, Eng. 211, Public Speaking, Eng. 231, Elective English	3	3	3
General Physics, Phys. 105, 106, 107	4	4	4
Economic History, Hist. 101, 102, 103	3	3	3
Industrial Arts Design, Ed. (I. A.) 205	0	0	3
General Sociology, Soc. 202, 203	3	3	0
Laboratory Problems in Industrial Arts, Ed. 206 (I. A.) a, b, c	3	3	3
†Military Science II, Mil. 201, 202, 203	2	2	2
Sports Activities, P.E. 201, 202, 203	1	1	1
	19	19	19

Junior Year

Introduction to Psychology, Psychol. 200, Educational Psychology, Ed. 304, Psychology of Adolescence, Ed. 476	3	3	3
General Economics, Econ. 201, 202, 203	3	3	3
Problems in Secondary Education, Ed. 344, Field Work in Secondary Education, Ed. 433, Visual Aids, Ed. 308	3	3	3
Laboratory Problems in Industrial Arts, Ed. 306 (I. A.) a, b, c	3	3	3
Business Law, Econ. 307	3	0	0
**Electives	3	3	3
*Electives	3	3	3
	21	20	18

Senior Year

Methods of Teaching Industrial Ed. 422, Observation and Directed Teaching, Ed. 444	3	3	3
Labor Problems, Econ. 331, Vocational Guidance, Ed. 420	3	3	0
Occupational Studies, Ed. 424	0	0	3
Curriculum Problems in Industrial Arts, Ed. 482, Instructional Aids and Devices, Ed. 483, Laboratory Planning and Equipment Selection, Ed. 484	3	3	3
**Electives	3	3	3
*Electives in Related Technical and Shop Courses	6	6	6
	18	18	18

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* Electives to be selected with aid of adviser to meet special needs of individual students.

† Or six credits in one or two of the following Departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

OCCUPATIONAL INFORMATION AND GUIDANCE

Edward W. Boshart

Objective.—Guidance is becoming a more important part of the preparation for the high office of teaching. Pupils of all ages are in need of assistance in meeting all sorts of life problems, such as those of education, vocation, health, and emotional stability. Each level of school development—elementary, junior high, senior high, and college—requires particular attention in which the teacher's advice is essential. In addition to the work of the classroom teacher, there is need of continued service in the form of general direction in supplying needed materials, suitable programs, general oversight of plans, and care of special cases requiring the attention of one with wide experience.

Through subject-matter courses, including exploration, tests and measurements, the requirements of various trades, occupations, and professions, State College is endeavoring to prepare individuals to become teachers of occupational information and to serve as counselors of students in leading them through their choice of studies and vocational interests toward successful and happy living. It is essential that counselors have an adequate background of teaching experience, as well as acquaintance with occupational problems; therefore, it is essential to the preparation of individuals for this work that they qualify to teach classes in occupations as related to the world about them, and thereby develop themselves for the position of counselors and directors of this work.

Organization.—The courses selected for this curriculum have as their objective the broadening of experience and acquaintance with the whole field of education and will lead toward the degree of Bachelor of Science in Occupational Information and Guidance. Throughout this period of preparation the emphasis will be on the thorough acquaintance with the work outlined, together with a selected minor in social sciences or natural sciences.

The first two years of this curriculum are in line with the general plan of the College which emphasizes work of fundamental value. The last two years are given to work of a professional and specialized nature stressing analysis of occupations and trades, guidance programs, organization and administration.

Placement of Graduates.—There is a growing demand for teachers of occupational information and guidance. In a few instances the full time of one or more instructors will be taken up in giving occupational information and performing other guidance functions. In the smaller schools where the full time is not thus used, the teacher will be required to hold other classes and should be prepared in some related field.

Graduate Study.—This department offers opportunity for those who have had experience in teaching to prepare for a position as counselor or director of guidance. This study leads toward the earning of the degree

of Master of Science in Education and may be accomplished through a year or more in residence or through the offerings of our summer school sessions. A prerequisite for work in the graduate field should be one or more years of teaching experience, a particular interest in the field, and a rather wide acquaintance with social and economic problems.

CURRICULUM FOR TEACHERS OF OCCUPATIONAL INFORMATION AND GUIDANCE

Freshman Year

COURSES	CREDITS First Term	Second Term	Third Term
Composition, Eng. 101, 102, 103	3	3	3
Algebra, Trigonometry, Mathematics of Finance, Math. 111, 112, 113	4	4	4
Science (selected with aid of adviser)	4	4	4
Economic History, Hist. 101, 102, 103	3	3	3
Occupations, Ed. 103	0	0	3
General Sociology, Soc. 202, 203	3	3	0
Military Science I, Mil. 101, 102, 103 or World History, Hist. 104	2	2	2
Fundamental Activities and Hygiene, P.E. 101, 102, 103	1	1	1
	20	20	20

Sophomore Year

Business English, Eng. 211, Public Speaking Eng. 231, Elective English	3	3	3
Science (selected with aid of adviser)	4	4	4
General Economics, Econ. 201, 202, 203	3	3	3
History of United States, Hist. 201, 202, 203	3	3	3
†Military Science II, Mil. 201, 202, 203	2	2	2
Sports Activities, P.E. 201, 202, 203	1	1	1
**Electives	3	3	3
	19	19	19

Junior Year

English or Modern Language	3	3	3
Introduction to Psychology, Psychol. 200, Educational Psychology, Ed. 304, Psychology of Adolescence, Ed. 476	3	3	3
Problems in Secondary Education, Ed. 344, Field Work in Secondary Education, Ed. 433, Visual Aids, Ed. 308	3	3	3
††American Government, Pol. Sci. 200, 201, 202	3	3	3
**Electives	3	3	3
*Electives	6	5	3
	21	20	18

Senior Year

Methods of Teaching Occupations, Ed. 423	3	0	0
Observation and Directed Teaching, Ed. 444	0	3	3
Philosophy of Guidance, Ed. 420	3	0	0
Social Recreation, P.E. 401	0	0	3
Psycho-diagnostic Techniques, Psy. 470, 471, 472	3	3	3
Occupational Studies, Ed. 424	0	0	3
**Electives	3	3	3
*Electives in related courses	6	9	3
	18	18	18

* Electives to be selected with aid of adviser to meet special needs of individual student.

†† Political Science 203 may alternate with Political Science 200.

† Or six credits in one or two of the following Departments: Economics, Psychology, History and Political Science, Modern Languages, Sociology.

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

Industrial Education

J. Warren Smith

Object.—In a greater degree than at any previous time, thought is now directed toward an extended program of trade-shop courses in industrial Education for North Carolina high schools. Some of the causes of this focus of attention are: unemployment, rising age for entrance to work, increasing school enrollment, and an extended school term. It is to prepare teachers for this field of service that this program is designed. A four-year course is outlined with the first two years running parallel with that of Industrial Arts, then specializing by following the outlined course during the last two years.

Positions for Graduates.—The student who completes this course will be prepared to teach in the all-day schools or the part-time or the evening classes, such as are supported by State and Federal funds for vocational education. At the present time, little difficulty should be encountered by the successful candidates in attaining positions after graduation.

Journeyman Experience Required. Candidates for degrees must have had at least two years of successful journeyman experience in the trade they wish to teach. Successful completion of this course leads to the degree of Bachelor of Science in Industrial Education. Men with journeymen experience who desire to take only professional courses, may enter as special students with the object of completing one or two years of training as outlined for the junior and senior years. For this work, no degree would be granted.

This Department is recognized as the official Training Department of Industrial Education for the State Department of Education. The head of the Department serves as itinerant teacher-trainer for part-time, day-trade, and evening classes, and for the preparation of prospective teachers.

For the time being, the services of the Head of this Department will be devoted largely to itinerant-teacher training. However, as the demand for resident courses at State College designed to prepare shop teachers develops, the schedule can be adjusted to meet this demand.

CURRICULUM FOR TEACHERS OF INDUSTRIAL EDUCATION

For freshmen and sophomore years, see Industrial Arts Education

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
Philosophy of Industrial Education, Ed. 427	0	3	0
*Shopwork (selected)	3	3	3
Introduction to Psychology, Psychol. 200, Educational Psychology, Ed. 304, Psychology of Adolescence, Ed. 476	3	3	3
Philosophy of Guidance, Ed. 420	0	0	3
Problems in Secondary Education, Ed. 344	3	0	0
Labor Problems, Econ. 331	3	0	0
General Sociology, Soc. 202, 203	3	3	0
Visual Aids, Ed. 308	0	0	3
Mechanical Drawing, M.E. 211, 212, 213	2	2	2
**Electives	3	3	3
Electives	0	3	2
	20	20	19

Senior Year

Local Survey: Planning a Program, Ed. 416	0	3	0
*Shopwork (selected)	0	3	0
Methods of Teaching Industrial Subjects, Ed. 422	3	0	0
Observation and Directed Teaching, Ed. 444	0	3	3
Occupational Studies, Ed. 424	0	0	3
Curriculum Problems in Industrial Arts, Ed. 482, Instructional Aids and Devices, Ed. 483, Laboratory Planning and Equipment Selection, Ed. 484	3	3	3
***Elective courses in Design	3	3	3
**Electives	3	3	3
Electives	5	0	3
	17	18	18

* Elective shopwork should be taken in fields available as Textiles, Woodshop, Machine Shop, Foundry, and Electricity.

*** Elective courses must be approved by the faculty adviser.

** To be selected from the following fields: Humanities, Military Science III and IV, Language and Literature, Pure Mathematics, Pure Natural Science, and Social Science.

THE TEXTILE SCHOOL

Thomas Nelson, Dean and Director of Textile Research

Organization.—The Textile School of North Carolina State College is organized for the purpose of administration into four departments: Yarn Manufacturing and Knitting, Weaving and Designing, Textile Chemistry and Dyeing, Textile Research.

The Textile School is organized to offer technical instruction, both undergraduate and graduate, in the production and finishing of textile products. It is also organized and equipped to conduct fundamental textile research and coöperates with the School of Agriculture, and with the United States Institute for Textile Research in efforts to improve and develop new uses for cotton and other textile fibres.

Purpose. The purpose of the Textile School is to educate men for professional service in Textile Manufacturing, Textile Management, Textile Chemistry and Dyeing, in Yarn Manufacturing, in Knitting, Weaving and Designing; to develop their capacities for intelligent leadership; to equip them to participate in commercial and public affairs; to aid in the development of the textile industry and its commerce through research and experimentation; to coöperate with the textile mills of the State in gaining, through scientific research, information that will improve the quality and value of manufactured products and increase technical skill.

Occupations.—Never before in America have more opportunities been offered to young men of North Carolina and the South generally than are available today to graduates of the Textile School.

North Carolina is the largest textile manufacturing State in the South; it has more mills than any other State in America. It has the largest towel, damask, denim, and underwear mills in America; and it has more mills that dye and finish their own products than any other Southern State. A great diversification of manufactured textile products is being made in cotton, rayon, silk, wool, and worsted.

The courses of instruction are arranged and grouped so that students may get the best results from their work, and accumulate the necessary knowledge, which, together with actual experience after graduation, enables them to fill such positions as the following:

Owners of mills.

Presidents and vice-presidents of mills and other textile establishments.

Secretaries and treasurers of mills.

Managers, superintendents, and department foremen in cotton, rayon, woolen, silk, and hosiery mills.

Superintendents and foremen in mercerizing, bleaching, dyeing, and finishing plants.

Designers and analysts of fabrics.
Technical demonstrators in the dyestuff industry.
Textile chemists.
Textile cost accountants in mills.
Purchasing agents for mills.
Salesmen of machinery, yarn, cloth, rayon, dyestuffs, and chemicals.
Positions in yarn and fabric commission houses and with fabric converters.
Specialists in Government service.
Representatives for manufacturers of machinery, rayon, dyestuffs, and mill supplies.

Degrees. Upon the completion of any one of the curricula in Textiles the degree of Bachelor of Science in Textiles is conferred.

The degree of Master of Science in Textiles is offered for the satisfactory completion of one year of graduate study in residence. Candidates for the degree of Master of Science in Textiles enter and are enrolled in the Graduate Division of the College.

The professional degree of Master of Textiles may be conferred upon graduates of the Textile School after five years of professional practice in charge of important work and upon the acceptance of a satisfactory thesis.

Requirements.—The requirements for graduation in the Textile School are the satisfactory completion of all the courses in one of the prescribed curricula on the pages following, a total of not fewer than 230 term credits, with not fewer than 230 honor points.

Of the minimum of 230 term credits required for graduation in the Textile School, 144 are common to all curricula; that is, 12 term credits in Mathematics, 18 in Language, 27 in Economics and Psychology, 12 in Chemistry, 15 in Physics, 12 in Engineering, 6 in Agriculture, 24 in General Textile, 12 in Military Training or Social Science alternatives, and 6 in Physical Education. Each of the curricula permits election of 18 term credits.

Inspection Trip.—Each student is required to make an inspection trip during his senior year to mills making various classes of fabrics, also to bleaching, dyeing, finishing, and hosiery plants. The trips are made in chartered busses.

Curricula.—The freshman and sophomore work is the same for all students in the Textile School. The training is general, and gives the student a good opportunity to make a wise choice in the selection of the particular field in which he desires to specialize. Five curricula are offered:

1. Textile Manufacturing
2. Textile Management
3. Textile Chemistry and Dyeing
4. Weaving and Designing
5. Yarn Manufacturing

Textile Manufacturing and Textile Management offer work in all Departments of the Textile School; these are therefore general curricula with one placing more emphasis on manufacturing, the other, more emphasis on economics.

Students who select Textile Chemistry and Dyeing, Weaving and Designing, or Yarn Manufacturing devote a larger percentage of their time to specialization in one Department of the Textile School.

Textile Curricula for University and College Graduates.—Selected courses leading to the degree Bachelor of Science in Textiles are offered to graduates of universities and standard colleges. These are arranged in accordance with the vocational aim of the individual student and in the light of credits presented from the institution by which the student has been graduated, subject to the approval of his adviser and the director of instruction. In cases where the student presents enough credits which may be used for courses required in his curriculum, he may be graduated B.S. in Textiles within one year. In no case should it take more than two years to complete the work for the degree.

Short Course for Textile Mill Men.—Instruction in yarn manufacturing, weaving, designing, fabric analysis, and dyeing, lasting two weeks in the second term, is offered for textile mill men who wish to make a short and intensive study of any of these subjects. The subject matter will be selected to suit the requirements of each individual.

Yarn Manufacturing and Knitting

Professor J. T. Hilton, Head of Department
Assistant Professor J. G. Lewis; Instructor G. R. Culberson

Purpose.—The purpose of this Department is to instruct students in the theory and practice of producing yarns and hosiery; to coöperate with mills in solving manufacturing problems through research and experimentation; and to manufacture the yarns used in the weave room. This Department is located on the top floor of the Textile Building.

Opening and Picking.—The opening and picking equipment is placed in a separate room and consists of bale breaker, vertical opener, C.O.B. and condenser, breaker picker, and finisher lapper.

Carding and Spinning.—This equipment occupies two rooms. The larger one is used for instruction. The machinery consists of cards, regular and controlled-draft drawing frames, fly frames, spinning frames, warper, spooler, winders, regular and fancy twisters, and a complete unit of combing machinery for the production of fine yarns. The smaller room contains a complete unit of carding and spinning machinery, including several types of long-draft spinning; it is used as an experimental laboratory. Thus student instruction and experimental work do not conflict. Both rooms are equipped with Parks-Cramer humidifiers.

Woolen. This equipment, placed in a separate room on the basement floor, consists of a complete woolen unit made by Davis and Furber, and a Universal winder.

Knitting.—This department is equipped with a variety of circular knitting machines for making children's hose, ladies' hose, and men's plain and fancy half hose. It is also equipped with a Wildman single head, single unit full-fashioned hosiery machine, Merrow sewing machine, loopers, bottle bobbin winder, Universal winder, balances, etc.

Research Laboratory.—This laboratory contains a single strand tester, Mullen tester, yarn and cloth testing machines with autographic recorder, twist counter, crimp tester, conditioning oven, and other necessary apparatus to test cotton and rayon yarns and fabrics for moisture content, twist and tensile strength.

The curriculum in Yarn Manufacture is listed with the other Textile curricula.

Weaving and Designing

Professor T. R. Hart, Head of Department

Associate Professor W. E. Shinn; Instructors J. A. Porter, Jr., W. P. Crawley

Purpose.—The purpose of this Department is to instruct students in the theory and practice of weaving and designing fabrics ranging from simple print cloths to elaborate leno and jacquard creations, to coöperate with the home economics departments of North Carolina colleges in creating consumer interest in textile products, to coöperate with mills in solving manufacturing problems through research and experimentation. This Department is located on the second floor of the Textile Building.

Weave Room.—This room contains a larger variety of looms than can be found in any textile mill. These have been carefully selected so that the students may obtain a knowledge of the different cotton, rayon, and silk looms made in the United States. It also contains looms to produce such fabrics as print cloths, sheetings, denims and twill fabrics, ginghams, fancy shirtings, dress goods, and plush, as well as fancy leno and jacquard fabrics. The weave room has been modernized so that the students can be trained in the technique of manufacturing fancy cotton, rayon, and combination fabrics on automatic, dobby, and jacquard looms. Other equipment in the weave room includes Universal filling winders, braiders and Bahnson humidifiers.

Warp Preparation. Short warps in the Textile School are made on the silk and rayon equipment in this department, which consists of a silk and rayon skein winder, and a combination warper and beamer. Other equipment includes a slasher and cotton beaming frame.

Designing and Fabric Analysis.—A full equipment of design boards for single and double cloths is provided in the classrooms. Dies for cutting samples and different makes of balances, and microscopes are provided for

the analysis of fabrics. Other designing equipment includes an enlarging camera, card cutting pianos and card lacing equipment.

The curriculum in Weaving and Designing is listed with the other Textile curricula.

Textile Chemistry and Dyeing

Professor A. H. Grimshaw, Head of Department
Instructor A. C. Hayes

Purpose.—The purpose of this Department is to instruct students in the theory and practice of dyeing, printing, and finishing yarns and fabrics; to conduct experiments; to coöperate with the mills of the State in solving problems relating to the dyeing and finishing of textile products; to dye the yarns used in the weave room to produce fabrics. This Department is located on the basement floor of the building.

Equipment.—The Dye Laboratory is fitted up with work tables, balances, steam baths, drying oven, and other apparatus for experimental dyeing, dye testing, color matching, and the testing of dyed samples by acids and alkalies. It also contains roller, spray, and screen printing apparatus.

The Dye House is equipped with kier; raw stock, package, skein, and hosiery dyeing machines; a cloth dyeing machine of the creel type; hydro-extractor; raw stock dryer and other equipment needed in the dyeing of larger quantities of material and in giving instruction in boiling out, bleaching, and dyeing raw stock, skeins, warps, hosiery, and piece goods.

The Research Laboratory contains microscopes, photo-micrographic cameras and projector, fadeometer, pH apparatus, viscosimeters, extractors, separator, analytical balances, electric oven, equipment for testing oil and finishing compounds, as well as the analytical equipment generally used by textile chemists. It also contains a dark room fully equipped for photographic work.

The curriculum in Textile Chemistry and Dyeing is listed with the other Textile curricula.

Textile Research

Thomas Nelson, Director

For a number of years the Division of Cotton Marketing, United States Department of Agriculture, stationed a representative at the Textile School to coöperate in producing new uses for cotton. Consumer packages for farm products, cotton fabrics for road making, cotton bagging, foundation fabrics for hooked rugs, and cotton bagging for sugar were some of the products of this coöperative arrangement.

The United States Institute for Textile Research has selected the Textile School as the location for its research project on warp sizing of spun rayon and cotton-spun rayon combination yarns.

The Textile School staff devotes considerable time each year to problems submitted to the School by mills.

The equipment available for research is listed under the Departments.

CURRICULUM IN TEXTILE MANUFACTURING

*Freshman Year

COURSES	CREDITS First Term	Second Term	Third Term
Composition, Eng. 101, 102, 103	3	3	3
Physics for Textile Students, Phys. 111, 112, 113	4	4	4
Algebra, Trigonometry, Mathematics of Finance, Math. 111, 112, 113	4	4	4
Shopwork, M.E. 121, 122, 123	1	1	1
Engineering Drawing I, M.E. 101, 102, 103	2	2	2
Textile Principles Lab., Tex. 101, 102, 103	1	1	1
Yarn Calculations, Tex. 104	0	1	0
Cloth Calculations, Tex. 131	0	0	2
Military Science I, Mil. 101, 102, 103, or World History, Hist. 104	2	2	2
Fundamental Activities and Hygiene, P.E. 101, 102, 103	1	1	1
	18	19	20

*Sophomore Year

Economic History, Hist. 101, 102, 103	3	3	3
Decorative Drawing, Arch. 106, or Light in Industry, Phys. 311	3	0	0
Light in Industry, Phys. 311, or Decorative Drawing, Arch. 106	0	0	3
General Inorganic Chemistry, Chem. 101, 102, 103	4	4	4
Cotton, Cotton Classing II, F.C. 201, 212	3	3	0
Yarn Manufacture I, Tex. 201, 203, 205	1	0	4
Power Weaving, Tex. 231, 232, 234	1	3	0
Fabric Structure and Analysis, Tex. 236, 237	0	2	2
Knitting I, Tex. 207, 208, 209, 211	3	1	1
†Military Science II, Mil. 201, 202, 203	2	2	2
Sport Activities, P.E. 201, 202, 203	1	1	1
	21	19	20

Junior Year

English, or Modern Language	3	3	3
General Economics, Econ. 201, 202, 203	3	3	3
Textile Calculations I, Tex. 345	0	0	3
Yarn Manufacture II, Tex. 301, 302, 303, 304	1	4	1
Dobby Weaving, Tex. 331, 332, 333, 335	1	1	4
Fabric Design and Analysis I, Tex. 341, 342	3	3	0
Dyeing I, Tex. 371, 372, 373, 375	4	1	1
Fabric Testing, Tex. 343	0	0	1
Electives	3	3	3
	18	18	19

Senior Year

Industrial Management, Personnel Management, Econ. 325A, 326A, 333	3	3	3
**Introduction to Psychology, Psychol. 200	3	0	0
**Applied Psychology, Psychol. 302	0	3	0
**Industrial Psychology, Psychol. 338	0	0	3
Yarn Manufacture IV, Tex. 401, 402, 403, 405	4	1	1
Leno Design, Tex. 441	3	0	0
Dobby Design, Tex. 443	0	3	0
Jacquard Design, Tex. 445	0	0	3
Cotton and Rayon Weaving, Tex. 431, 432, 435	1	1	3
Cotton and Rayon Dyeing I, Tex. 471, 472, 473, 474	1	4	1
Fabric Analysis, Tex. 451, 452	2	2	0
Textile Microscopy I, Tex. 475	0	0	1
Electives	3	3	3
	20	20	18

* Freshman and sophomore years for all Textile curricula.

† Or 6 credits in one or two of the following Departments: Economics, Psychology, History and Political Science, Modern Language, Sociology.

** Principles of Accounting, Econ. 301, 302, 303, may be substituted for Psychology 200, 302, 338.

CURRICULUM IN TEXTILE CHEMISTRY AND DYEING

The freshman and sophomore years are the same as for Textile Manufacturing.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
English or German	3	3	3
General Economics, Econ. 201, 202, 203	3	3	3
Introduction to Psychology, Psychol. 200, or Textile course	0	0	3
Qualitative and Quantitative Analysis, Chem. 211, 212, 223	4	4	4
Dyeing II, Tex. 377, 378, 379, 381, 382	5	5	2
Fabric Testing, Tex. 343	0	0	1
Electives	3	3	3
	18	18	19

Senior Year

Industrial Management, Personnel Management, Econ. 325A, 326A, 333	3	3	3
Organic Chemistry, Chem. 421, 422, 423	4	4	4
Applied Psychology, Psychol. 302, or Textile course	0	3	0
Industrial Psychology, Psychol. 338, or Textile course	0	0	3
Textile Miscroscopy II, Tex. 489, 490	1	1	0
Textile Printing, Tex. 483, 484, 485, 487	4	1	1
Cotton and Rayon Dyeing II, Tex. 477, 478, 479, 480, 481	2	5	5
Electives	6	3	3
	20	20	19

CURRICULUM IN YARN MANUFACTURING

The freshman and sophomore years are the same as for Textile Manufacturing.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
English or Modern Language	3	3	3
General Economics, Econ. 201, 202, 203	3	3	3
Accounting I, Econ. 301, 302	3	3	0
Yarn Manufacturing III, Tex. 310, 311	0	3	3
Yarn Manufacturing Lab. III, Tex. 307, 308, 309	2	2	2
Dobby Weaving, Tex. 331, 332, 333, 335	1	1	4
Dyeing I, Tex. 371, 372, 373, 375	4	1	1
Electives	3	3	3
	19	19	19

Senior Year

Industrial Management, Personnel Management, Econ. 325A, 326A, 333	3	3	3
Introduction to Psychology, Psychol. 200	3	0	0
Applied Psychology, Psychol. 302	0	3	0
Industrial Psychology, Psychol. 338	0	0	3
Machine Shop II, M.E. 227, 228, 229	1	1	1
Elements of Electrical Engineering I, E.E. 321, 322	0	3	3
Textile Calculations II, Tex. 413	3	0	0
Yarn Manufacturing V, Tex. 407, 408, 409, 411, 412	5	5	2
Manufacturing Problems, Tex. 415	0	0	3
Electives	6	3	3
	21	18	18

CURRICULUM IN TEXTILE MANAGEMENT

The freshman and sophomore years are the same as for Textile Manufacturing.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
English or Modern Language	3	3	3
Accounting I, Econ. 301, 302, 303	3	3	3
General Economics, Econ. 201, 202, 203	3	3	3
Yarn Manufacture II, Tex. 301, 302, 303, 304	1	4	1
Textile courses	6	2	5
Electives	3	3	3
	18	18	18

Senior Year

Industrial Management, Personnel Management, Econ. 325A, 326A, 333	3	3	3
Marketing Methods and Sales Management, Econ. 311, 312, 313	3	3	3
Introduction to Psychology, Psychol. 200	3	0	0
Applied Psychology, Psychol. 302	0	3	0
Industrial Psychology, Psychol. 338	0	0	3
Textile courses	8	8	7
Electives	3	3	3
	20	20	19

Textile courses to be selected from:

Fabric Design and Analysis I, Tex. 341, 342	3	3	0
Dobby Weaving, Tex. 331, 332, 333, 335	1	1	4
Dyeing, Tex. 371, 372, 373, 375	4	1	1
Textile Calculations, 345 or 413	3	or	3
Yarn Manufacture IV, Tex. 401, 402, 403, 405	4	1	1
Leno Design, Tex. 441	3	0	0
Dobby Design, Tex. 443	0	3	0
Jacquard Design, Tex. 445	0	0	3
Calculating Fabric Costs, Tex. 344	0	3	0
Cotton and Rayon Weaving, Tex. 431, 432, 435	1	1	3
Cotton and Rayon Dyeing, Tex. 471, 472, 473, 474	1	4	1
Fabric Analysis, Fabric Testing, Tex. 451, 452, 343	2	2	1
Manufacturing Problems, Tex. 415	0	0	3
Color in Woven Design, Tex. 455, 456	3	3	0
Wool Manufacture, Tex. 416, 417, 418	1	4	0
Textile Microscopy I, Tex. 476	0	0	1

CURRICULUM IN WEAVING AND DESIGNING

The freshman and sophomore years are the same as for Textile Manufacturing.

Junior Year

COURSES	CREDITS First Term	Second Term	Third Term
English or Modern Language	3	3	3
General Economics, Econ. 201, 202, 203	3	3	3
Appreciation of Fine Arts, Arch. 111, 112, or Textile courses	3	3	0
Textile Calculations I, Tex. 345	0	0	3
Fabric Design and Analysis I, Tex. 341, 342	3	3	0
Jacquard Design, Tex. 445	0	0	3
Dobby Weaving, Tex. 335, 337, 338, 339	2	2	5
Fabric Testing, Tex. 343	0	0	1
Electives	3	3	3
	17	17	21

Senior Year

Industrial Management, Personnel Management, Econ. 325A, 326A, 333	3	3	3
Introduction to Psychology, Psychol. 200	3	0	0
Applied Psychology, Psychol. 302	0	3	0
Industrial Psychology, Psychol. 338	0	0	3
Leno Design, Tex. 441	3	0	0
Dobby Design, Tex. 443	0	3	0
Fabric Design and Analysis II, Tex. 453	0	0	3
Jacquard Design Laboratory, Tex. 447, 448, 449	1	1	1
Color in Woven Design, Tex. 455, 456	3	3	0
Cotton and Rayon Weaving, Tex. 435, 437, 438, 439	2	2	5
Fabric Analysis, Tex. 451, 452	2	2	0
Textile Microscopy I, Tex. 475	0	0	1
Electives	3	3	3
	20	20	19

The Graduate School of the University of North Carolina

STATE COLLEGE DIVISION

William Whatley Pierson, Jr., Dean, Chapel Hill
Zeno Payne Metcalf, Director of Graduate Studies at State College

Organization

Purposes.—Graduate Instruction at State College is organized to formulate and develop graduate study and research in the fields primarily of Agriculture, Engineering, and Textile Manufacturing, and in the training of teachers of these subjects. The urgent need for graduate instruction leading to research in these fields is recognized by the leaders in the occupations which depend upon the development of these branches of industry. State College, therefore, offers training for teachers, investigators, and leaders in Agriculture, Engineering, and Manufacturing. Moreover, unless graduate study and research in the technological and related fields are provided, the institutions of higher learning in this section of the country will look elsewhere for trained men, whereas there should be a fair balance of such men from every section of the country.

Facilities.—State College offers exceptional facilities and opportunities for research. The Agricultural Experiment Station of North Carolina, the Engineering Experiment Station, and the Research Laboratories of the Textile School are integral parts of the College. In the Textile School, besides the research carried on by regular members of the staff, the Bureau of Agricultural Economics and other Bureaus at Washington have, for some years, used the facilities of the School for special research. Graduate students have the advantages offered by all these agencies in addition to the regular laboratories used for instruction.

In its undeveloped resources and raw materials, as well as in its going concerns in business and industry, in its varied topography and products, North Carolina is a rich field for research. The State is already imbued with a spirit of progress stimulating to intellectual growth.

Scholarships and Fellowships. The College offers annually graduate fellowships and a number of teaching and research fellowships. Besides these, special fellowships are supported by various commercial organizations.

College Fellowships give tuition and a stipend of $450 an academic year, paid in nine equal installments, a month apart, beginning October 25. The holder of a fellowship may be required to render a maximum of ten hours a week of service to the Department in which he is specializing.

Teaching and Research Fellowships give $600 or more an academic year. The holder of one of these fellowships may not carry more than half a full

schedule of graduate studies. The rest of his time must be given to teaching in classroom or laboratory, or to research in one of the Experiment Stations.

The Honor Society of Phi Kappa Phi Fellowship, State College Chapter, offers $50 annually, preferably to a member of the Society, to assist in promoting research, and advanced training of worthy students.

Special Fellowships have for some years been maintained by business or manufacturing organizations desirous of having research made on certain problems pertaining to their interest. Some organizations maintaining these scholarships have been the National Fertilizer Association, the N. V. Potash Export My., the American Cyanamids Company, the Superphosphate Institute, E. I. DuPont de Nemours and Company, the Niagara Sprayer and Chemical Company, Eli Lilly and Company, the American Potash Institute, and the Northwestern Yeast Company. The stipends afforded by these fellowships have varied from $720 to $1,500 for twelve months. It is hoped that some of these may be available every year.

ADMISSION AND DEGREES

Degrees in Residence

Master of Science in Agriculture
Master of Science in Engineering
Master of Science
(pure, not applied)
Master of Science in Education
Master of Science in Textiles
Master of Science
(in a specialized field)

Admission.—1. A candidate for admission to graduate study must present an authorized transcript of his collegiate record as evidence that the candidate holds a bachelor's degree for a four years' undergraduate course from a college whose standards are equivalent to those of State College.

2. Admission to courses of graduate work does not necessarily mean that a student may immediately become a candidate for an advanced degree. If the student is not prepared to do graduate work at once, he may pursue undergraduate courses which will fit him for advanced work.

3. A member of the senior class of State College may, upon the approval of the Committee on Graduate Instruction, register for graduate courses to fill a roster of studies not to exceed eighteen credits for any term.

Regulations

Credits.—1. For all Masters' degrees, forty-five term credits are required, a credit being given for each hour of class work successfully completed through a term. Besides the term credits, for all Masters' degrees a thesis must be written and approved.

2. Not more than ten of the academic credits required for a graduate degree will be accepted from other institutions.

3. No graduate credit will be allowed for excess undergraduate credit from any other institution.

Courses of Study.—As designated in the College Catalog under Description of Courses, the courses numbered 500 to 599 are for graduate students only, and those numbered 400 to 499 are for graduates and advanced undergraduates.

The program of the student shall contain at least twelve credits in courses of the 500 group. Nine credits in this group may be obtained in approved research courses. A maximum of 33 credits may be gained in the 400 group. A minimum grade of B must be made on all courses to obtain graduate credit.

Language Requirements.—A reading knowledge of at least one modern foreign language is required of candidates for the Master of Science degrees. The knowledge will be tested by a special examination by the Language Department.

Thesis.—A graduate student, candidate for the Master's degree, must prepare under the supervision of the student's adviser a thesis upon a subject, approved by the adviser, in the field of the student's special work. Two copies, the original and the first carbon, of the completed thesis must be presented to the Director of Graduate Studies at least one month before the degree is awarded. Requirement as indicated for Graduate Students must be observed.

Residence.—A candidate for a Master's degree is required to be in residence at the College, pursuing graduate work, one full academic year of three terms. The candidate is not permitted to take courses leading to forty-five credits in a shorter time.

Six summer schools of six weeks in residence at the College are reckoned sufficient to fulfill the residence requirement. By specific approval of the Director of Graduate Studies one summer period may be spent away from the College if devoted to the preparation of the thesis required for graduation.

In special cases it is possible for graduate students to do twelve weeks work during a summer session, provided instructors will remain at the College throughout the summer. Under these provisions a minimum of four summer sessions, two of twelve weeks and two of six weeks, are required for residence.

Class Work and Examinations.—As a mature student admitted to graduate study only after ability and earnestness are established, the graduate student is expected to assume greater individual responsibility, and since specializing, to work in a more comprehensive manner than the undergraduate. However, in preparation, in attendance, and in all the routine of class work, the graduate student is subject to the regulations observed in other divisions of the College.

Ph. D. degree

Offered in Agronomy, Entomology, and Plant Pathology.

Requirements: 3 years above Bachelor's or 2 above Masters (at 45 qn. hrs. per year comes to about 135 hours) plus Thesis & examinations.

Besides the examination in class, the graduate student, at least two weeks prior to graduation, has a general examination on his work.

Professional Degrees

Master of Agriculture
Master of Textiles
Ceramic Engineer
Chemical Engineer
Civil Engineer
Electrical Engineer
Mechanical Engineer

Significance.—The professional degrees are not honorary; they are tests of ability and testimonials of accomplishment. To merit the professional degree, a candidate must, in his thesis, demonstrate his ability to attack and to solve a new problem of sufficient complexity to require distinctly original processes, and the solution of which shall make, however small yet a real contribution to his profession. The record of his work must demonstrate his power to conceive, to plan, to organize, to carry through to completion a project of considerable magnitude. The candidate should quite obviously have grown professionally since his graduation and evince intellectual vitality to guarantee the continuance of his growth.

Requirements.—A professional degree may be conferred upon a graduate of State College in the School in which the candidate received the Bachelor's degree; the degree of Master of Agriculture may be conferred upon graduates of other institutions who have performed outstanding professional service in agriculture for the State of North Carolina for a continuous period of not less than five years.

2. The degree of Master of Agriculture may be conferred upon graduates of State College after five years of service in agriculture, upon the acceptance of a thesis.

The degree in Engineering or in Textiles may be conferred upon graduates of State College after five years' professional practice in responsible charge of important work, upon the acceptance of a thesis on a subject related to the practice in which the applicant has been engaged.

3. Application for the degree must be presented to the Director of Graduate Studies not less than nine months before the degree may be conferred.

4. With the application for a degree, the candidate must present, as preliminary basis for the degree, (1) the subject of a thesis he purposes to write, and (2) a statement in outline of his professional work since graduation, both of which must be approved.

5. The completed thesis must be submitted, on or before April 1, to the Director of Graduate Studies for consideration, and with it a detailed statement, duly certified, of the candidate's professional work since graduation, upon which, in addition to the thesis, the degree is to be awarded.

6. Upon notification that his thesis and work have been approved by his Committee as worthy basis for the degree, the candidate shall, upon a specified date, appear before his Committee for oral or written examination on his work and his thesis.

Fees

The Graduate student will pay a $2.00 registration fee each registration and $3.00 a credit hour for all courses.

The Professional candidate will pay $10.00 when he matriculates and $15.00 for his diploma.

Correspondence about graduate work should preferably be addressed to the Director of Graduate Studies.

DIVISION OF COLLEGE EXTENSION

Edward W. Ruggles, Director

Purpose.—The College Extension Division is organized to carry the practical and cultural advantage of college studies to persons who cannot attend classes on the campus, and to groups and communities that may profit by the service offered through the following means.

Extension Classes are organized where at least fifteen persons are interested and willing to take up the same subject. Such matters as the distance from the college, the nature of the subject, and the availability of instructors must be taken into consideration.

Correspondence Courses for college credit are offered in Agronomy, Animal Husbandry, Horticulture, Soils, Poultry, Agricultural Economics, Rural Sociology, Chemistry, Education, Economics, English, Geology, History, Architectural Engineering, Ceramic Engineering, Mechanical Engineering, Mathematics, Modern Languages, Sociology, Safety and Zoölogy. The list of these courses is being added to as rapidly as possible. Complete information concerning them is included in the Bulletin of Correspondence Courses.

Correspondence Courses of a practical nature are offered in Business English, Mathematics, Industrial Electricity, Land Surveying, Plumbing, Engineering Drawing, Air Conditioning, Heating and Ventilation, Building and Estimating, Sheet-metal Pattern Drafting, Municipal Administration, Poultry, Business Law, Diesel Engines, and Vegetable Gardening. In addition, the courses in Ceramic Engineering may be taken as practical where no credit is desired.

Short Courses are offered by the College Extension Division to tie up the facilities of the several Schools of State College with the trades and industries of North Carolina into a permanent educational program. In carrying out this program, short courses of a practical nature are offered every year

which are increasing in popularity. During the present school year (1940-41) the following short courses and institutes are scheduled: Electrical Meters and Relays, Engineers, Surveyors, Plumbing and Heating Contractors, Gas-Plant Operators, Water-Works Men, Retail Coal Merchants, Electrical Contractors, Street Superintendents, Amateur Photographers, Sanitarians, Building Inspectors, Rayon, and a Safety School for Truck Operators. Additional courses are being added as the demand arises.

College Extension Lectures by members of the faculty and concerts by the College musical organizations are available to any high school, civic club, woman's club, science club, agricultural or engineering meeting or organization, desiring to put on a good lecture or musical program.

Reading Courses are offered to graduates and undergraduates who desire to continue their intellectual growth and to keep abreast of the advances made both in their specific field and in relating fields.

Bulletins describing the various functions of the Division will be gladly supplied on request. Write to Edward W. Ruggles, Director, College Extension Division, North Carolina State College, Raleigh, North Carolina.

Full Information.—Any person interested in extension classes or correspondence courses should write to the College Extension Division, requesting the Extension Bulletin, which contains complete information concerning methods of instruction, fees, and the conditions upon which College credit will be granted.

THE SUMMER SESSION

Time; Work. Beginning June 16, 1941, the Summer Session will continue six weeks. The work, directed by the regular College Officers of Administration and conducted largely by the Faculty, maintains the College standards and warrants College credit toward degrees.

Advantages.—Special advantages are offered those desiring to get teachers' certificates, or to renew or raise the grade of a certificate; also to teachers with ambition to advance culturally and professionally. College students may remove conditions or gain additional credits. Applicants for admission to College may add needed credits for entrance.

Cultural Courses. Although the Summer Session at State College conducts courses specifically technical in Agriculture, Engineering, and Textile, and confines its Teacher Training to these departments, general courses of broad cultural value are offered in English, Modern Languages, Mathematics, Chemistry, Physics, Botany, Zoölogy, and the Social Sciences.

Full Information regarding the Summer Session is given in the Summer Session issue of *State College Record,* which may be obtained from W. L. Mayer, Registrar, State College Station, Raleigh.

IV. DESCRIPTION OF COURSES

AERONAUTICAL ENGINEERING

Courses for Advanced Undergraduates

Aero. Engr. 210. General Aeronautics 3-0-0 or 0-3-0

Prerequisites: Math. 101, 102, 103.

Required of sophomores taking Aeronautical Engineering.

A study of the practical aspects of aircraft operation. It embraces Air Navigation, Meteorology, Theory of Flight and Civil Air Regulations. This course serves as the ground school for those students wishing to receive the primary flight training under the Civil Aeronautics Administration Program. Lusk, *General Aeronautics.* Mr. Parkinson.

Aero. Engr. 310. Elementary Aeronautics 0-0-3

Prerequisites: Phys. 201, 202, 203.

Required of juniors taking Aeronautical Engineering.

A study of the airplane and simple aerodynamics. Carter, *Simple Aerodynamics and the Airplane.* Mr. Parkinson.

Aero. Engr. 332, 333.—Air Transportation 0-3-3

Prerequisite: Aero. Engr. 310.

Required of seniors taking Aeronautical Engineering.

The various phases of airport design, air transportation and airline operation are studied in this course. This includes a survey of existing conditions, factors governing development, topographic survey, runway layout, methods of aircraft operations, personnel organization and aviation law. Practical examples are studied at the University-owned and operated airport. *Lecturer's Notes.* Mr. Parkinson.

Aero. Engr. 351, 352. Advanced General Aeronautics 6-6-0 or 0-6-6

Prerequisite: Aero. Engr. 210.

Elective.

Ground school course for those students wishing to receive advanced flight training under the Civil Aeronautics Administration Program. The scope of the course embraces Navigation, Meteorology, Parachutes, Aerodynamics and Aircraft, Engines, Instruments, and Radio, Navigation Aids as required for a Commercial Pilot's Certificate. *Lecturer's Notes.* Mr. Parkinson.

Aero. Engr. 421, 422, 423. Airplane Design 3-3-3

Prerequisites: E. M. 213, 222, C. E. 321 and Aero. Engr. 310.

Required of seniors taking Aeronautical Engineering.

A study of the design and construction of airplanes. Niles & Newell, Vols. I & II, *Airplane Structures.* Mr. Sanford.

Aero. Engr. 431, 432, 433. Aerodynamics 3-3-3

Prerequisites: Math. 303, Aero. Engr. 310.

Required of seniors taking Aeronautical Engineering.

A study of classical flow theory, viscous flow, airplane performance and stability, accelerated flight, and airworthiness specifications. Diehl, *Engineering Aerodynamics.* Mr. Sanford.

Aero. Engr. 441, 442, 443. Aeronautical Laboratory 1-1-1

Prerequisites: M. E. 313, 314, 315.

Required of seniors taking Aeronautical Engineering.

Advanced study and testing in the field of air-cooled internal combustion engines and their auxiliaries. Wind tunnel tests on air foils and models; tests of wings and structural members; test of fuels and lubricants, and tests in applied metallurgy. Rice, *Mechanical Engineering Laboratory.* Messrs. Rice and Sanford.

Aero. Engr. 451, 452. Aircraft Engines 3-3-0

Prerequisites: M. E. 307, 308, 309.

Required of seniors taking Aeronautical Engineering.

The practical aspect of aircraft engine operation including design, carburetors, magnetos, super-chargers, fuels, oils, fuel and oil systems, engine installations, trouble shooting and accessories. *Lecturer's Notes.* Mr. Parkinson.

Aero. Engr. 461. Aircraft Instruments and Navigation 3-0-0

Prerequisite: Aero. Engr. 310.

Elective.

This course deals with the instruments used in aircraft engine operation, flight indication, and in navigation. The uses, principle of operation, and calibration is studied in detail. The fundamentals of navigation include problems in navigation such as course plotting, radius of action from fixed and moving bases and interception. *Lecturer's Notes.* Mr. Parkinson.

Aero. Engr. 471. Aircraft Propeller Design 0-0-3

Prerequisite: Aero. Engr. 310.

Elective.

The various theories are discussed in this design course. This embraces effect of blade shape, tip speed, and gearing on propeller performance. The various types of propellers are studied in detail. Weick, *Aircraft Propeller Design.* Mr. Parkinson.

Courses for Graduates Only

Aero. Engr. 531, 532, 533. Advanced Aerodynamics. 3-3-3

Prerequisites: Aero. Engr. 431, 432, 433.

Wind tunnel research; a study of test performance; a series of experiments, the compilation and interpretation of the results. Mr. Sanford.

Aero. Engr. 541, 542, 543.—Aeronautics Research. 3-3-3

Prerequisites: Aero. Engr. 441, 442, 443.

Research and thesis in connection with an aeronautical project. Mr. Parkinson.

AGRICULTURAL ECONOMICS

Courses for Advanced Undergraduates

Agr. Econ. 202. Agricultural Economics. 0-0-3

Prerequisites: Econ. 205 or Econ. 201, 202, 203.

Required of sophomores in Agriculture.

A study of the economics of agricultural production, the marketing of farm products, farm credit, land tenure, and other major economic problems of the farmer. Messrs. Clement, Forster, Hamilton, Leager.

Agr. Econ. 212. Land Economics. 0-3-0

Prerequisites: Econ. 205 or 201, 202, 203.

Required of sophomores in Forestry, and in Wildlife Conservation and Management.

The problems of land economics including land classification and land use with special emphasis on forest land; land ownership and control; the principles of land valuation; policies of land settlement and development; the taxation of forest lands. Mr. Forster.

Agr. Econ. 303. Farm Management I. 0-0-3

Prerequisites: Econ. 205 or 201, 202, 203.

Required of juniors in Agricultural Economics, Agriculture and Agricultural Education.

The principles involved in the successful operation of the farm, farm planning, management of labor, farm work programs, use of machinery, and farm administration. Messrs. Forster, Greene.

Agr. Econ. 313. Farm Accounting. 0-0-3

Prerequisite: Econ. 205.

Required of juniors in Vocational Agriculture.

The practical aspects of farm accounting, preparation of inventories of farm property, simple financial statements, method of keeping farm records, analysis and the interpretation of results obtained from farm business transactions. Mr. Greene.

Agr. Econ. 322, 323. Grades, Standards, and Inspection. 0-3-3

Prerequisites: Econ. 205 or 201, 202, 203.

Elective for seniors in Agricultural Economics.

History of the grades and standards of important agricultural products, together with the technique of inspection. Mr. _ _ _ .

Agr. Econ. 332. History of the Agricultural Adjustment Program 0-3-0

Elective for juniors and seniors in Agriculture.

A comprehensive study of the economics of the Agricultural Adjustment Acts, and of the Agricultural Conservation Programs; the effect of the programs on production and prices of cotton, tobacco, wheat, corn, and hogs. Mr. Barnes.

Agr. Econ. 333.—The Agricultural Adjustment Program. 0-0-3

Prerequisite: Agr. Econ. 332. Elective for juniors and seniors in Agriculture.

A comprehensive study of the methods and routine for administration of the Agricultural Conservation Program and the crop control measures now in effect. Laboratory work will include field and office work with aerial photographs and with the forms prescribed for use with the Program with a view to preparing students for the summer work. Messrs. Patton, Barnes.

Courses for Graduates and Advanced Undergraduates

Agr. Econ. 402, 403. Farm Cost Accounting. 0-3-3

Prerequisites: Econ. 205 or 201, 202, 203, and 301, 302, 303.

Required of seniors in Agricultural Economics.

The principles of accounting applied to farm transactions, the preparation of financial statements, the methods of keeping farm records, analysis of an individual farm record, the interpretation of cost accounting results.

Mr.Greene.

Agr. Econ. 411. Agricultural Marketing. 3-0-0

Prerequisites: Econ. 205 or 201, 202, 203.

Required of seniors in Agricultural Economics, Agriculture, and Vocational Education.

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

Messrs. Clement, Leager.

Agr. Econ. 412. Problems of Land Economics. 0-3-0

Prerequisites: Econ. 201, 202, 203, Agr. Econ. 202, and 6 additional term credits in Economics.

Elective.

The economic problems of land classification, ownership and acquisition of land, tenancy and land ownership, the functions of the landlord and the tenant, land valuation and land speculation.

Messrs. Forster, Hamilton.

Agr. Econ. 421. Marketing Methods and Problems. 3-0-0

Prerequisites: Econ. 201, 202, 203, Agr. Econ. 202, and 6 additional term credits in Economics.

Required of seniors in Agricultural Economics.

A careful study of the problems and methods involved in the marketing of farm products. Suggestions for improvement stressed. Mr. Clement.

Agr. Econ. 422. Agricultural Coöperation. 0-3-0

Prerequisites: Econ. 205 or 201, 202, 203.

Required of seniors in Agricultural Economics.

Specific consideration of local community coöperation, both economic and social; farmers' buying, selling, and service organizations. Mr. Clement.

Agr. Econ. 423. Farm Management II. 0-0 3

Prerequisite: Agr. Econ. 303.

Required of seniors in Agricultural Economics.

Application of farm management principles to the management and organization of farms in typical regions of the State. Mr. Greene, Mr. Forster.

Agr. Econ. 432. Agricultural Finance. 0-3-0

Prerequisites: Econ. 205, Agr. Econ. 202, and 6 additional term credits in Economics.

Elective.

Principles involved in financing the production and marketing of agricultural products. Consideration of farm mortgage credit, personal and intermediate credit, and agricultural taxation. Mr. Leager.

Agr. Econ. 442. Cotton and Tobacco Marketing. 0-3-0

Prerequisites: Econ. 205, Agr. Econ. 202, Agr. Econ. 411, and 3 additional credits in Economics.

Required of seniors in Agricultural Economics.

The problems, methods, and practices used in the marketing of tobacco and cotton. Messrs. Forster, Clement.

Courses for Graduates Only

Agr. Econ. 501. Economics of Agricultural Production 3-0-0

Prerequisites: Econ. 201, 202, 203, Agr. Econ. 202, and 6 additional term credits in Economics.

Economic theories applicable to agricultural production; the nature and characteristics of the factors of production, the law of variable proportion, the law of diminishing return, and the theory of least cost. Mr. Forster.

Agr. Econ. 502. Farm Organization and Management. 0-3 0

Prerequisites: Econ. 205, Agr. Econ. 303, 423, 501, and 6 additional term credits in Economics.

The extension of the economic principles discussed in Agr. Econ. 501, and this application to the problems of farm organization and management. Mr. Forster.

Agr. Econ. 503. Agricultural Finance. 0-0-3

Prerequisites: Econ. 201, 202, 203, Agr. Econ. 432, and 6 additional term credits in Economics.

Problems in financing agricultural production and marketing. A history of the development of financial institutions designed to serve agriculture. Mr. Leager.

Agr. Econ. 513. Coöperative Marketing Methods and Practices. 0 0 3

Prerequisites: Econ. 201, 202, 203, Agr. Econ. 411, and 6 additional term credits in Economics.

A critical study of the methods and practices used by large agricultural coöperatives. Mr. Clement.

Agr. Econ. 521, 522, 523, Research in Agricultural Economics. 3-3-3

Prerequisites: Economics 201, 202, 203; 408, 409, and 6 additional term credits in Economics.

A consideration of the research method and procedure now being employed by research workers in the field of Agricultural Economics, including qualitative, quantitative, inductive and deductive methods of research procedure, choice of projects, planning, and execution of the research project.
Messrs. Forster, Greene.

Agr. Econ. 532. National Economic Policies Affecting Agriculture. 0-3-0

Prerequisites: Econ. 201, 202, 203, Agr. Econ. 202, Agr. Econ. 411.

A critical analysis of the various farm relief proposals with special reference to those made to control production, to assist in the marketing of farm products, and to supply farmers with various kinds of credit. Mr. Lange.

AGRICULTURAL ENGINEERING

Courses for Undergraduates

Agr. Eng. 202. Farm Equipment. 0 3 0

Prerequisites: Math. 100 or Physics 115 or 201. Required of sophomores in Agriculture.

A study of modern equipment and buildings for the farm.
Messrs. Weaver, Giles.

Agr. Eng. 212. Farm Engines. 0 3-0

Prerequisite: Physics 115 or 201. Required of sophomores in Agr. Eng. and juniors in Animal Production and in Dairy Manufacturing.

A study of the principles of gas-engine operation and their application to farm uses; selection, operation, and repair of engines. Mr. Giles.

Agr. Eng. 222. Agricultural Drawing. 0-3-0

Elective for juniors and seniors.

Drawing-board work covering both freehand sketching and elementary mechanical drawing. Working and pictorial drawing, lettering, maps, graphs, tracing, and blueprinting. Mr. Weaver.

Courses for Advanced Undergraduates

Agr. Eng. 303. Terracing and Drainage. 0 0-3

Prerequisites: Soils 201 and Agr. Eng. 202.

Required of juniors in Agr. Eng., juniors in Floriculture, Pomology and Vegetable Gardening, and of seniors in Animal Production, Poultry Science, and Farm Business.

A study of the different methods of disposing of surplus water and the prevention of erosion. Messrs. Weaver, Giles.

Agr. Eng. 313. Farm Machinery and Tractors. 0-0-3

Prerequisite: Agr. Eng. 202.

Required of seniors in Agr. Eng., and in Poultry Science.

A study of the design, construction and operation of modern labor-saving machinery for the farm. Mr. Giles.

Agr. Eng. 322. Farm Buildings. 0 3-0

Prerequisite: Agr. Eng. 202.

Required of juniors in Agr. Eng., and seniors in Agr. Economics.

A study of the design, construction, and materials used in modern farm buildings. Mr. Weaver.

Agr. Eng. 331, 332. Farm Shop Work. 3-3-0

Prerequisite: Agr. Eng. 202.

Required of juniors in Agr. Eng., and in Vocational Agriculture.

For students intending to teach Vocational Agriculture in the high schools of the State: Students in Agricultural Engineering and Agriculture. Lecture and laboratory practice, in drafting, sharpening farm tools, making concrete, woodworking, cold metal working, forging, soldering and pipe fitting. Mr. Giles.

Agr. Eng. 333. Teaching Farm Shop Work. 0-0-3

Prerequisites: Agr. Eng. 331 and 332.

Elective for juniors and seniors in Vocational Agriculture.

The use and care of power tools; shop management and methods of presenting the subject matter. Messrs. Giles, Coggins.

Courses for Graduates and Advanced Undergraduates

Agr. Eng. 403. Erosion Prevention. 0-0-3

Prerequisite: Agr. Eng. 303.

Required of seniors in Agr. Eng.

The causes and effects of erosion and the methods of conserving our greatest national resource—our fertile soil. Mr. Weaver.

Agr. Eng. 423. Farm Structures. 0-3-0 or 0-0-3

Prerequisite: Agr. Eng. 322.

Required of seniors in Agr. Eng.

An advanced study of modern building methods as applied to farm structures. The use of labor-saving barn equipment and methods of reducing labor to minimum is stressed. The placing of the farm group in relation to topography and farm activities, from the standpoint of economy, appearance, and utility, is an important phase of the course. Mr. Weaver.

Agr. Eng. 432. Rural Electrification. 0-3-0

Prerequisite: Agr. Eng. 322.

Required of seniors in Agr. Eng.

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

Agr. Eng. 481, 482, 483. Special Problems in Agricultural Engineering. 3-3-3

Prerequisites: Agr. Eng. Three credits in 300 courses.

Only one term required of seniors in Agr. Eng., other two elective.

This course is designed to meet the needs of students who desire advanced work in one of the following branches of Agr. Eng.: Farm Engines, Tractors, Farm Mach., Buildings, Conveniences, Rural Electrification, Erosion Control and Drainage. Messrs. Weaver, Giles.

Agr. Eng. 491, 492, 493. Senior Seminar. 1-1-1

Prerequisite: Senior standing in Agr. Eng.

Required of seniors in Agr. Eng.

Students will be assigned special problems the results of which are to be presented to the class. Messrs. Weaver, Giles.

ANIMAL HUSBANDRY AND DAIRYING

Courses for Undergraduates

A. H. 202. Animal Nutrition I. 0-3-0 or 0-0-3

Prerequisites: Chem. 101, 102, 103.

Required of sophomores in Agriculture.

A study of animal nutrition; composition of animal body; digestion; nutrients; feeding standards; calculating rations. Messrs. Ruffner, Haig.

Courses for Advanced Undergraduates

A. H. 301. Farm Meats I. 3-0-0 or 0-3-0 or 0-0 3

Elective for juniors and seniors in Agriculture. Required of juniors in A. H. and seniors in Pomology and Poultry Science.

A study of the composition and value of meat, with practice work in slaughtering and cutting. Mr. Swaffar.

A. H. 302. Farm Meats II. 0-3-0

Prerequisite: A. H. 301.

Elective for juniors and seniors in Agriculture.

Special study and practice in making retail cuts and in curing pork, beef, and lamb. Mr. Swaffar.

A. H. 303. Advanced Stock Judging. 0-0-3

Elective for juniors and seniors in Agriculture.

A study of market and show-ring requirements in the selection of horses and mules, beef cattle, dairy cattle, sheep, and swine. Breed characteristics of these animals are studied in detail, and practice judging brings out the relationship of form to function in livestock production.

Messrs. Haig, Swaffar.

A. H. 311. Comparative Anatomy and Physiology of Domestic Animals. 3 0-0

Prerequisite: Zool. 102.

Elective for juniors and seniors in Agriculture.

A course dealing with the structure and functions of the animal body. Laboratory, lectures, and recitations. Mr. Grinnells.

A. H. 313. Sheep Production. 0-0-3

Elective for juniors and seniors in Agriculture. Required of seniors in Animal Husbandry.

Mr. Swaffar.

A. H. 321. Dairy Cattle and Milk Production. 3-0 0

Elective for juniors and seniors in Agriculture. Required of seniors in Poultry Science and Agricultural Engineering.

A study of management of dairy cattle for economical milk production, including dairy breed characteristics, adaptation, selection, management, feeding, calf raising, dairy barn equipment. Mr. Haig.

A study of the establishment, care, and management of the farm flock.

A. H. 322, 323. History of Breeds. 0-3-3

Required of juniors in Animal Prod. Elective for juniors and seniors in Agriculture.

A study of types, characteristics, and history of the leading strains and families of the different breeds of animals.

Messrs. Ruffner, Haig, Swaffar.

A. H. 331. Swine Production. 3-0 0

Required of juniors in Animal Production and seniors in Poultry Science. Elective for juniors and seniors in Agriculture.

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

A. H. 332. Testing of Milk Products. 0-4-0

Elective for juniors and seniors in Agriculture. Required of seniors in Animal Husbandry and juniors in Dairy Manufacturing.

Lectures and laboratory practice on the testing of milk and milk products for butterfat, acidity, adulteration, preservatives, sediment, etc., that are ordinarily used by dairy manufacturing plants or in milk inspection work.

Mr. Clevenger.

A. H. 333. Cheesemaking. 0-0-3

Elective for juniors and seniors in Agriculture. Required of juniors in Dairy Manufacturing.

Lectures and laboratory practice in making various soft and hard cheeses usually made on a farm or in a cheese factory. Mr. Clevenger.

A. H. 341. Dairying. 3-0 0 or 0-3-0

Required of juniors in Animal Prod. and seniors in Vegetable Gardening. Elective for juniors and seniors in Agriculture.

Fundamentals of dairy-herd management in the production of milk and cream on the farm. Laboratory work: the use of the Babcock Test, butter-making on the farm, operation of cream separators. Mr. Haig.

A. H. 342. Dairy Manufacture Practice. 0-3 0

Elective for juniors and seniors in Agriculture. Required of juniors in Dairy Manufacturing.

Lectures and laboratory practice on the business and factory management methods used in dairy plants. Mr. Clevenger.

A. H. 343. City Milk Supply. 0-0-4

Elective for juniors and seniors in Agriculture. Required of juniors in Dairy Manufacturing.

Lectures and laboratory practice; the phases of the city milk supply from the standpoint of the Milk Inspector and Board of Health; the methods and processes used in a central pasteurizing milk distribution plant and the dairymen supplying milk to same; the raw retail milk distributor and his problems. Mr. Clevenger.

A. H. 351. Horse and Mule Production. 3-0-0

Elective for juniors and seniors in Agriculture.

A study of practical methods in production and management of horses and mules for work on farms under Southern conditions. Special study of home-grown feeds for horses and mules at work or idle. Mr. Haig.

A. H. 352. Common Diseases. 0 3-0

Elective for juniors and seniors in Agriculture.

A study of contagious, non-contagious, and parasitic diseases of farm animals. Laboratory, lectures, recitations. Mr. Grinnells.

A. H. 353. Animal Hygiene and Sanitation. 0-0-3

Elective for juniors and seniors in Agriculture. Required of juniors in A. H. and of senior Teachers of Agriculture.

Animal health and prevention of disease as affected by environment. Lectures, reference reading, recitations. Mr. Grinnells.

A. H. 361. Animal Nutrition II. 3-0-0 or 0-0-3

Prerequisite: A. H. 202.

Required of juniors in Animal Prod. Elective for juniors and seniors in Agriculture.

A study of feeding stuffs used in America; laws controlling feeding stuffs; preparation of feeds; home-mixed and commercial feeds.

Messrs. Ruffner, Haig.

A. H. 362. Dairy Machinery. 0-1-0

Elective for juniors and seniors in Agriculture. Required of seniors in Dairy Manufacturing and Agr. Engineering.

Lecture and demonstration on the installation, kind, care, and handling of dairy plant equipment, including the refrigerating unit, pipe fitting, soldering, etc. Mr. Clevenger.

A. H. 371. Creamery Buttermaking. 4-0-0

Elective for juniors and seniors in Agriculture. Required of juniors in Dairy Manufacturing.

This course deals with the principles and practices of factory buttermaking, from the care of the cream on the farm through the different processes until ready for marketing. Mr. Clevenger.

A. H. 372. Beef Cattle Production. 0-3-0

Elective for juniors and seniors in Agriculture. Required of seniors in Animal Husbandry.

A study of the feeding, care, and adaptation of beef cattle to North Carolina conditions. Mr. Swaffar.

A. H. 381. Ice Cream Making. 4-0-0

Elective for juniors and seniors in Agriculture. Required of juniors in Dairy Manufacturing.

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

A. H. 391, 392, 393. Senior Seminar. 1-1-1

Prerequisite: A. H. 202.

Required of seniors in A. H.

A discussion of livestock problems by extension and research workers, together with special assignments to students with regard to various phases of the industry. Animal Husbandry Staff.

A. H. 394. Dairy Products Judging. 0-0-1

Elective for juniors and seniors in Agriculture. Required of seniors in Dairy Manufacturing.

A course of training for students in judging all dairy products according to official standards and commercial grades. Mr. Clevenger.

A. H. 395. Summer Practicum. 3 credits

Prerequisites: 18 credits in Animal Husbandry.

Required of all students in Animal Production and Dairy Manufacturing.

This course requires a minimum of six weeks practical work on an approved livestock farm or in a creamery. If the work is done at the College farms or College creamery, no remuneration other than specified credit will be allowed. Each student will be required to submit an outline of his proposed work during the spring term and a final report of the work done during the fall term. Staff.

Courses for Graduates and Advanced Undergraduates

A. H. 401, 402, 403. Dairy Manufactures. 3-3-3

Prerequisites: A. H. 202 and 12 hours of the dairy manufacturing courses.

Required of seniors in Dairy Manufacturing.

Special problems dealing with the manufacture and marketing of dairy products. Mr. Clevenger.

A. H. 412. Animal Nutrition III. 0 3-0

Prerequisites: A. H. 202, A. H. 361.

Elective for seniors in Agriculture.

A study of the chemistry and physiology of nutrition and the processes of animal life; recent scientific publications are studied. Mr. Ruffner.

A. H. 413. Herd Improvement. 0-0 3

Prerequisites: A. H. 202, 341, 361.

Elective for juniors and seniors in Agriculture. Required of juniors in A. H.

This course is designed for training students as supervisors of Herd Improvement Associations in North Carolina. Rules for Advanced Registry are studied, and practical work in keeping feed costs, the Babcock Test, and bookkeeping necessary for dairy associations. Mr. Haig.

A. H. 421. Animal Breeding. 4 0 0

Elective for juniors and seniors in Agriculture. Required of seniors in Animal Husbandry.

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

Mr. Ruffner.

A. H. 432. Pure-Bred Livestock Production. 0 3-0

Prerequisites: A. H. 202, 331.

Elective for seniors in Agriculture. Required of seniors in Animal Husbandry.

A study of the pure-bred livestock industry. Lectures and discussion supplemented by assignments from current periodicals and breed papers. Special study of the selection of livestock best suited to different localities.

Mr. Ruffner.

A. H. 433. Stock Farm Management. 0-0-3

Prerequisite: A. H. 202.

Elective for juniors and seniors in Agriculture. Required of seniors in Animal Husbandry.

A study of successful methods of operating farms devoted chiefly to livestock production; special reference is made to best systems applied to North Carolina conditions. Mr. Ruffner.

A. H. 441, 442, 443. Problems in Advanced Animal Breeding.
3 0-0, 0-3-0, 0-0-3

Prerequisite: A. H. 421.

Elective for seniors in Agriculture.

A study of the physiology of reproduction. Methods and problems of breeders; influence of pedigree, herd books, and Mendelism in animal breeding. Mr. Ruffner.

Courses for Graduates Only

A. H. 501, 502, 503. Research Studies in Animal Husbandry
3 0-0 or 0 3-0 or 0-0-3

Prerequisite: Eighteen credits in Animal Husbandry.

An intensive study of experimental data. Staff.

A. H. 511, 512, 513. Advanced Nutrition. 3-0-0, 0-3-0, 0-0-3

Prerequisites: A. H. 202, 361.

A survey of experimental feeding, together with a study of the fundamental and practical feeding problems of the various sections of the country. A study is made of the effects of various feeds on growth and development. Animals are used in demonstrating the effects of these various nutrients and rations. Mr. Ruffner.

A. H. 521, 522, 523. Special Problems in Dairy Manufacturing Practice. 3-3-3

Prerequisite: Eighteen term credits in Dairy Manufacturing.

Available for graduate students interested in special dairy manufacturing problems under definite supervision and approval. Mr. Clevenger.

A. H. 531, 532, 533. Seminar. 1-1-1

Members of the seminar will be assigned subjects which will be reviewed and discussed. Review of literature, scientific reports and Experiment Station bulletins. Oral and written reports. Staff.

ARCHITECTURE AND ARCHITECTURAL ENGINEERING

Courses for Undergraduates

Arch. 100. Pencil Sketching. 3-0 0, 0-3-0, 0-0-3 or 1-1-1

Required of seniors in L. A., and sophomores in Ind. Arts. Elective for Engineering and Textile students.

Quick sketching of objects as seen and imagined in perspective. Elementary principle of perspective, especially as applied to the visualization of imagined objects. *Mimeographed Notes and Problems Sheets.*

Messrs. Paulson, Baumgarten.

Arch. 101, 102, 103. Freehand Drawing 1, 2, and 3. 2-2-2

1. Required of juniors in Arch., Arch. Eng., and L. A. 2-0-0

Sketching in pencil and pen and ink from models, casts and nature. Emphasis upon tonal value, pattern of darks, character and variety of line, and accenting. Lettering. Watson, *Pencil Sketching.*

2. Required of juniors in Arch., and Arch. Eng. 0-2-0

Water color rendering. Nature and qualities of pigments; theory of color and of tone; presentation of decorative and of pictorial subjects in monochrome and in full color. Guptill, *Reference to Color.*

3. Required of juniors in Arch., Arch. Eng., and L. A. 0-0-2

Charcoal Drawing from architectural casts and models. Emphasis upon delicacy and gradation of shade and shadow. Value sketches of composition projects. Mr. Paulson.

Arch. 104. Art Appreciation for Teachers. 0-0-3

Picture study of the list suggested by the State Board of Education for grade-school use, including paintings, architecture, and sculpture. Paulson, *Art Appreciation for Teachers.* Mr. Paulson.

Arch. 105. Art Principles in Industry. 3-0-0

Elective for Engineering and Textile students, required of sophomores in Industrial Arts.

Line, form, color and aesthetic principles of practical art applicable to the design of articles for manufacture. *Mimeographed Notes.* Mr. Paulson.

Arch. 106. Decorative Drawing. 3-0-0, 0-3-0, 0-0-3

Required of juniors in the Textile School.

Freehand drawing and creative designing of decorative motives adaptable to weaving and cloth printing. *Mimeographed Problem Sheets.*
Mr. Paulson.

Arch. 107. Architectural Drawing. 3-3-0

Required of freshmen in Architecture. M. E. 105 and 106 may be substituted for Arch. 107.

[Drafting Practice.] Use of instruments in drawing plans, elevations, sections; projections; architectural lettering and conventions; tracing and blueprinting; elements of architecture and introduction to design. Pickering, *Architectural Design.* Mr. Williams.

Arch. 111, 112, 113. Appreciation of Fine Arts, Architecture, Painting, Sculpture. 3-3-3

Elective for students of junior standing.

Principles of art. Study of those qualities which constitute great art. First term, architecture; second term, painting; third term, sculpture and the minor arts. Reinach, *Apollo; University Prints; Mimeographed Notes.* Robb and Garrison, *Art in the Western World.* Mr. Paulson.

Arch. 114. Clay Modeling. 1-1-1

Prerequisite: Arch. 100.

Required of seniors in Arch.

Modeling of ornament, reliefs, and full round projects in clay or wax. Moulds and plaster casting. Small scale building detail models. Lectures, laboratory, and critiques. Mr. Paulson.

Courses for Advanced Undergraduates

Arch. 201, 202, 203. Elements of Architecture I, II, and III. 3-3-3

Prerequisites: M. E. 105, 106, or Arch. 107.

Required of sophomores in Arch., Arch. Eng., and L. A.

Exercises and studies of architectural elements and details, walls, openings, etc. A study of the orders of architecture and their application to simple problems in composition and design. Turner, *Fundamentals of Architectural Design;* Ramsey and Sleeper, *Graphic Standards.*

Messrs. Shumaker, Williams.

Arch. 205. Shades and Shadows. 2-0-0

Prerequisite: M. E. 107.

Required of sophomores in Arch. and juniors in L. A.

The determination of conventional shades and shadows as they occur on rendered drawings. Buck, Ronan and Oman, *Shades and Shadows.*

Mr. Shumaker.

Arch. 206. Perspective Drawing. 1 0-0

Prerequisite: M. E. 107.

Required of sophomores in Arch., Arch. Eng., and of juniors in L. A. and Agr. Engr.

Study of the theory of perspective with special applications to illustration and design. Lectures and drawing. Turner, *Fundamentals of Architectural design.* Mr. Baumgarten.

Arch. 207. Historic Motives in Textiles. 3-0 0

Elective for students of junior standing.

Chronologic development of ornament motives; the adaptation of historic motives to modern textile design. Hamlin, *History of Ornament.*

Mr. Paulson.

Arch. 211, 212, 213. Freehand Drawing 4, 5, and 6. 3-3-3

Prerequisite: Arch. 103.

Required of fifth year Arch., elective for others.

The purpose of this course is to give the student a mastery of presentation in his own chosen medium. The first term (Arch. 211) will be devoted principally to still life; the second (Arch. 212) to landscape; and the third (Arch. 213) to figure drawing. Personal technique encouraged; sound principles of drawing insisted upon. Mr. Paulson.

Arch. 301, 302, 303. Intermediate Design, B-1, B-2, B-3. 3 3-3

Prerequisites: Arch. 201, 202, 203.

Required of juniors in Arch., and Arch. Eng.

Problems in elementary composition, design, planning and rendering. Library research. Registration with the Beaux Arts Institute of Design may be required. *Beaux Arts Institute Problems.*

Messrs. Williams, Baumgarten.

Arch. 304. Photographic Practice. 0-0-1

Required of juniors in Arch., and Arch. Eng.

The practical use of photography as an aid in architectural rendition. *Lectures, Notes,* and *Assignments.* Mr. Paulson.

Arch. 305. Working Drawings. 0-0-2

Prerequisites: Arch. 201, 202, 203.

Required of sophomores in Arch. and seniors in Agr. Engr.

The preparation of working drawings of sections and details of construction. Ramsey and Sleeper, *Graphic Standards;* Knoblock, *Good Practice in Construction.* Mr. Williams.

Arch. 321, 322, 323. History of Architecture 1, 2, and 3. 3-3-3

Prerequisite: Arch. 203.

Required of juniors in Arch., Arch. Eng., and L. A.

The origin and development of historic styles of architecture from antiquity to the nineteenth century. Illustrated lectures, library references, sketches. Fletcher, *History of Architecture;* Hamlin, *History of Architecture.*

Mr. Baumgarten.

Arch. 325. History of Sculpture and Mural Decoration. 0-0-2

Prerequisite: Arch. 203.

Required of seniors in Arch. Eng. and of juniors in Arch.

The development of sculptural and mural art as adjuncts to architecture, ancient to modern. Critique of modern decoration supplementary to architecture. Mimeographed notes, library reference and illustrated lectures.

Mr. Williams.

Arch. 351, 352. Architectural Design E-1, E-2. 3-3-0

Prerequisite: Arch. 303.

Required of seniors in Arch. Eng.

Advanced Architectural Design studied especially from the viewpoint of structure. Projects developed with wall and spanning sections. Rendered presentation of practical constructive programs.

Messrs. Williams, Baumgarten.

Arch. 353, 354, 355. Architectural Design B 4, B-5, and B-6. 6 6 6

Prerequisite: Arch. 303.

Required of seniors in Arch.

Advanced programs in architectural design. Registration with the Beaux Arts Institute of Design may be required. Complete presentation drawings of *projects* such as Class B—*Beaux Arts Institute Problems.*

Messrs. Williams, Baumgarten.

Arch. 401, 402, 403. Architectural Design A-I, A-11, A-III. 6 6-6

Prerequisite: Arch. 355.

Required of fifth year in Arch.

Major problems in advanced planning and research. Registration with the Beaux Arts Institute of Design may be required. *Beaux Arts Institute Problems.*

Messrs. Shumaker, Williams, Baumgarten.

Arch. 405. History of the Decorative Arts. 0-3 0

Prerequisite: Arch. 321, or 322.

Elective for students of junior standing.

Lectures and library research on the history of the decorative arts, including interior architecture, furniture, stained glass, etc. McClure, E., *Period Furniture.*

Mr. Shumaker.

Arch. 407. Architectural Composition. 2-0-0

Prerequisite: Arch. 323.

Required of fifth year in Arch.

Principles of planning and composition as related to buildings. Architectural motives, group planning. Library research and sketches. Curtis, *Architectural Composition.* Messrs. Shumaker, Williams.

Arch. 408. Architectural Estimates. 0-0-2

Prerequisite: Arch. 305.

Required of fifth year in Arch.

Lectures and problems in taking off quantities and in estimating materials and labor cost in building construction. *Mimeographed Notes.*

Messrs. Shumaker, Williams.

Arch. 409. Building Materials I. 3-0-0

Prerequisite: Arch. 303.

Required of seniors in Arch. and Arch. Eng.

Nature and qualities of building materials, especially fabricated materials, and their use in interior and exterior finish and in construction. Sample exhibits, lectures, and demonstrations. *Manufacturers' Data Sheets.*

Mr. Williams.

Arch. 411, 412, 413. Architectural Office Practice. 2-2-2

Prerequisite: Arch. 305.

Required of juniors in Arch., seniors in Arch. Eng.

The preparation of working drawings from sketches, following office routine. Knoblock, *Good Practice in Construction;* Ramsey and Sleeper, *Graphic Standards.* Mr. Baumgarten.

Arch. 414. Professional Practice. 0-0-1

Prerequisite: Econ. 307.

Required of fifth year in Arch.

Ethics and procedure in the profession of architecture. Relation of patron and commissionee. *Mimeographed Notes.* Mr. Shumaker.

Arch. 415. City Planning. 0-2 0

Prerequisite: Arch. 323.

Required in fifth year in Arch.

Origin and development of urban communities. Aesthetic, economic, and circulatory problems in city and town planning. Zoning and restraining legislation. Mr. Shumaker.

Arch. 416. Architectural Specifications. 0-0-3

Prerequisite: Econ. 307.

Required of seniors in Arch. and Arch. Eng.

Execution of specifications for architectural building contracts, identification of material, clarification of terms, and protection of patron, contractor, and architect. *Mimeographed Notes.* Messrs. Shumaker, Williams.

Arch. 421. History of Architecture 4. 0-3-0 0-3-0

Prerequisite: Arch. 323.

Required in fourth year in Arch.

Nineteenth century and contemporary architectural styles, with special attention to trends resulting from the use of modern materials. Illustrated lectures, discussion assignments, and reports. Fletcher, *History of Architecture.* Messrs. Williams, Baumgarten.

Arch. 501, 502, 503. Graduate Design I, II, III. 4-4-4

Prerequisites: Arch. 323, 403 (or 352).

Class A.—Project. Advanced problems in design. Archaeology. Measured Drawings. Registration with the Beaux Arts Institute of Design is required. *Beaux Arts Institute Problems.*

Messrs. Shumaker, Williams, Baumgarten.

Arch. 511, 512, 513. Historic Research I, II, III. 4-4-4

Prerequisites: Arch. 323, 403 (or 352).

Research in Architecture and Art in some important phase of its development. Library work with sketches. *Library References.*

Messrs. Paulson, Williams, Baumgarten.

BOTANY

Courses for Undergraduates

Bot. 101, 102. General Botany. 4-4-0

Required of freshmen and sophomores in Agriculture.

The first term: the nature of the higher crop type plants; the second: a survey of the major lower plant groups with the emphasis upon the economic forms, bacteria and fungi.

Messrs. Wells, Shunk, Anderson, Whitford, Buell.

Bot. 203. Systematic Botany. 0 0 3

Prerequisites: Bot. 101, 102.

Elective in Agriculture and Science.

An introduction to the local flora and the classification of the plants included therein. Messrs. Wells, Shunk, Whitford, Buell.

Bot. 211-213. Dendrology. 3-0-3

Prerequisites: Bot. 101, 102, 203.

Required of sophomores in Forestry.

A study of the principal trees of North America. Mr. Buell.

Bot. 221. Plant Physiology. 5 0 0 or 0-0-5

Prerequisites: Bot. 101, 202.

Required of sophomores in Forestry.

A study of the activities of living plants with special emphasis upon the fundamental principles concerned. Mr. Anderson.

Courses for Advanced Undergraduates

Bot. 301. Diseases of Field Crops. 3-0-0

Prerequisites: 101, 102.

Elective for juniors and seniors.

A study of the more important diseases of field crops, such as cotton, tobacco, corn, small grains, legumes, and grasses; emphasis on symptoms, cause, and control. Mr. Lehman.

Bot. 303. Diseases of Fruit and Vegetable Crops. 0 0-3

Prerequisites: Bot. 101, 102, 221.

Elective for juniors and seniors.

Lectures and laboratory studies of importance, causes, symptoms, and control of diseases affecting these crops. Mr. Shaw.

Bot. 311. Diseases of Forest Trees. 3-0-0

Prerequisites: Bot. 101, 102, 221.

Required of seniors in Forestry.

Lectures and laboratory studies of importance, causes, symptoms, and control of diseases affecting trees and their products. Mr. Shaw.

Bot. 401. Advanced Plant Pathology. 5 or 5 or 5

Prerequisites: Bot. 101, 102, 221, 301 or 303.

Elective.

A course designed to give the student training in those methods of investigation which are most useful in the study of plant pathological problems. Mr. Lehman.

Bot. 402. General Bacteriology. 0-4-0

Prerequisites: Bot. 101, 102, or Zool. 101.

Required of juniors or seniors in Agriculture.

An introduction to the principles of bacteriology; laboratory work on modern cultural methods of handling and studying bacteria. Mr. Shunk.

Bot. 411-412. Plant Morphology. 3-3-0

Prerequisites: Bot. 101, 102, 203.

Elective in Agriculture and Forestry.

An advanced survey of plants; the lower groups are given the first term, the higher (land plants) the second. Messrs. Wells, Shunk.

Bot. 432. Advanced Plant Physiology. 0 3-0 or 0-5-0

Prerequisites: Bot. 101, 102, 221.

A critical and comprehensive treatment of the various aspects of plant physiology. Particular attention is given to basic principles and to recent developments. Mr. Anderson.

Bot. 441. Plant Ecology. 3-0-0

Prerequisites: Bot. 101, 102, 221.

Required of juniors in Forestry.

Environmental control of plant distribution with emphasis upon the habitats and vegetation of North Carolina. Mr. Wells.

Bot. 442. Microanalysis of Plant Tissue. 0-3-0

Prerequisites: Bot. 101, 102, 221.

The identification in plant tissues of mineral elements and organic compounds and the physiological significance of these materials. Mr. Anderson.

Bot. 443. Soil Microbiology. 0 0 3

Prerequisites: Bot. 101, 102, 221, 402.

Elective in Agriculture and Forestry.

A study of the more important microbiological processes that occur in soils: decomposition of organic materials, ammonification, nitrification, and nitrogen fixation. Mr. Shunk.

Bot. 451. Plant Microtechnique. 3-0-0

Prerequisites: Bot. 101, 102.

Elective in Agriculture and Forestry.

Materials and processes involved in the preparation of plant structures for microscopic examination. Mr. Anderson.

Bot. 452. Advanced Bacteriology. 0-3-0

Prerequisites: Bot. 101, 102, 221, 402.

A study of the methods used in the bacteriological analysis of water and milk. Mr. Shunk.

Bot. 453. Advanced Plant Ecology. 0 0-3

Prerequisites: Bot. 221, 441.

Elective in Agriculture and Forestry.

Practice in the use of the instruments necessary in the study of environmental factors; advanced readings and conferences on plant distribution in relation to these factors. Mr. Wells.

Bot. 463. Advanced Systematic Botany. 0-0-3

Prerequisites: Bot. 101, 102, 203.

A continuation of the elementary course 203 in the identification of the local flora plants together with a survey of the plant families from the modern phylogenetic point of view. Messrs. Wells, Buell.

Bot. 473. Aquatic Biology. 0-0-2

Prerequisites: Bot. 101, 102.

Required of Sanitary Engineers.

Identification and control of the aquatic algae and protozoa which give trouble in reservoirs. A survey of the higher water and marsh plants is also included. Mr. Whitford.

Bot. 481, 482, 483. Pathogenic Fungi. 3-3 3

Prerequisites: Bot. 101, 102.

A course on the structure, identification, and classification of fungi. Special attention is given to species parasitic on crop plants. Mr. Lehman.

Courses for Graduates Only

Bot. 501, 502, 503. Pathology of Special Crops. 3-3-3

Prerequisites: Bot. 301 or 401, 402.

A comprehensive study of the etiology, symptoms, and control of specific diseases. Messrs. Lehman or Shaw.

Bot. 511, 512, 513. Bacteriology: Special Studies. 3 3 3

Prerequisites: Bot. 402, 452.

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

Mr. Shunk.

Bot. 521. Advanced Systematic Botany. 3-0-0 or 0-0-3

Prerequisites: Bot. 203, 411, 412.

An advanced survey of restricted groups of plants involving organization and distribution problems. Messrs. Wells, Buell.

Bot. 523. Cytogenetics. See F. C. 523.

Bot. 531, 532, 533. Plant Physiology. 3-3-3

Prerequisite: Bot. 221, 432.

Critical study of some particular problem, involving original investigation together with a survey of pertinent literature. Mr. Anderson.

Bot. 541. Plant Ecology. 3-0-0 or 0-0-3

Prerequisites: Bot. 203, 441.

Minor investigations in vegetation-habitat problems accompanied by advanced reference reading. Mr. Wells.

Bot. 551, 552, 553. Research in Botany. 3-3-3

Prerequisite: 30 hours in 100-300 courses in Botany. Staff.

Bot. 561, 562, 563. Seminar. 1-1-1

Attendance by the student upon the weekly seminar together with the presentation of a paper in his major field of research. Mr. Wells.

CERAMIC ENGINEERING

Courses for Undergraduates

Cer. E. 102. Ceramic Materials. 0 3-0

Required of sophomores in Ceramic Engineering. Prerequisite: Geol. 220.

The origin and occurrence of ceramic raw materials, their chemical and physical properties and system of measuring them. Ries, *Clays Occurrence, Properties and Uses.* Mr. Kriegel.

Cer. E. 103. Ceramic and Mining Processes. 0-0-3

Required of sophomores in Cer. E. and Geol. E. Prerequisite: Geol. 220.

The winning and preparation of ceramic materials and the equipment and processes used in manufacturing ceramic products. Garve, *Factory Design and Equipment.* Mr. Greaves-Walker.

Courses for Advanced Undergraduates

Cer. E. 201. Drying Fundamentals and Practice. 3 0 0

Prerequisites: Phy. 203, Cer. E. 102.

Required of juniors in Cer. E.

The theory and practice of drying ceramic products. Problems. Greaves-Walker, *Drying Ceramic Products.* Mr. Greaves-Walker.

Cer. E. 203. Ceramic Products. 0 0-3

Prerequisite: Cer. E. 102.

Required of juniors in Cer. E.

A study of the physical, chemical, and artistic requirement of ceramic products. Laboratory practice. Messrs. Greaves-Walker, Kriegel.

Cer. E. 252. Firing Fundamentals and Practice. 0-3-0

Prerequisites: Cer. E. 102 and 201.

Required of juniors in Cer. E.

The theory and practice of firing ceramic products. Problems. Wilson, *Ceramics, Clay Technology.* Mr. Greaves-Walker.

Cer. E. 253. Ceramic Calculations. 0-0 3

Prerequisites: Chem. 212, Cer. E. 102, 201, 252.

Required of juniors in Cer. E.

Solution of chemical and physical problems of the ceramic industries. Andrews, *Ceramic Tests and Calculations.* Mr. Kriegel.

Cer. E. 303. Silicates I. 3-0-0

Prerequisites: Chem. 331, Cer. E. 253 and Geol. 338.

Required of seniors in Cer. E.

The fundamental principles underlying the composition and production of whitewares, glazes, terra cotta, and abrasives. Hall and Insley, *A Compilation of Phase Rule Diagrams.* Mr. Kriegel.

Cer. E. 304. Silicates II. 0-3-0

Prerequisites: Chem. 331, Cer. E. 303 and Geol. 338.

Required of seniors in Cer. E.

The fundamental principles underlying the composition and production of refractories, cements, plasters, glasses, and metal enamels. Hall and Insley, *A Compilation of Phase Rule Diagrams;* Andrews, *Enamels;* Scholes, *Modern Glass Practice.* Mr. Kriegel.

Cer. E. 305. Pyrometry. 1-0-0

Prerequisite: Cer. E. 252.

Required of seniors in Cer. E.

The theory and use of temperature measuring instruments in industry. Wood and Cork, *Pyrometry.* Mr. Kriegel.

Cer. E. 311, 312, 313. Ceramic Laboratory. 3-3 3

Prerequisites: Cer. E. 201, 203, 252, 253, 304.

Required of seniors in Cer. E.

Advanced practice in producing and determining the chemical and physical properties of ceramic materials and products; thesis.

Messrs. Greaves-Walker, Kriegel.

Cer. E. 314, 315. Ceramic Designing. 0 4-4

Prerequisites: M. E. 213, E. M. 322, Cer. E. 103, 201, 252, and 253.

Required of seniors in Cer. E.

Designing of ceramic equipment and structures. Garve, *Factory Design and Equipment.* Messrs. Greaves-Walker, Kriegel.

Courses for Graduates and Advanced Undergraduates

Cer. E. 403. Refractories. 0-0-3

Prerequisites: Chem. 331, Geol. 338, Cer. E. 102, 304.

Required of seniors in Cer. E.

Refractory materials and manufacture of refractory products. Use of refractory products in industrial furnaces. Norton, *Refractories.*

Mr. Greaves-Walker.

Courses for Graduates Only

Cer. E. 501, 502, 503. Designing of Ceramic Equipment and Plants. 3-3-3

Prerequisite: Cer. E. 315.

Advanced study and designing of ceramic machinery, dryers, kilns, and plant structures. Mr. Greaves-Walker.

Cer. E. 505, 506, 507. Advanced Refractories and Furnaces. 3 3-3

Prerequisite: Cer. E. 313, 403.

Advanced study of refractory materials and products, and their use.

Mr. Greaves-Walker.

Cer. E. 509, 510, 511. Industrial Adaptability of Ceramic Materials. 3-3-3

Prerequisite: Cer. E. 313.

Laboratory investigations to determine the industrial uses to which various North Carolina ceramic materials can be put.

Messrs. Greaves-Walker, Kriegel.

Cer. E. 513, 514, 515. Ceramic Research. 3-3-3

Prerequisite: Cer. E. 313.

Research problems in ceramics will be assigned to meet the desire of the student for specialization. Messrs. Greaves-Walker, Kriegel.

Cer. E. 517, 518, 519. Glass Technology. 3-3-3

Prerequisites: Chem. 331, Geol. 338, Cer. E. 253, 304, 403.

Advanced study of the manufacture and physical properties of glass.

Mr. Greaves-Walker.

Cer. E. 521, 522, 523. Advanced Silicate Technology. 3-3-3

Prerequisites: Cer. E. 303, 304, 313.

Advanced laboratory practice in bodies, glazes, glasses, and colors.

Mr. Kriegel.

CHEMICAL ENGINEERING

Courses for Undergraduates

Chem. E. 201, 202, 203. Introduction to Chemical Engineering. 1-1-2

Required of sophomores in Chem. E. Prerequisites: Chem. 103; Math. 102.

Reactions in chemical processes, illustrative problems, and control methods; elements of unit processes and unit operation; visits to chemical plants, elementary chemical engineering calculations. Randolph, *Introduction to Chemical Engineering.* Messrs. Randolph, Johnson.

Chem. E. 212, 213. Chemical Nature of Engineering Materials. 0-3-3

Prerequisites: Chem. 103; Math. 103.

Required of seniors in General Engineering; elective for others. Prerequisites: Chem. 103; Math. 103.

Study of the fundamental facts about the chemical nature of engineering materials as an aid in the proper choice of materials for various engineering purposes under working conditions. Teachers' Manual. Mr. Randolph.

Courses for Advanced Undergraduates

Chem. E. 311, 312, 313. Chemical Engineering I. 3 3 3

Prerequisites: Chem. 213; Chem. E. 201 or Tex. 212.

Required of juniors in Chem. E. and of seniors in Textile Chemistry and Dyeing.

Unit processes, inorganic and organic technology; industrial chemistry; equipment, materials, methods, and processes employed in chemical manufacture; water, fuels, and power, studied on the quantitative and mathematical basis; conversion of raw materials into such necessary products, as sugar, paper, gas, paint, leather, glass; by-products and waste products. Read's *Industrial Chemistry;* Scroggins, *Organic Unit Processes;* Teachers' Manual; Badger and McCabe, *Elements of Chemical Engineering;* and *Library References.* Messrs. Lauer, Doody.

Chem. E. 321, 322, 323. Chemical Engineering Laboratory I. 1-1-1

Prerequisite or concurrent: Chem. E. 311.

Required of juniors in Chem. E.

A laboratory study of industrial control methods; visits to industrial plant; problems and processes solved and presented in technical reports; preparation of products on pilot plant scale; costs studies. *Notes.*
Messrs. Lauer, Doody, Drum.

Chem. E. 330. Treatment of Water and Sewage 3-0 0 or 0-0-3

Prerequisite: Chem. E. 311 or C. E. 215.

Required of juniors in San. E.

Principles involved in the control of municipal water supplies and in sewage treatment; reactions involved; chemical nature of water and sewage treatment; methods for removal of the more objectionable materials in industrial waters. *Notes.* Messrs. Randolph, Doody.

Chem. E. 331. Industrial Stoichiometry. 3-0 0 or 0-3-0 or 0-0-3

Prerequisite or concurrent: Chem. E. 311.

Required of juniors in Chemical Engineering.

Industrial calculations and measurements; heat balances; material balances; fuels and combustion processes; principles of chemical engineering calculations. Haugen and Watson, *Industrial Chemical Calculations.*
Mr. Johnson.

Courses for Graduates and Advanced Undergraduates

Chem. E. s401. Pilot Plant Practice. 3 credits

Prerequisites: Chem. E. 313, Chem. E. 323, Chem. 213.

Required of Junior Chemical Engineering students and elective for others. To be given during two weeks immediately preceding the opening of the fall term in September.

Practical application of chemical machinery and chemical testing methods. Pilot plant examination of chemical processes. Cost estimation and process development through pilot plant studies. Reference: current technical journals, lectures and notes. Messrs. Lauer, Doody, Randolph.

Chem. E. 411, 412, 413. Principles of Chemical Engineering. 3-3-3

Prerequisite: Chem. E. 311; concurrent with Chem. 431.

Required of seniors in Chem. E.

Survey of field of Chemical Engineering; control in industrial manufacture; unit operations; flow of fluids and of heat; equipment for and principles involved in such operations as crushing and grinding, separation, evaporation, distillation, filtration, humidification, drying, absorption, and extraction; chemical engineering calculations; design and efficiency of chemical machinery. Walker, Lewis, McAdams, and Gilliland, *Principles of Chemical Engineering;* Badger and McCabe, *Elements of Chemical Engineering.* Messrs. Bain, Johnson, Lauer, Doody.

Chem. E. 421. Water Treatment. 3-0-0 or 0-3-0 or 0 0 3

Prerequisite: Chem. E. 311.

Required of seniors in Chem. E.

Supplies of water; filter plant machinery, equipment and practice; water purification and softening; types of filters; requirements of waters for municipal and manufacturing purposes; water analysis; research on water purification and industrial waste treatment. *Notes.*

Messrs. Randolph, Doody.

Chem. E. 422. Chemistry of Engineering Materials. 3 or 3 or 3

Prerequisite: Chem. E. 311.

Required of seniors in Chem. E.

Technical study of engineering materials, suitable materials for manufacturing plants, machines, and special uses; corrosion and chemical action; paints and protective coatings; metallurgy; strength, toughness, and elasticity of metals; chemical, metallographic, and microphotographic examinations of metals and alloys, and other materials; fire assaying. Leighou, *Chemistry of Engineering Materials;* White, *Engineering Materials.*

Messrs. Randolph, Van Note, Bain.

Chem. E. 423. Electrochemical Engineering. 3-3-3 or 0-0-3

Prerequisite: Chem. E. 311.

Required of seniors in Chem. E.

Theory and practice of electrochemical industries; principles of electrolysis and other electrochemical processes; electric furnace; electrothermal operations, electrometallurgy. Mantell, *Industrial Electrochemistry.*

Messrs. Randolph, Doody, Lauer.

Chem. E. 425. Gas Engineering. 3 or 3 or 3

Prerequisite: Chem. E. 311.

Elective for seniors or graduates in Chem. E.

A gas engineering course: manufacture of industrial fuel gases and their distribution; advances made in the industry; apparatus and equipment; plant design; general practice in gas plants; application and use of gas and the by-products of its manufacture; pipe lines, service connections, gas meters.

Mr. Randolph.

Chem. E. 426. Sanitation Processes. 0-0 3

Prerequisite: Chem. E. 311.

Technical study of the methods of sanitation in industrial plants; equipment and practice in the disposal and treatment of waste materials and sewage; measures necessary in eliminating occupational disease hazards. *Notes.*

Messrs. Randolph, Lauer.

Chem. E. 427. Industrial Application of Physical Chemistry. 3 or 3 or 3

Prerequisite: Chem. E. 311.

Special phases of physical chemistry studied technically with reference to the practical application of these principles in the chemical industries such as industrial catalysis, evaporation principles, absorption, equilibrium, applications of phase rule, physical metallurgy, colloids. *Notes.* Mr. Doody.

Chem. E. 428. Fuel and Combustion Engineering. 3 or 3 or 3

Prerequisite: Chem. E. 311.

Fundamental principles and mechanism of the combustion reactions; quantitative application to problems of design or use of equipment for fuel processing and utilization; and a thorough study of solid, liquid, and gaseous fuels, with complete methods of analysis. Haslam and Russell, *Fuels and Their Combustion.*

Messrs. Lauer, Randolph.

Chem. E. 431, 432, 433. Chemical Engineering Laboratory and Design II. 2-2-2

Prerequisite or concurrent: Chem. E. 411.

Required of seniors in Chem. E.

A laboratory study of measurement of flow of fluids and heat; crushing and grinding, distillation; evaporation; drying; humidity; filtration and mechanical separation; absorption and extraction; calculations; design and construction of equipment for these fundamental unit operations in chemical industry. Messrs. Johnson, Bain, Seely.

Chem. E. 434. Chemical Engineering Design. 3 or 3 or 3

Prerequisite or concurrent: Chem. E. 411.

Location, layout, and complete design of the chemical plant and its process equipment; materials of construction; economic factors controlling the chemical industry, and optimum design from the standpoint of economic return, process development, pilot-plant production studies. *Notes.*

Messrs. Lauer, Johnson.

Chem. E. 435. Industrial Oils, Fats and Waxes. 0-0-3 or 3-0-0

Prerequisite: Chem. E. 311.

Elective for juniors or seniors in Chem. E.

Commercial practice in the manufacture, refining, and conversion of animal and vegetable oils and their by-products; analyses, tests, and methods of preparation for foods and feeds; drying, semi-drying, and essential oils; industrial fats and waxes. Technical study of petroleum refining and products; lubricants. Mr. Lauer.

Chem. E. 436. Chemical Engineering Thermodynamics. 3 or 3 or 3

Prerequisite or concurrent: Chem. E. 411.

A study of the thermal properties of matter and energy relationships underlying chemical processes. A thorough consideration of fundamental laws of energy as applied to Chemical Engineering problems and processes in industry. Messrs. Doody, Johnson.

Chem. E. 437. Cellulose and Allied Industries. 3-3-0 or 3-3-3

Prerequisite or concurrent: Chem. E. 311 or Forestry 206, 207.

Required of seniors in Forestry.

Cellulose and its compounds; forest raw material for chemical industries; methods and processes; control conditions; machinery; equipment; water requirements; processes for manufacture of paper; rayon; tannin; tar; pitch; turpentine; creosote; wood alcohol; acetic acid; acetone; rubber, and cellulose conversion products; distillation, and extract industries. *Notes.*

Mr. Lauer.

Chem. E. 438. Corrosion: Causes and Prevention. 3-3-3

Prerequisite: Chem. E. 311.

Theories of corrosion; influences of metal composition and methods of manufacture; external influences; corrosion testing; preventive measures against atmospheric, underground, underwater, closed water system, chemical corrosion. Good practices; comparison of corrosive resisting materials; suitability of materials for corrosion resistance in various chemical and industrial uses. Speller, *Corrosion: Causes and Prevention. Notes.*

Mr. Johnson.

Chem. E. 439. Chemical Principles. 3 or 3 or 3

Prerequisite or concurrent: Chem. E. 311.

Fundamental principles in chemical manufacture and correlation of these principles in unit processes and operation. Hougen and Watson, *Industrial Chemical Calculations. Notes.* Mr. Doody.

Chem. E. 440. Metals and Alloys. 3 or 3 or 3

Prerequisite: Chem. E. 311 and 422 or M. E. 131.

Elective for seniors or graduates.

Metals and alloys studied through chemical, thermal, and microscopic analysis; intermetallic compounds, solid solutions, eutectics; internal mechanisms and their effect in aging, heat treating, mechanical working; modern physical metallurgical problems and practices. Doan, *Principles of Physical Metallurgy;* Williams and Homerberg, *Principles of Metallography.*

Mr. Bain.

Courses for Graduates Only

Chem. E. 501. Chemical Technology—Advanced. 3-3-3

Prerequisite: Chem. E. 411.

An advanced course in problems, processes, and methods of chemical manufacture and production; special problems of local manufacturing plants worked out under plant conditions; optimum production conditions; special study in applied inorganic, applied organic chemistry, and research in applied chemistry. Messrs. Randolph, Lauer.

Chem. E. 502. Industrial Chemical Research. 3 3-3

Prerequisite: Chem. E. 411.

Chemical research on some industrial problem relating to North Carolina resources; practice in industrial plants, control analyses, estimate of losses, costs, data sheets, technical report. Staff.

Chem. E. 503. Chemical Engineering Research. 3-3-3

Prerequisite: Chem. E. 411.

Some plant problem studied exhaustively by making investigations at the chemical plant, and by supplementary experiments and research in the laboratory; measurements, tabulation, graphs, calculation of some actual plant problem, and Pilot plant research problems. Staff.

Chem. E. 504. Advanced Chemical Engineering. 3-3-3

Prerequisites: Chem. E. 411, Chem. E. 431.

Advanced study of process equipment, theory, and practice in operation and design for the unit operations, evaporation, distillation, absorption, filtration, drying, crystallization, and air conditioning; Chemical Engineering thermodynamics; coefficients of heat transfer; heat of reactions; evaporators; stills; condensers, and heat exchangers; interrelations between heat transfer and fluid friction. McAdam, *Heat Transmission* and other texts.
Staff.

CHEMISTRY

Courses for Undergraduates

Chem. 101, 102, 103. General Inorganic Chemistry. 4 4-4

Recitations and laboratory work; theories of laws, history, occurrence, preparation, properties, and uses of the more important elements and their compounds; formulae, valence, equations and calculations.
Messrs. Caveness, Reid, Jones, Jordan, Satterfield, Showalter, Loeppert, White, Wilson.

Chem. 211. Qualitative Analysis. 4-0 0

Prerequisites: Chem. 101, 102, 103.

Required of sophomores in Ceramic, Chemical, and Mining Engineering and those majoring in chemistry and of juniors in Textile Chemistry and Dyeing.

Chemical analysis: identification and separation of more common ions and analysis of mixture of salts of commercial products.
Messrs. Wilson, Caveness, Reid, Jones.

Chem. 212. Quantitative Analysis. 0-4-0

Prerequisite: Chem. 211.

Required of sophomores in Ceramic Engineering, Chemistry, Chemical Engineering, and of juniors in Textile Chemistry and Dyeing.

Chem. 213. Quantitative Analysis. 0-0-4

Prerequisite: Chem. 211.

Required of sophomores in Chemical Engineering and those majoring in Chemistry.

A continuation of Chem. 212. Gravimetric methods. Substances of more difficult nature are analyzed, as minerals, steel, alloys, limestone, Paris green, etc. Messrs. Wilson, Caveness, Reid, Jones.

Chem. 221. Introduction to Organic Chemistry. 4-0-0 or 0-4-0 or 0-0-4

Prerequisites: Chem. 101, 102, 103.

Required of sophomores in Agriculture. Elective for others.

Hydrocarbons, alcohols, aldehydes, ketones, acids, ethers, esters, amino-acids, and bezine derivatives; carbohydrates, fats, proteins, and related compounds. Mr. Reid.

Chem. 223. Quantitative Analysis. 0-0 4

Required of students in Textile Chemistry and Dyeing.

A continuation of Chem. 212. Substances of more difficult nature are analyzed, as sulphites, sulphides, bleaching powder, Turkey-red oil, soaps. Messrs. Wilson, Caveness, Reid, Jones.

Chem. 233. Quantitative Analysis. 0-0-4

Prerequisite: Chem. 212.

Required of Agr. Chemistry students.

Course allows students to choose field of analysis, such as soil analysis, fertilizers, feedstuffs, insecticides, and fungicides. Mr. Wilson.

Chem. 242. Chemical Calculations. 0-3-0 or 0-0-3

Prerequisites: Chem. 101, 102, 103.

Chemical problems, especially in analytical work; lectures on principles, theories, laws, upon which the problems are based; assigned problems for discussion. Mr. Jones.

Chem. 331. Physical Chemistry. 5-0-0

Prerequisites: Chem. 101, 102, 103.

Required of Cer. E.; elective to others.

Fundamental chemical principles from a physiochemical viewpoint; special attention to silicate analysis, colloids, and phase rule. Mr. Sutton.

Courses for Graduates and Advanced Undergraduates

Chem. 401. Historical Chemistry. 2 0-0

Prerequisites: Chem. 101, 102, 103.

Development of Chemistry and the history of men instrumental in the progress of Chemistry. Mr. Williams.

Chem. 402, 403. Theoretical Chemistry. 0 2-2

Prerequisites: Chem. 101, 102, 103.

Atoms and molecules; chemical reactions and conditions influencing them; electronic conception of valence, radio activity. Mr. Jordan.

Chem. 411. Advanced Qualitative Analysis. 4-0 0

Prerequisite: Chem. 211 or its equivalent.

Lectures and laboratory work dealing with the analysis of alloys and complex mixture. Mr. Wilson.

Chem. 412. Advanced Quantitative Methods. 0-3-0 or 0-0 3

Prerequisite: Chem. 213 or its equivalent.

Methods and apparatus in advanced quantitative analysis; heat of combustion, colorimetry, complete analysis of ores, special steels, paint pigments and alloys. Mr. Wilson.

Chem. 421, 422, 423. Organic Chemistry. 4-4-4

Prerequisites: Chem. 101, 102, 103.

Required of juniors in Chemical Engineering, Chemistry, and seniors in Textile Chemistry and Dyeing. Elective for others.

Aliphatic and aromatic compounds; practical applications; methods of preparation and purification of compounds, and their structures. Mr. Williams.

Chem. 424. The Chemistry of Hydrocarbons and Their Derivatives. 0-3-0 or 0-0-3

Prerequisites: Chem. 421, 422, 423.

New developments in solvents, resins, detergents, synthetic rubber and motor fuels. Mr. Reid.

Chem. 431, 432, 433. Physical Chemistry. 4-4-4 or 4-4-0

Prerequisite: Chem. 213.

The first two terms only required of Chemical Engineers; elective for Agricultural Chemistry students.

Principles of Physical Chemistry; laws and theories, application to various branches of chemistry and to industrial processes. Mr. Sutton.

Chem. 441. Food Products and Adulterants. 3-0-0 or 0-3 0

Prerequisites: Chem. 221 or 421, 422, 423.

Designed for students in all schools.

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

Chem. 442. Chemistry of Colloids. 0-3-0

Prerequisites: Chem. 221 or 421, 422, 423.

Colloidal behavior, osmotic pressures, dialysis, sols and gels, membranes and membrane equilibria, proteins, and Donnan equilibrium. Mr. Jones.

Chem. 451, 452. Physiological Chemistry. 3-3-0

Prerequisites: Chem. 221 or 421, 422, 423.

Essential chemical facts pertaining to life processes; digestion, absorption, metabolism, secretions, and excretions; lectures, laboratory.
Mr. Satterfield.

Chem. 462. Chemistry of Vitamins. 0-3-0 or 0-0-3

Prerequisites: Chem. 221 or 421, 422, 423.

Required of juniors in Animal Prod.

Application of vitamin hypothesis to human nutrition; history, nomenclature, properties, distribution, effects of deficiencies, vitamin values.
Mr. Satterfield.

Chem. 472. Blood Analysis. 0-3-0 or 0-0-3

Prerequisites: Chem. 212 and 421, 422, 423.

Hemoglobin, sugar, urea, uric acid, cholesterol, creatine, creatinine, non-protein, nitrogen, amino-acid nitrogen, calcium. Folin-Wu system is emphasized; lectures and laboratory. Mr. Satterfield.

Chem. 481. Agricultural Chemistry. 3 0-0

Prerequisites: Chem. 101, 102, 103, and 221 or 421, 422, 423.

Feeding the plant; insecticides and fungicides; transforming the plant into human food and animal food. Composition of plants; relation between composition and uses. Mr. Satterfield.

Chem. 482, 483. Food and Nutrition. 0 3 3

Prerequisites: Chem. 221 or 421, 422, 423.

Open to all students desiring a practical knowledge of the subject.

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

Chem. 491, 492, 493. Advanced Physical Chemistry. 3-3-3

Prerequisites: Chem. 431, 432, 433.

An advanced problem course designed for chemical engineers. Mr. Sutton.

Courses for Graduates Only

Chem. 501, 502, 503. Organic Chemistry, Advanced. 3-3-3

Prerequisites: Chem. 421, 422, 423.

Principles of Organic Chemistry, current literature; laboratory work and preparation in quantity. Mr. Williams.

Chem. 511. Organic Qualitative Analysis. 3-0-0

Prerequisites: Chem. 421, 422, 423.

Detection of elements and radicals, group characteristics. Mr. Williams.

Chem. 512. Organic Quantitative Analysis. 0 3-0

Prerequisites: Chem. 212, 421, 422, 423.

Analysis of organic compounds for carbon, hydrogen, nitrogen, the halogens, sulfur, etc. Mr. Williams.

Chem. 513. Micro-Analysis. 0-0-3

Prerequisites: Chem. 421, 422, 423.

Tests for compounds, and impurities in quantities too small to be detected by ordinary methods. Mr. Williams.

Chem. 523. Micro-Chemical Analysis. 0-0-3

Prerequisite: Chem. 213.

Inorganic micro qualitative analysis; fibres, starches, etc. Mr. Wilson.

Chem. 531, 532, 533. Chemical Research. 3-3 3

Prerequisite: 54 term credits in Chemistry. Open to all graduates.

Special problems that will furnish material for a thesis. Staff.

Chem. 541, 542, 543. Seminar. 1-1-1

Required of graduate students specializing in Chemistry.

Preparation and presentation of abstracts of current publications in the field of Chemistry.

Chem. 552, 553. Biochemistry. 0-3-3

Prerequisites: Chem. 421, 422, 423, 482, 483.

Special topics in Biochemistry. Mr. Satterfield.

CIVIL ENGINEERING

Courses for Undergraduates

C. E. 101, 102, 103. Drawing. 1 1-1

Required for freshmen in Forestry.

Plain lettering, common symbols, platting of areas from compass-survey notes furnished, filling in contours from notes furnished, tracing, calculation of areas by planimeter; finished maps. Sloane and Montz, *Elementary Topographic Drawing.* Messrs. Fontaine, Lambe.

C. E. s200. Surveying.* 3 credits

Prerequisite: Math. 102.

Required in the summer immediately following the freshman year in Aero. E., Agr. Eng., A. E., Cer. E., and E. E. and M. E. following the sophomore year.

The use, care and adjustment of surveying instruments; elementary land surveying, traverse lines, leveling, topographical surveying and stadia measurements. Tracy, *Plane Surveying.* Mr. Mann and Staff.

C. E. 221, 222, 223. Surveying, Theoretical. 3 3 3

Prerequisite: Math. 102.

Required of sophomores in Civil, Construction, Highway and Sanitary Engineering. C. E. 221, 222 required in Forestry (0-3-3), of Geol. Eng., and Landscape Architecture (3-3-0).

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* Note.—Two sessions: (a) Full time, 3 weeks immediately following close of College third term; (b) half time, 6 weeks concurrently with College Summer School term in order to allow students to schedule summer school work.

Use, care and adjustment of surveying instruments, Land Surveying, Topographical Surveying, Leveling and Theory of stadia measures, plane table, etc.

Third term, railroad surveys, including simple, compound, reverse, and spiral curves, turnouts, etc. Davis and Foote, *Surveying*. Rubey, *Route Surveys*. Staff.

C. E. 224. **Topographic Drawing.** 0-0-1

Prerequisites: C. E. 101, 102, 103.

Required in Forestry, Landscape Architecture.

Plotting by coördinates; contours and general topography. *Notes*. Staff.

C. E. 225, 227. **Field Surveying.** 1-0-1

To be taken concurrently with C. E. 221, 223.

Required in C. E., Constr. E., San. E., H. E., and Landscape Architecture. C. E. 225 required in Geol. E. (1-0-0), and in Forestry (0-1-0).

Surveying field practice, topographical surveys, railroad and highway curves. Profiles, cross-sections. Staff.

C. E. 226. **Mapping.** 0-1-0

Prerequisites: M. E. 105, 106. To be taken concurrently with C. E. 222.

Required of all students in the Department of Civil Engineering, Geological Engineering, and Landscape Architecture.

Practice in conventional signs and lettering. A complete topographical map and tracing is to be made involving the use of three methods of contour location. Field notes to be furnished. Messrs. Fontaine, Lambe.

C. E. 281. **Mill and Mill Village Sanitation.** 3-0-0

Prerequisite: Chem. 103.

Mill and mill village water supply and sewage disposal, mosquito and fly control, sanitary milk supply, industrial hygiene. This course given for textile students. Ehlers and Steele, *Municipal and Rural Sanitation*. Mr. Johnson.

Courses for Advanced Undergraduates

C. E. s300. **Surveying and Mapping.** 3 credits

Prerequisites: C. E. 221, 222, 223; C. E. 224.

Required in summer immediately following sophomore year in Forestry.

Boundary; topographical surveys, and calculations of sections of College Experimental Forestry Lands. Finished section maps. Davis and Foote, *Surveying*. Staff.

C. E. s310. Advanced Surveying.* 3 credits

Prerequisites: C. E. 221, 222, 223; C. E. 226.

Required in the summer immediately following the sophomore year in Civil Engineering.

Plane table practice, special problems in surveying practice; triangulation, railroad and highway spirals; hydrographic surveying with sextant; plane table problems; the use and rating of current meters; measurement of stream flow; drainage problems.

Laying out proposed construction work. Topograph, details, special problems. Davis and Foote, *Surveying.* Mr. Mann and Staff.

C. E. 321. Materials of Construction. 3-0-0

Required of juniors in C. E., H. E., Constr. E., San. E., M. E., Aero. E. and A. E., and of seniors in I. E.

The study of materials used in buildings and other engineering structures, with particular reference to their methods of manufacture and physical properties. Two periods lecture and recitation; one period laboratory. Tucker, *Laboratory Manual in the Testing of Materials. Lectures and Notes.* Messrs. Tucker, Fontaine, Babcock.

C. E. 361, 362, 363. Construction Engineering I. 3-3-3

Prerequisite: E. M. 311.

Required of juniors in Constr. E.

Study of working drawings, good practice in masonry and frame construction, estimating quantities. Huntington, *Building Construction; Notes and Trade Literature.* Mr. Bramer.

C. E. 365, 366. Sanitary and Mechanical Equipment of Buildings. 3-3-0

Prerequisites: E. M. 311, 312.

First term required of juniors in Constr. E. First and second terms required of juniors in Arch. E.

A study of water supply, soil, waste, and vent-pipe systems, principles and practice of heating and ventilating and a discussion of various other mechanical equipment of a building, such as elevators, dust-collecting systems, etc. Gay and Fawcett, *Mechanical and Electrical Equipment of Buildings.* Mr. Bramer.

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* Note. Two sessions: (a) Full time, 3 weeks immediately following close of College third term; (b) half time, 6 weeks concurrently with College Summer School term in order to allow students to schedule summer school work.

C. E. 383. Sanitary Engineering. 0 0-3

Prerequisite: Chem. 103.

Required of juniors in San. E.

This course covers in a general way, the field of Sanitary Engineering, including: water supply and sewage disposal; ventilation; mosquito and fly control; refuse disposal; public health laws and organization. Ehlers and Steele, *Municipal and Rural Sanitation.* Mr. Johnson.

Courses for Graduates and Advanced Undergraduates

C. E. 421, 422. Reinforced Concrete. 3-3-0

Prerequisites: E. M. 313, 322.

Required of all seniors in Department of Civil Engineering and Architectural Engineering.

Derivation of formulas used in reinforced concrete design, use of diagrams and curves. Illustrative problems in design. Turneaure and Maurer, *Principles of Reinforced Concrete Construction.* Messrs. Mann, Bramer.

C. E. 423, 424, 425. Graphic Statics. 1-1-1

Prerequisite: E. M. 313.

First term required of all seniors in Department of Civil Engineering. First, second, and third terms required of all seniors in Architectural Engineering.

Principles involved in the solution of problems by graphical methods. Moments, shears. Resultant pressure on retaining walls. Stress diagrams. Fairman and Cutshall, *Graphic Statics* and assigned references. Mr. Mann.

C. E. 426, 427. Structural Design. 0-3-3

Prerequisites: E. M. 322, C. E. 431.

Required of seniors in C. E., H. E., Constr. E., San. E.

Design of beams, columns, tension members, plate girders, trusses and structures. Bishop, *Structural Design.* Mr. Mann.

C. E. 431, 432. Theory of Structures. 3-3-0

Prerequisite: E. M. 322.

Required of seniors in C. E., H. E., Constr. E., San. E.

Roof trusses; bridge trusses; three hinged arch, lateral bracing and portals; rigid frame, wind stresses in tall buildings, indeterminate trusses, secondary stresses. Sutherland and Bowman, *Structural Theory.*

Mr. Bramer.

C. E. 431a, 432a. Theory of Structures (abridged). 3-3-0

Prerequisite: E. M. 322.

Required in Architectural Engineering, C. E. 431, 432, to be required if less than five students enroll for C. E. 431a, 432a.

Stress analyses and designs of wooden and steel roof trusses; wood, steel, and reinforced concrete floor systems. Theory and design of columns, footings, retaining walls. Theories for wind stress design in tall buildings.

Mr. Bramer.

C. E. 435. Soil Mechanics. 3-0-0

Prerequisites: E. M. 321, 322.

Required of all seniors in Civil Engineering.

The classification of soils, their physical characteristics and tests; the suitability of certain types of soils for foundations; methods of stabilizing soils; general principles involved in selection of soils for foundations.

Messrs. Bramer, Babcock.

C. E. 438, 439. Elements of Structures. 0-3-3

Prerequisite: E. M. 322.

Required of seniors in General Engineering, elective for others.

Stress analyses and designs of footings, columns, beams, floor systems, and roof trusses; estimating quantities and costs of comparative designs. Lectures Notes. Mr. Bramer.

C. E. 442. Railroad Economics. 0-3-0

Prerequisites: C. E. 223, E. M. 311.

Required of seniors in Civil Engineering.

Economics of railroad location; construction, maintenance and operation; betterment and valuation surveys. Raymond, *Elements of Railroad Engineering.* Mr. Mann.

C. E. 443. Hydraulic Structures. 0 0-3

Prerequisite: E. M. 330.

Required of juniors in Civil Engineering.

Application of the fundamentals of Fluid Mechanics to problems in Hydraulic Engineering; flow in pipes, in canals and natural water courses; design of locks and dams for navigation; flood control and power development; theory of design, installation and operation of pumps and hydraulic motors. Mr. Riddick.

C. E. 449. Hydrology. 0-0 3

Prerequisite: E. M. 330.

Elective for seniors in Engineering.

The study of the science of the occurrence, distribution and use of water upon the earth with particular reference to North Carolina, including precipitation, evaporation, transpiration, seepage, runoff and stream flow. Meyer, *Elements of Hydrology.* Mr. Van Leer.

C. E. 453. Applied Astronomy. 0-0-4

Prerequisite: C. E. 310.

Required of seniors in C. E. and H. E.

The application of astronomy in determining latitude, azimuth, longitude and time; astronomical observations with transit and sextant; reduction of observations. One credit given for observations. Hosmer, *Applied Astronomy.* Mr. Babcock.

C. E. 461, 462, 463. Construction Engineering II. 3 3 3

Prerequisites: C. E. 361, 362, 363.

Required of seniors in Constr. E.

Study of construction of reinforced concrete and steel-framed structures; estimation, cost analysis, organization, management of construction plants, field methods, proposals and contracts. Huntington, *Building Construction; Notes and Trade Literature.* Mr. Bramer.

C. E. 467. Specifications. 0-0-3

Prerequisite: C. E. 321.

Required of seniors in Constr. E. and Arch. E.

Preparation of specifications and legal documents for building operations. Kirby, *Elements of Specification Writing.* Mr. Johnson.

C. E. 469. Construction Methods. 0-0-3

Prerequisites: C. E. 361, 362, 363.

Required of seniors in Construction Engineering.

A study of organization, equipment, plant layout, work sequences, progress analyses, and safety methods applicable to construction work.

Mr. Johnson.

C. E. 473. Aerial Surveying. 0-0-3

Prerequisite: C. E. s310.

Elective for juniors and seniors in Engineering.

A study of various methods of constructing topographical maps from horizontal, vertical, and oblique photographs, and different methods of control of Aerial Surveys. The work covered is confined to the methods of producing maps from photographs and does not take up the technical work of photography or piloting. This course will be given only to an enrollment of six students or more. Breed and Hosmer, *Higher Surveying.*

Mr. Babcock.

C. E. 181, 482. Sanitary Engineering Laboratory. 1-1-0

Concurrent with C. E. 485, 486.

Required in Civil Engineering and Sanitary Engineering.

Laboratory analysis of sewage and sludge. Inspection trips to sewage disposal plants. Laboratory analysis for determining quality and safety of water. Inspection of waterworks in various cities. *Notes.* Mr. Johnson.

C. E. 483. Financing of Sanitary Utilities. 0 0 3

Prerequisites: Math. 303, C. E. 383.

Required in Sanitary Engineering.

Rates and service charges, collections, operating cost control, bond issues, and budgets. Mr. Johnson.

C. E. 485. Waterworks. 3-0 0

Prerequisite: E. M. 330.

Required of seniors in C. E. and San. E.

Municipal waterworks; quantity; sources of supply; collection; purification; distribution. Babbitt and Doland, *Water Supply Engineering.*

Mr. Johnson.

C. E. 486. Sewerage. 0 3 0

Prerequisite: E. M. 330.

Required in C. E. and San. E.

Separate and combined sewer system; principles of design and construction; sewer appurtenances; disposal plants. Metcalf and Eddy, *Sewerage and Sewage Disposal.* Mr. Johnson.

C. E. 488. Water Purification. 0 3-0

Prerequisites: E. M. 330, C. E. 485.

Required of seniors in San. E.

Design and operation of water purification plants; sedimentation, coagulation, filtration, and sterilization of water. Recent treatment processes. Inspection trips to various plants. Babbitt and Doland, *Water Supply Engineering.* Mr. Johnson.

C. E. 489. Sewage Disposal. 0-0-3

Prerequisite: C. E. 486.

Required of seniors in San. E.

Design and operation of sewage disposal plants; treatment processes and devices; efficiencies and costs of plants; public health, legal and economic problems involved. Inspection trips to disposal plants. Metcalf and Eddy, *Sewerage and Sewage Disposal.* Mr. Johnson.

Courses for Graduates Only

C. E. 525, 526, 527. Advanced Structural Design. 3-3-3

Prerequisites: C. E. 426, 427.

Analysis and design of fixed, hinged and multispan arches. Complete designs of steel and reinforced concrete structures. MacCullough and Thayer, *Elastic Arch Bridges.* Mr. Bramer.

C. E. 531, 532, 533. Advanced Structural Theory. 3-3-3

Prerequisites: C. E. 431, 432.

Stress analysis in continuous frames and arches; secondary stresses; wind stresses and space frame-work. Analyses by use of Beggs' Deformeter. Sutherland and Bowman, *Advanced Structural Theory.* Mr. Bramer.

C. E. 561, 562, 563. Construction Engineering Research. 3 3 3

Prerequisites: C. E. 461, 462, 463.

Study of recent advancement and developments in Construction. Original research. Mr. Bramer.

C. E. 581, 582, 583. Sanitary Engineering Research. 3-3 3

Prerequisites: C. E. 383, 488, 489.

In the first term a study of recent developments and research in Sanitary Engineering is made from current literature. In the second term a research problem is selected and data on the problem are compiled from literature. In the third term individual research is done. Mr. Johnson.

C. E. 585, 586. Advanced Sewage Disposal. 3 3-0

Prerequisite: C. E. 489.

Study of sewage, sludge, and industrial wastes, efficiencies obtained by different types of disposal plants, treatment processes and their results, sludge conditioning, digestion and disposal. Mr. Johnson.

C. E. 588, 589. Advanced Water Purification. 0-3-3

Prerequisite: C. E. 488.

Study of water purification processes, primary and secondary treatments, control of tastes and odors, and treatment of colored waters.

Mr. Johnson.

ECONOMICS

Courses

Econ. 201, 202, 203. General Economics. 3 3-3

Required of sophomores in Constr. E., I. E., juniors in Agricultural Teaching, Cer. E., C. E., E. E., Geol. E., H. E., M. E. and Textile curricula, and of seniors in A. E., Chem. E. and San. E.

A study of economic institutions and general principles governing production and distribution of wealth under the existing economic organization.

Messrs. Brown, Green, Leager, Moen, and Shulenberger.

Econ. 205. Introduction to Economics. 3 0-0 or 0-3 0 or 0-0-3

Required of students in Forestry, Land. Arch., and Ind. Arts.

The business aspects and economic organization of society; production, distribution, and value of economic goods. Mr. Green.

Econ. 212. Accounting for Engineers. 3 0-0 or 0 3 0

A survey of accounting principles; financial statements, their construction, use, and interpretation. Mr. Shulenberger.

Econ. 301, 302, 303. Principles of Accounting. 3-3-3

Required of juniors in Agricultural Economics, Industrial Engineering, Textile Manufacturing, and Yarn Manufacturing.

Fundamental principles of theory and practice; interpretation of the structure, form, and use of business statements. Mr. Shulenberger.

Econ. 305. Business Organization. 0-3-0

Prerequisites: Econ. 201, 202, 203 or 205.

Required of seniors in Highway Engineering.

Forms of business enterprises; single enterprises, partnerships, joint-stock companies and corporations, and principles of business management.

Mr. Green.

Econ. 307. Business Law. 3 0-0 or 0-3-0 or 0-0-3

Required of seniors in Engineering.

Sources of law, fields of law, contracts, agency, sales, negotiable documents, and the law as it controls business transactions.

Messrs. Green and McMillan.

Econ. 308. Advanced Business Law. 0 0-3

Prerequisite: Econ. 307.

A continuation of Economics 307, including bailments, suretyship, real property and corporations, with some attention to recent developments in State and Federal Law. Mr. Green.

Econ. 311, 312, 313. Marketing Methods and Sales Management. 3 3-3

Prerequisites: Econ. 201, 202, 203 or 205.

Marketing functions, agencies, systems, retailing, and marketing analysis; problems in marketing; elements of sales management. Mr. Moen.

Econ. 315. Advertising. 3-0 0

Prerequisites: Econ. 201, 202, 203.

Principles of advertising. Mr. Moen.

Econ. 318. Money and Credit. 3-0-0

Prerequisites: Econ. 201, 202, 203 or 205.

The functions, history, and development of money and credit; contemporary policies and relation to prices; interrelations of money and credit in banks and financial institutions. Mr. Moen.

Econ. 319. Modern Banking. 0 3-0

Prerequisites: Econ. 201, 202, 203 or 205.

Origin and development of banking in the United States; functions and operations of the modern bank; banking laws; Federal Reserve System.

Mr. Moen.

Econ. 320. Corporation Finance. 0-0-3

Prerequisites: Econ. 201, 202, 203.

Raising and spending of funds and standards of control. Mr. Moen.

Econ. 325, 326. Industrial Management. 3-3-0

Prerequisites: Econ. 201, 202, 203.

Required of seniors in Textile Engineering; elective for all others.

General principles and techniques of modern scientific management. The organization, plant design, industrial equipment, purchasing, inventories, production planning, motion and time study, wage incentive, budgets. Practical application to the textile industry. Mr. Miller.

Econ. 331. Labor Problems. 3 0-0

Prerequisites: Econ. 201, 202, 203 or 205.

An economic approach to labor problems, covering such topics as insecurity, wages, hours, working conditions, substandard workers, and legislation aimed at correcting existing evils. Mr. .

Econ. 332. Industrial Relations. 0 3-0

Prerequisites: Econ. 201, 202, 203.

History, organization, activities, and policies of organized labor; legal aspects, recent developments. Mr. Miller.

Econ. 333. Personnel Management. 3-0-0 or 0-3-0 or 0-0-3

Prerequisites: Econ. 201, 202, 203 or 205.

Required of Textile seniors; elective for all others.

Executive development and its adjustment to superiors and subordinates; employee selection and training; working conditions and morale; conference technique; research; public relations; cases involving practical situations. Mr. Miller.

Econ. 335. Time Study. 0-3-0

Prerequisites: Econ. 201, 202, 203.

Analysis of shop operation into elements, and the determination of the time for each element; emphasis on factors affecting job specification, and wage-rate setting. Mr. Miller.

Econ. 337. Personal and Executive Development. 3-0-0

Prerequisites: Econ. 201 or 205 or Psych. 200.

Self-management physical surroundings, work habits, psychological and physiological factors. Mental efficiency desirable thought habits, emotions, and attitudes toward work, associates. Leadership necessary qualifications for the executive and how to develop them. Mr. Miller.

Econ. 340. Transportation Problems. 0 0-3

Prerequisites: Econ. 201, 202, 203.

The economic aspects of transportation facilities provided by the railroads, highways, and air- and water-transportation agencies. Special attention to principles and problems of rate making, operation, management, valuation, coördination and government regulation. Mr. . .

Econ. 401. Advanced Accounting. 3-0-0

Prerequisites: Econ. 301, 302, 303.

Problems of asset valuation, such as depreciation, replacements, amortization, etc., found in all types of business organizations. Mr. Shulenberger.

Econ. 404, 405. Principles of Cost Accounting. 0-3-3

Prerequisites: Econ. 301, 302, 303.

Cost finding, material costs, labor costs, overhead costs, etc.
Mr. Shulenberger.

Econ. 408. Survey of Statistical Methods. 3-0 0 or 0-3-0

Prerequisites: Econ. 201, 202, 203 or 205.

Required of juniors in Forestry and Agricultural Economics.

Elective for all others.

Methods of describing quantitative data; collection and methods of analysis of statistical materials; use of charts and graphs for presenting numerical facts. Mr. Leager.

Econ. 409. Statistical Technique. 0-3-0

Prerequisite: Econ. 408.

Required of juniors in Agricultural Economics.

The problem of estimation, correlation (i, e., the measurement of relationship between variables) simple linear and non-linear forms; normal curve and probable error; methods of sampling. Mr. Leager.

Econ. 414. International Economic Relations.

Prerequisites: Econ. 201, 202, 203 or 205.

Backgrounds and some newer developments in international economics, with special emphasis on the position of the United States in world trade.
Mr. Green.

Econ. 415. Investment Problems and Policies. 0 3-0

Prerequisites: Econ. 201, 202, 203 or 205.

Different types of investments and methods of judging them. Managing personal finances. Mr. Moen.

Econ. 416. Public Finance and Taxation. 0-3-0

Prerequisites: Econ. 201, 202, 203.

Classes of income and expenditure; incidence of different classes of taxes.
Mr. Moen.

Econ. 418. Principles of Insurance. 0-0 3

Prerequisites: Econ. 201, 202, 203.

Elective.

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

Econ. 420. Public Utility Regulation. 0-0-3

Prerequisites: Econ. 201, 202, 203.

A critical examination of the problem of public utility regulation, including the problems of valuation, rate making, the holding company, public vs. private ownership, security regulations, and related issues. Emphasis is placed upon recent developments. Does not include the railroads.
Mr. _ .

Econ. 501. Advanced Economic Theory. 3-3-0

Prerequisite: Eighteen (18) term credits in Economics.

Recent and current economic theory; principal schools of economists; theory of prices under the system of free enterprise. Mr. .

Econ. 502. History of Economic Doctrines. 0 0 3

Prerequisite: Econ. 501.

History of economic doctrines from the Mercantilists to the period of Ricardo. Mr. .

EDUCATION: TEACHER EDUCATION

AGRICULTURAL EDUCATION

Ed. 308. Visual Aids. 0-0-3

Prerequisite: Junior standing.

Required of students in Education.

Methods and technique of visual instruction; lettering; statistical illustrating; chart, graph, and poster-making; photography; projector operation, care, and use. Designed for teachers and extension workers.

Mr. Armstrong.

Courses for Graduates and Advanced Undergraduates

Ed. 406. Principles of Teaching. 3-0-0

Prerequisites: Ed. 303, 304.

Required of seniors in Agr. Ed.

Principles of teaching related to job of teaching vocational agriculture; motivation, directing study, teaching technique, lesson planning. Mr. Cook.

Ed. 407. Methods of Teaching Agriculture. 5-0-0

Prerequisites: Ed. 303, 308, or equivalents, and at least 12 credits in Agriculture.

Required of students in Agricultural Education.

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

Ed. 408. Observation and Directed Teaching. 0-5-0

Prerequisites: Ed. 406, 407, and at least 12 credits in Agriculture.

Required of seniors in Agr. Ed.

Observation and teaching vocational agriculture under supervision, participation in the varied activities of the teacher of vocational agriculture.

Staff in Agricultural Education.

Ed. 411. Evening Classes and Directed Teaching. 0-5-0

Prerequisites: Ed. 406, 407, and at least 12 credits in Agriculture.

Required of seniors in Agr. Ed.

Community activities of teachers of vocational agriculture; organization, method, and directed teaching of evening and part-time classes. Mr. Cook.

Ed. 412. Materials and Methods in Teaching Agriculture. 0-5-0

Prerequisites: Ed. 406, 407, and 12 credits in Agriculture.

Required of seniors in Agr. Ed.

Use of illustrative and actual materials in teaching vocational agriculture; collection and preservation of specimens; chart making; practice in use of materials in directed teaching. Mr. Armstrong.

Ed. 426. Secondary Education in Agriculture. 0-0-3

Prerequisites: Ed. 303, 304, and 6 other credits in Education.

School organization in the United States with special reference to agricultural education, curricula; elimination; movements in guidance and character education, with particular reference to agricultural teaching.

Mr. Cook.

Ed. 460. Special Problems in Teaching Agriculture. 3 or 3 or 3

Prerequisites: Ed. 406, 407 or equivalent.

Planning programs of work and courses of study; collecting and preparing materials for teaching; and making teaching plans. Mr. Cook and Staff.

Ed. 461 (a-b). Trends in Teaching Vocational Agriculture. 3 or 6 credits

Prerequisites: 18 credits in Education, including 5 in Agricultural Education.

Newer procedures in teaching vocational agriculture, the problems of the out-of-school farm youth, evening class instruction and the F. F. A.

Staff in Agricultural Education.

Ed. 462 (a-b). Course of Study Problems. 3 or 6 credits

Prerequisites: 18 credits in Education, including 5 in Agricultural Education.

Selection and organization of subject matter in vocational agriculture; supervised practice. Staff in Agricultural Education.

Ed. 463 (a-b). Guidance and Individual Instruction. 3 or 6 credits

Prerequisites: 18 credits in Education, including 5 in Agricultural Education.

Individualized instruction applied to vocational agriculture; study of the agricultural occupations, guidance and counseling with special reference to pupils in vocational agriculture. Staff in Agricultural Education.

Courses for Graduates Only

Ed. 516. Problems in Agricultural Teaching. 3-0-0 or 0-3-0 or 0-0-3

Prerequisites: Ed. 407, and at least 12 other credits in Education and Agriculture. Experience in Agricultural Teaching will be accepted in lieu of Ed. 407.

Investigations, reports, and a critical evaluation of present practices; course adapted to individual interests and needs.

Staff in Agricultural Education.

Ed. 517. Principles of Agricultural Education. 3-0-0 or 0-3-0 or 0-0-3

Prerequisite: Eighteen credits in Education and Agriculture. Permission to register.

Principles and practices in agricultural education in the light of educational research and of changing rural conditions. Mr. Cook.

Ed. 520. Agricultural Education Seminar. 1-1-1

Prerequisite: Eighteen credits in Education.

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

Ed. 521. Research in Education. 3-3-3

Prerequisite: Eighteen hours in Education and permission to register.

A study of one or more research problems under the guidance of a member of the staff. Staff.

INDUSTRIAL EDUCATION

AND

INDUSTRIAL ARTS

Ed. (I.A.) 105 a, b, c. Industrial Arts Drawing. 3-3-3

Required of freshmen in Industrial Arts Education.

A general or introductory course in the fundamentals of drawing as a phase of planning and problem solving. Opportunities will be provided for the student to become familiar with a variety of the more common types of pictorial representation, such as layout work, machine, and architectural drawing. Mr. Boshart.

Ed. (I.A.) 106 a, b, c. Orientation in Industrial Arts. 3 3-3

Required of freshmen in Industrial Arts Education.

This course is organized to provide initial experiences for students interested in teaching Industrial Arts at the secondary school level. Special emphasis will be placed upon a study of the importance and relationships of Industrial Arts to other areas in the public school and to individual development. This course is composed of readings, lectures, laboratory experiences and visitations so as to better understand the place of industry in life. Mr. Ludington.

Ed. (I.A.) 205. Industrial Arts Design. 0-0 3

Prerequisite: Ed. (I. A.) 105 a, b, c.

Required of sophomores in Industrial Arts Education.

A course in the application of accepted elements of design and construction in a variety of industrial materials. Emphasis will be placed upon individual expression and the development of an appreciation for well designed industrial products. Mr. Boshart.

Ed. (I.A.) 206 a, b, c. Laboratory Problems in Industrial Arts. 3-3-3

Prerequisites: Ed. (I. A.) 105 a, b, c, and I. A. 106 a, b, c.

Required of sophomores in Industrial Arts Education.

This is an exploratory course involving discussions, readings, films, visits, and laboratory work in the following areas: drawing and planning, woodwork, metal work, and electricity. Messrs. Ludington and Boshart.

Ed. (I.A.) 306 a, b, c. Laboratory Problems in Industrial Arts. 3-3-3

Prerequisites: Ed. (I. A.) 105 a, b, c; Ed. (I. A.) 106 a, b, c, and Ed. (I. A.) 206 a, b, c.

Required of all juniors in Industrial Arts Education.

An advanced course in hand and machine tool techniques applicable in the following Industrial Arts areas: printing, electricity, and metal work. Emphasis will be placed upon the development of master craftsmanship and an understanding of the social-economic problems related to the development of the graphic arts, power, and metals industries.

Mr. Ludington.

Ed. 344. Problems in Secondary Education. 0-0 3

Prerequisites: Ed. 303, and 6 other credits in Education.

Required of juniors preparing to teach industrial subjects.

Deals with the problems of secondary education, with special reference to the relationships of industrial subjects with the other elements of the program; basic principles, historical perspective; and types of teaching.

Mr. Boshart.

Courses for Graduates and Advanced Undergraduates

Ed. 416. Local Survey; Planning a Program. 0-3-0

A course designed to teach methods of surveys of local occupations, and upon the findings plan a suitable program of Industrial Education.

Mr. Smith.

Ed. 422. Methods of Teaching Industrial Subjects 3-0-0

Prerequisites: Ed. 304, 344.

Required of seniors in Industrial Arts Education and those preparing to teach vocational classes in trades and industries.

The basic principles of teaching in the classroom or shop. Intended for those who are teaching or preparing to teach shop and drawing courses. Emphasis will be placed on arrangement of materials, lesson planning, and conduct of class work. Messrs. Boshart or Ludington.

Ed. 427. Philosophy of Industrial Education. 0-3-0

The philosophy of industrial education, a review of Federal and State legislation pertaining to industrial education. The different kinds of schools, such as part-time, all-day trade, general industrial, and evening school.

Mr. Smith.

Ed. 433. Field Work in Secondary Education. 0 3-0

Prerequisites: Ed. 344, and 6 credits in Education.

Required of juniors in Industrial Arts Education.

A study of pupil-teacher-community relationships at the secondary school level involving observations, visits, reports, readings, and conferences.

Staff.

Ed. 440. Vocational Education. 3 or 3 or 3

Prerequisites: Ed. 303, 344, and 6 additional credits in Education.

Elective for students in Industrial Arts and Industrial Education.

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

Ed. 444. Observation and Directed Teaching of Industrial Subjects. 3-3-0 or 0-3-3

Prerequisites: Ed. 422, 433.

Required of students who desire an "A" grade certificate to teach industrial subjects.

Observation of and active participation in phases of teacher activity; emphasis on development of systematic procedure and ability to work independently with students. Students will work in actual situations under supervision. Staff.

Ed. S., Ex. 452. Industrial Arts in the Elementary School.

Prerequisite: 12 credits in education and the consent of the instructor.

A course for advanced undergraduate and graduate students.

This course is organized to help students gain insights into the materials, processes, and products of industry which are fundamental to an understanding of major problems of living. In addition to readings, trips, films and group discussions, opportunities will be provided for laboratory expe riences involving the use of a variety of industrial materials and processes, such as: woodworking, metal working, block printing, weaving, ceramics, book binding. Staff.

Ed. (I.A.) S. 470. Laboratory Problems in Industrial Arts. 3 or 3 or 3

An elective course for undergraduates with consent of the instructor.

This is an advanced laboratory course in drawing, wood and/or metal which will be conducted on a general shop or laboratory of industries basis. Mr. Ludington.

Ed. S., Ex. 480. Modern Industries.

Prerequisite: 12 credits in education and consent of the instructor.

Elective course for advanced undergraduate and graduate students.

A course involving readings, films, trips, and discussions which will help students gain understandings, insights, and appreciations of our modern industrial environment. The purpose of the course is to assist teachers in guiding students to sources of information relative to various modern industries. Staff.

Ed. 482. Curriculum Problems in Industrial Arts. 3-0-0

A course for advanced undergraduate and graduate students in Industrial Arts Education.

This course is organized around selected problems relative to the planning and organization of learning experiences in the Industrial Arts area, and the relation of this area to other school areas and community. Mr. Ludington.

Ed. 483. Instructional Aids and Devices. 0-3-0

Prerequisites: Ed. 304, and 6 other credits in Education.

Required of those intending to teach Industrial Arts or Industrial Education, and those who because of trade experience desire to teach trade subjects.

This course deals with analysis of trades and jobs to determine teaching units. These are to be arranged in teaching sequence with related subject matter, thus developing experience in analysis, course making and lesson planning. Mr. Ludington.

Ed. 484. Laboratory Planning and Equipment Selection. 0-0-3

A course for advanced undergraduate and graduate students.

This course deals with those problems related to the physical planning of school shops and laboratories along with the selection of hand tools and power equipment. Planning will be done in harmony with modern concepts of education. Whenever possible, actual or contemplated school buildings will be used for class work. Mr. Ludington.

Ed. 492. Individual Problems in Education.

An elective course for graduate students in Industrial Arts Education and Industrial Education, with consent of instructor.

This course is composed of individual and group studies of one or more major problems in Industrial Arts and Industrial Education. Problems will be approached through the application of research techniques with final reports prepared in a form suitable for publication as a magazine article, technical or professional bulletin. Staff.

Courses for Graduates Only

Ed. 510. Administration and Supervision of Vocational Education. 3 or 3 or 3

Prerequisites: Ed. 304, 344, 420, 440, or equivalent.

Administrative and supervisory problems of vocational education. Considers the practices and policies of Federal and State offices, organization and administration of city and consolidated systems, and individual school departments for Vocational Education. For graduate students majoring in Education. Staff.

Ed. 514. Modern Principles and Practices in Secondary Education. 3 or 3 or 3

Required of graduate students in Guidance, Industrial Arts, and Industrial Education.

A basic course in the foundations of modern programs of secondary education purposes, curriculum, organization, administration, the place and importance of the high school in the community in relation to contemporary social forces. Mr. Ludington.

Ed. 521. Research in Education. 3 or 3 or 3

The student will make a study of one or more research problems under the supervision of some member of the staff of the Department of Teacher Education. The course will be selected on the recommendation of the member of the faculty with whom the student plans to carry on the study.
Staff.

Ed. 530. Philosophy of Industrial Arts. 3 or 3 or 3

Required of all graduate students in Industrial Arts Education; elective for others with consent of the instructor.

A study of current and historical developments in Industrial Arts. Topics for reading and discussion will include philosophical concepts, functions, scope, criteria for the selection and evaluation of learning experiences, laboratory organization, student personnel programs, community relationships, teacher qualifications, problems confronting the Industrial Arts profession, and other selected topics of special interest to class members.
Mr. Ludington.

Occupational Information and Guidance

Ed. 103. Occupations. 3-0 0 or 0-3-0 or 0-0-3

Required in Occupational Information and Guidance. Elective for others.

A comprehensive view of the field of occupations, supplying facts which young persons are entitled to have in deciding upon their life work. The work will consist of readings, reports, discussions, and lectures by the instructor of the course and representatives of various occupations. Mr. Boshart.

Courses for Graduates and Advanced Undergraduates

Ed. 420. Philosophy of Guidance. 3 or 3 or 3

Prerequisite: 12 credits in education.

This is a beginning course intended to give emphasis to the place of guidance in the school program covering the elementary, junior high, and senior high divisions. It will treat of the development of educational and vocational guidance, the relation of personnel work, principles and practices of guidance in employment, child legislation, and records. Mr. Boshart.

Ed. 423. Methods of Teaching Occupations. 3-0-0

Prerequisites: Ed. 304, 344.

Required of seniors expecting to teach occupational information and guidance and elective for others who are interested.

The basic principles of teaching occupational information and guidance. Emphasis will be placed on the selection and preparation of materials, the literature available, and methods of presentation.

Messrs. Boshart and Smith.

Ed. 424. Occupational Studies. 0-0-3

Prerequisite: 12 credits in Education.

This course is intended to acquaint teachers with the field of occupations, the selection of suitable instructional materials and its presentation to pupils. Class work will consist of readings, discussions, visitations, lectures and reports. Analysis of leading groups of occupations will be made with the idea of selecting and preparing teaching units of occupational information or units for using subject matter courses as civics, English, or shop work. Mr. Boshart.

Ed. 433. Field Work in Secondary Education See page 212

Ed. 481. Character Education. 0-0-3

Prerequisite: 12 credits in Education.

Factors influencing character development; opportunities and responsibilities of the school for the conception and attitudes fundamental to good conduct, trends, materials, and procedures. Mr. Cook.

Ed. 490. Individual Problems in Guidance. 3 or 3 or 3

An elective course for advanced undergraduate and graduate students interested in the guidance field.

This course is intended for individual or group studies of one or more of the major problems in guidance and personnel work. Problems will be selected to meet the interests of individuals of the class and approached through research techniques with the idea of preparing suitable material for distribution in mimeographed or bulletin form. Staff.

Courses for Graduates Only

Ed. 512. Problems in Counseling. 0-0-3

Prerequisite: Ed. 420, 432, or equivalent.

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

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

Ed. 521. Research in Education. See page 215

PSYCHOLOGY

Ed. 303, 304. Educational Psychology. 3 3 0

(For description of course see Psychology 303, 304) Mr. McGehee.

Ed. 476. Psychology of Adolescence. 0-0-3

(For description of course see Psychology 476) Mr. McGehee.

ELECTRICAL ENGINEERING

Courses for Undergraduates

E. E. 113. Electric Shop. 0 0-3

A course offered for students in Teacher Education. Practical electrical problems suitable for secondary school; electrical shop equipment.

Credit is allowed only for students in the Department of Education. Mr. Winkler.

E. E. 201, 202. Electrical Engineering Fundamentals. 3-3-0 or 0-3-3

Prerequisite: Math. 102.

Required of sophomores in E. E. Concurrent with Phys. 201, 202, 203.

Fundamental laws of electric, magnetic and dielectric circuits; problem drill. Timbie and Bush, *Principles of Electrical Engineering.* Mr. Browne.

Courses for Advanced Undergraduates

E. E. 301, 302, 303. Electrical Engineering. 4-4-4

Prerequisite: E. E. 202.

Required of juniors in E. E.

Principles, performances and characteristics of direct current apparatus, electronics, theory of periodic currents, alternating current circuits and systems. Timbie and Bush, *Principles of Electrical Engineering.* Kloeffler, Brenneman and Kerchner, *Direct Current Machinery,* Bryant and Correll, *A. C. Circuits.* Messrs. Fouraker and Pearsall.

E. E. 311, 312, 313. Electrical Engineering Laboratory. 2 2-2

Required of juniors in E. E. Concurrent with E. E. 301, 302, 303.

A laboratory course coördinated with E. E. 301. Ricker and Tucker, *Electrical Engineering Laboratory Experiments.*

Messrs. Lear, Pearsall, Keever, Glenn, and Nichols.

E. E. 320, 321. Elements of Electrical Engineering I. 3-3-0 or 0-3-3

Prerequisites: Math. 202, Phys. 203.

Required of juniors in Aero. E., Chem. E., C. E., H. E., Constr. E., and San. E., and of seniors in Cer. E., Geol. E., and Min. E.

Theory and problems in applied electricity; motor characteristics and *industrial applications.* Daws, *Industrial Electricity.*

Messrs. Lear, Pearsall, Glenn, and Winkler.

E. E. 331, 332, 333. Elements of Electrical Engineering II. 4-4-4

Prerequisites: Math. 202, Phys. 203.

Required of seniors in M. E., Gen. E., and Industrial Engineering.

Principles, characteristics, and operation of electric equipment. Loew, *Direct and Alternating currents.*

Messrs. Keever, Pearsall, Glenn, Nichols.

E. E. 343. Electrical Equipment of Buildings. 0-0-3

Prerequisite: Phys. 203.

Required of juniors in Construction Engineering and seniors in Architectural Engineering.

Wiring of buildings for light and power; selection of motors and lighting equipment. Moyer and Wostrel, *Industrial Electricity and Wiring.*

Messrs. Lear and Winkler.

Courses for Graduates and Advanced Undergraduates

E. E. 433. Electric Distribution. 0-0-3

Prerequisite: E. E. 401.

Required of seniors in E. E.

Low voltage distribution systems. Mr. Keever.

E. E. 401, 402. Alternating Current Machinery. 4-4-0

Prerequisite: E. E. 303.

Required of seniors in E. E.

Principles and characteristics of alternating current machinery. Bryant and Johnson, *Alternating Current Machinery.*

Messrs. Fouraker and Keever.

E. E. 411, 412, 413. Electrical Engineering Laboratory. 2-2-2

Required of seniors in E. E. Concurrent with E. E. 401, 402, 403.

A laboratory course coördinated with classroom work. Ricker and Tucker, *Electrical Engineering Laboratory Experiments.*

Messrs. Keever, Pearsall, Glenn, and Winkler.

E. E. 403. Electric Transmission. 0-0-4

Prerequisite: E. E. 402.

Theory and characteristics of electric circuits for high tension transmission of power. Bryant and Correll, *Alternating Current Machinery.*

Messrs. Fouraker and Keever.

E. E. 421, 422, 423. Electric Power Applications (Optional with E. E. 425, 426, 427). 3-3 3

Prerequisites: E. E. 303, 307.

Selection of electric equipment for industrial applications, control equipment; electric traction, electric power plants. Mr. Browne.

E. E. 425, 426, 427. Electric Communication (Optional with E. E. 421, 422, 423). 3 3-3

Prerequisites: E. E. 303, 307.

Circuits and equipment for wire communication; radio and carrier current systems. Everitt, *Communication Engineering.*

Messrs. Fouraker and Glenn.

E. E. 437. Illumination. 0-0 3

Prerequisites: E. E. 303, 307.

Required of seniors in E. E.

Characteristics of electric lamps; electric lighting systems. Kunerth, *Textbook of Illumination.* Mr. Lear.

E. E. 453. Power Network Calculations. 0-0-3

Prerequisite: E. E. 402.

The method of symmetrical components applied to fault calculation in power system networks. Mr. Brown.

E. E. 441, 442, 443. Electrical Measurements in Industry. 3 3 3

Prerequisite: E. E. 303 or E. E. 322 or E. E. 333.

Theory and practice of electrical measurements in industry, including electrical methods applied to measurement of nonelectric values.

Mr. Brown.

Courses for Graduates Only

E. E. 501, 502, 503. Fundamental Principles in Electrical Engineering. 3 3-3

Prerequisites: E. E. 433, 402.

Review of fundamentals involved in the more complex problems encountered in electrical engineering. Messrs. Fouraker, Brown.

E. E. 505, 506, 507. Electrical Engineering Seminar. 1-1-1

Prerequisite Graduation in E. E.

A series of papers and conferences of junior instruction staff and students who are candidates for advanced degrees in electrical engineering.
Messrs. Browne, Brown.

E. E. 521, 522, 523. Engineering Electronics. 4-4-4

Prerequisite: Graduation in E. E.

Electron tubes in industry, including studies of various types of tubes and their associated circuits. Mr. Brown.

E. E. 531, 532, 533. Illumination Engineering. 3 3-3

Prerequisite: Graduation in E. E.

Advanced principles of Illumination Engineering. Mr. Brown.

E. E. 550. Electrical Engineering Research. 3-3-3

Prerequisite: Graduation in E. E.

Individual research in the field of Electrical Engineering.
Messrs. Browne, Brown.

ENGINEERING MECHANICS

Courses for Advanced Undergraduates

E. M. 301. Engineering Mechanics (Abridged). 3-0-0 or 0-3-0

Prerequisite: Math. 202.

Co-requisites: Math. 303 and Phys. 201.

Required of students in Cer. E., Ch. E., Geol. E., and I. E. Also required of students in Agr. Eng.

Statics: Concurrent, parallel, and nonconcurrent force systems; the determination of their resultants and conditions of equilibrium; friction, centroids and moments of inertia. Poorman, *Applied Mechanics.*
Messrs. Smith, Conner, Feltner, and Massey.

E. M. 302. Engineering Mechanics (Abridged). 0-3 0 or 0-0-3

Prerequisites: E. M. 301 and Math. 303.

Required of students in Cer. E., Ch. E., Geol. E., and I. E. Also required of students in Agr. Eng.

Kinematics: The relation between distance, time, velocity, and acceleration for particles and bodies. Kinetics: The motion of bodies as affected by unbalanced forces. Poorman, *Applied Mechanics.*

Messrs. Smith, Conner, Feltner, and Massey.

E. M. 311. Engineering Mechanics. 3-0 0 or 0 3-0 or 0-0-3

Prerequisite: Math. 201.

Co-requisites: Math. 202 and Phys. 201.

Required of all students in Engineering except Cer. E., Ch. E., Geol. E., and I. E.

Statics and Friction: Study of concurrent, parallel and nonconcurrent systems of both coplaner and noncoplaner forces; the application of statics to the solution of fundamental engineering problems, including statical friction. Seely and Ensign, *Analytical Mechanics for Engineers.*

Messrs. Smith, Conner, Feltner, and Massey.

E. M. 312. Engineering Mechanics. 3-0-0 or 0-3 0 or 0-0-3

Prerequisites: E. M. 311 and Math. 202.

Co-requisites: Math. 303.

Required of all students in Engineering except Cer. E., Ch. E., Geol. E., and I. E.

Kinematics; centroids moments of inertia. Seely and Ensign, *Analytical Mechanics for Engineers.* Messrs. Smith, Conner, Feltner, and Massey.

E. M. 313. Engineering Mechanics. 3-0-0 or 0-3-0 or 0-0-3

Prerequisites: E. M. 312 and Math. 303.

Required of all students in Engineering except Cer. E., Ch. E., Geol. E., and I. E.

Kinetics: The motions of particles of rigid bodies as they are affected by the action of unbalanced forces. The Newtonian laws of motion; work and energy; power; impulse and momentum; applications to special engineering problems. Seely and Ensign, *Analytical Mechanics for Engineers.*

Messrs. Smith, Conner, Feltner, and Massey.

E. M. 320. Strength of Materials (Abridged). 3 0-0 or 0 0-3

Prerequisites: E. M. 302 or E. M. 312, Math. 303.

Required of Engineering students in Chem. E., E. E., and Ind. E. Also required of students in Agr. Eng.

Stresses and strains in engineering materials; tension, compression, shear and torsion; bending moments and shear in beams; fibre stresses in simple beams and their distribution throughout the cross section; deflection of beams; design of columns. Seely, *Resistance of Materials.*

Messrs. Smith, Conner, Feltner, and Massey.

E. M. 321. Strength of Materials. 0-3-0 or 0-0-3

Prerequisites: E. M. 302 or E. M. 312, and Math. 303.

Co-requisite: E. M. 313.

Required of all students in Engineering except Chem. E., E. E., Geol. E., anl Ind. E.

Stresses and strains in engineering materials; tension, compression, shear, and torsion; emphasis on the applications to engineering structures; bending moments and shear in simple beams; fibre stresses in beams and their distribution throughout the cross section. Timoshenko and McCullough, *Elements of Strength of Materials.*

Messrs. Smith, Conner, Feltner, and Massey.

E. M. 322. Strength of Materials. 3 0-0 or 0-0-3

Prerequisite: E. M. 321.

Required of all students in Engineering except Chem. E., E. E., Geol. E., and Ind. E.

A continuation of E. M. 321. Various methods for finding the deflection of beams; determination of stresses in statically indeterminate beams; the study of columns; combined stresses. Timoshenko and McCullough, *Elements of Strength of Materials.*

Messrs. Smith, Conner, Feltner, and Massey.

E. M. 330. Fluid Mechanics. 3-0-0, 0-3-0, or 0-0-3

Prerequisites: E. M. 302 or E. M. 313.

Required of students in Aero. E., Ch. E., C. E., E. E., Geol. E., M. E.

A study of the fundamental principles of mechanics of fluids; properties of fluids; intensity of pressure; hydrostatic pressure on areas; applications of hydrostatics; kinematics of fluid flow; dynamics of fluid flow; applications of hydrokinetics; friction losses in pipes; flow through pipes; dynamic forces. Daugherty, *Hydraulics.*

Messrs. Conner, Riddick, and Massey.

E. M. 331. Hydraulics. 3-0-0 or 0 3 0

Prerequisite: E. M. 330.

Required of students in E. E. and M. E.

The application of the principles of fluid mechanics to hydraulic pumping and power machinery; impulse and reaction type turbines; turbine laws and factors; water power plants; pumping and machinery, reciprocating and centrifugal pumps; efficiency, capacity, and selection of pumps. Daugherty, *Hydraulics*, and *Notes*. Messrs. Conner, Riddick, and Massey.

E. M. 332. Hydraulics. 0-3-0 or 0-0-3

Prerequisite: E. M. 330.

The application of the principles of fluid mechanics to various hydraulic structures and measuring devices; bouyant force and flotation; weirs, orifices, gates; forces exerted by fluids; flow in open channels; models of open channel flow; flow in pipe lines. Daugherty, *Hydraulics*, and *Notes*. Messrs. Conner, Riddick, and Massey.

Courses for Graduates and Advanced Undergraduates

E. M. 401. Advanced Strength of Materials. 3-0-0

Prerequisites: E. M. 320 or E. M. 322.

Elective for Engineering seniors and graduate students.

Detailed study of the deflections of beams; special types of beams; statically indeterminate systems. Timoshenko, *Strength of Materials*. Mr. Smith.

E. M. 402. Advanced Fluid Mechanics. 0-3-0

Prerequisite: E. M. 330.

Elective for Engineering seniors and graduates.

A study of more advanced problems than taken up in E. M. 330; kinematics of fluid flow; conformal mapping; laminar and turbulent flow; the boundary layer; flow around immersed bodies; closed conduits. Instructor's notes and selected references. Mr. Conner.

E. M. 404. Vibration Problems. 0-0-3

*Prerequisites: E. M. 320 or 322, Math. 431a, or 431b.

Elective for Engineering seniors and graduate students.

Fundamental vibratory systems of one degree of freedom; balancing of rotating systems; calculation of critical speeds of rotating shafts; vibrating instruments; systems of several degrees of freedom. Den Hartog, *Mechanical Vibrations*. Mr. Conner.

* Math. 411, 412 are desirable.

Courses for Graduates Only

E. M. 501. Advanced Strength of Materials. 3-0-0

Prerequisites: E. M. 401, Math. 431a or 431b.

A study of more advanced problems than taken up in E. M. 320 or E. M. 322; energy of strain; Castigliano's Theorem; impact; Maxwell's Theorem; Mohrs circle. Timoshenko, *Strength of Materials.* Mr. Smith.

E. M. 502. Applied Elasticity. 0-3-0

*Prerequisites: E. M. 401, Math. 431a or 431b.

Stress analysis of machine parts; stress concentration; stress in curved bars; torsion and bending in prismatical bars; stress in thick-walled cylinders; fly wheels; shrink fits. Timoskenko, *Strength of Materials.* Mr. Smith.

E. M. 503. Applied Elasticity. 0-0-3

*Prerequisites: E. M. 502, Math. 431a or 431b.

Thin bars, plates and slabs in compression, tension, or combined compression and tension; built-up columns. Timoshenko, *Strength of Materials.* Mr. Smith.

E. M. 505. Research in Strength of Materials. 3 3-3

Special problems and investigations. Mr. Smith.

***E. M. 506. Research in Mechanical Vibrations.** 3-3-3

Prerequisite: E. M. 404.

Special problems and investigations. Mr. Conner.

***E. M. 507. Research in Fluid Mechanics.** 3-3-3

Prerequisite: E. M. 402.

Special problems and investigations. Mr. Conner.

ENGLISH

Freshman English

Eng. 101, 102, 103. Composition. 3-3-3

Required of all freshmen.

Grammar review and intensive practice in composition; reading and analysis of literary types, with emphasis upon both composition and appreciation; directed supplementary reading collateral with class study; exercises and reports; conferences.

Messrs. Cameron, Chadbourn, Clark, Davis, Gibson, Hartley, Kincheloe, Ladu, Lyell, Marshall, Shackford, Shelley, Wynn, Wynne.

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* Math. 411, 412 are desirable.

Writing

Eng. 211. Business English. 3 or 3 or 3

Prerequisite: Eng. 101, 102, 103.

Practical application of the principles of composition; types of letters; form, style, and tone of effective correspondence; intensive word study. Conferences. Messrs. Wilson, Shelley.

Eng. 215. Principles of News and Article Writing. 3-0-3

Prerequisite: Eng. 101, 102, 103.

Introduction to the writing of simple news articles; class criticism of non-technical newspaper and magazine articles. Vocabulary building; collateral reading. (Class limited to twenty students.) Mr. Wynn.

Eng. 216. Advanced Article Writing. 0-3-0

Prerequisite: Eng. 101, 102, 103, and 215 or equivalent.

A continuation of Eng. 215, with intensive practice in writing and criticizing nontechnical articles. Subjects determined by student's interest. Vocabulary building; collateral reading. Mr. Wynn.

Eng. 222. Advanced Composition. 0-3 0

Prerequisite: Eng. 101, 102, 103.

Comprehensive study and practice in original and imaginative composition, with emphasis upon the essay, the short-story, and the one-act play. Class criticism; conferences. Mr. Shelley.

Eng. 321. Technical Writing I. (For students in Engineering.) 3 or 3 or 3

Prerequisites: Eng. 101, 102, 103, 211, 231, and one term of literature.

Principles of writing engineering reports, articles, and papers for public delivery. Readings in essays and technical periodicals. Term papers in library research and technical report writing. Mr. Fountain.

Eng. 323. Technical Writing II. (For students in Agriculture and Forestry.) 0-0-3

Prerequisites: Eng. 101, 102, 103, and required sophomore English courses.

Fundamentals of style in professional writing. Reports, articles, papers. Term papers in library research and in professional reports. Mr. Fountain.

Speech

Eng. 231. Public Speaking. 3 or 3 or 3

Prerequisites: Eng. 101, 102, 103.

Speech organization and effective delivery; extempore speeches; audience motivation and use of motivating process; acquisition of ease before audience. Messrs. Paget, Fountain, Wynne.

Eng. 236. Parliamentary Practice. 0-2-0

Prerequisites: Eng. 101, 102, 103.

Not to be counted toward the fulfillment of any requirement in English.

Rules and customs of assemblies, including organization, motions; participation in and conduct of meetings; parliamentary strategy. Mr. Paget.

Eng. 237. Speech Adjustment. 0-0-2

Prerequisites: Eng. 101, 102, 103.

Poise and pleasing communicative habits in all group contacts; habits of speech, posture, action, and language. Mr. Paget.

Eng. 331. Persuasion. 3-0 0

Prerequisite: Eng. 231 or equivalent.

Psychological forces, methods of conciliation, securing and holding attention, and winning response; extempore speeches and discussions.
Mr. Paget.

Eng. 332. Argumentation and Extemporaneous Speaking. 0 3-0

Prerequisite: Eng. 231 or equivalent.

Analysis, brief-drawing and evidence, and methods of proof and refutation; fundamentals of conviction; naturalness and forcefulness; extempore speeches, debates, and discussions. Mr. Paget.

Eng. 333. Public Address. 0-0 3

Prerequisite: Eng. 231 or equivalent.

Public addresses for special occasions, including announcement, speech of introduction, committee-room speech, personal conferences, after-dinner speech, speech at professional convention, political speech, college oration, formal sales talk. Mr. Paget.

Literature

Eng. 261. English Literature I. 3-0-0

Prerequisites: Eng. 101, 102, 103.

Chief masterpieces of English literature from *Beowulf* through Shakespeare, with emphasis on social and historical backgrounds. Parallel readings and papers. Messrs. Hartley, Clark.

Eng. 262. English Literature II. 0-3-0

Prerequisites: Eng. 101, 102, 103.

Significant prose and poetry of the seventeenth and eighteenth centuries, with emphasis on the contribution of the two centuries to modern thought. Parallel readings and papers. Messrs. Hartley, Clark, Lyell.

Eng. 263. English Literature III. 0-0-3

Prerequisites: Eng. 101, 102, 103.

Masterpieces of the nineteenth century, with emphasis on changing literary tastes and ideas; the impact of scientific development on thought and literature. Parallel readings and papers. Messrs. Hartley, Clark, Lyell.

Eng. 265. American Literature I. 3-0-0

Prerequisites: Eng. 101, 102, 103.

A study of chief American literary productions in their historical setting, from the early colonial period to 1840. Mr. Ladu.

Eng. 266. American Literature II. 0-3 0

Prerequisites: Eng. 101, 102, 103.

A study of chief American literary productions in their historical setting, from 1840 to 1890. Mr. Ladu.

Eng. 267. American Literature III. 0 0-3

Prerequisites: Eng. 101, 102, 103.

A study of the leading American writers of the present century, with a relation of their works to the social background of the period. Mr. Ladu.

Eng. 271. The English Novel. 3-0 0

Prerequisites: Eng. 101, 102, 103.

Analysis of representative novels of England and America, chosen to illustrate the development of the form and to provide a background for appreciating the modern novel. Mr. Lyell.

Eng. 272. Modern Drama. 0-0-3

Prerequisites: Eng. 101, 102, 103.

Modern plays, beginning with Ibsen; contemporary English and American productions. Mr. Clark.

Eng. 273. The Development of the Drama. 0-0-3

Prerequisites: Eng. 101, 102, 103.

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

Eng. 275. Southern Writers. 3-0-0

Prerequisites: Eng. 101, 102, 103.

An introduction to Southern culture as revealed in poetry from Poe to John Crowe Ransom and in the regional novel and short story; readings in the contemporary Southern essay dealing with social, political, and literary problems. Mr. Kincheloe.

Eng. 276. English Poetry, 1830-1900. 0-3-0

Prerequisites: Eng. 101, 102, 103.

A study of major poets writing in an age of scientific progress and social change. Emphasis on Browning, Tennyson, and Arnold. Parallel readings and papers. Mr. Hartley.

Eng. 281. Literary Masterpieces. 3-0-0

Prerequisites: Eng. 101, 102, 103.

A background for the enjoyment of literature; an introduction to its appreciation and criteria. Mr. Harrison.

Eng. 282. The Short Story. 0-3-0

Prerequisites: Eng. 101, 102, 103.

An appreciation of the present-day short story through examination of development, structure, type, and style; a comprehensive term paper, or its equivalent in original short fiction. Mr. Wynne.

Eng. 283. The Bible as Literature. 0-0-3

Prerequisites: Eng. 101, 102, 103.

Selected books of the Old and New Testaments (King James Version) as literary and historical documents. Mr. Cameron.

Eng. 285. Shakespeare. 3-0-0

Prerequisites: Eng. 101, 102, 103.

An analysis of principal plays. Reports on parallel readings. Messrs. Clark, Hartley.

Eng. 286. The Romantic Period. 0-3-0

Prerequisites: Eng. 101, 102, 103.

Representative poems by Gray, Blake, Burns, Wordsworth, Coleridge, Scott, Southey, Byron, Shelley, and Keats. Messrs. Clark, Hartley.

Eng. 287. Modern Biography. 0-0-3

Prerequisites: Eng. 101, 102, 103.

A study of short modern biographies by representative American and British writers; collateral reading in longer biographical works; reports and assignments for investigation. Mr. Shelley.

***Eng. 291. The Eighteenth Century.** 0-3-0

Prerequisites: Eng. 101, 102, 103.

Chief masterpieces of English literature from Alexander Pope to nineteenth century; collateral reading; reports. Mr. Hartley.

Eng. 292. Contemporary British Literature. 0-0-3

Prerequisites: Eng. 101, 102, 103.

An introduction to chief figures in contemporary British literature: Kipling, Galsworthy, Wells, Bennett, Conrad. Collateral readings; term paper. Mr. Ladu.

ETHICS AND RELIGION

Courses

Rel. 301. Introduction to Religion. 3-0-0

Prerequisite: Junior or Senior standing.

Characteristics of the major religious sects of America and brief survey of recent trends in religious thought. Mr. Hicks.

Rel. 302. The Life of Jesus. 3-0-0

Prerequisite: Junior or Senior standing.

The career of Jesus of Nazareth as recorded in the Synoptic Gospels and interpreted against the religious, economic, and political background of the age in which Jesus lived. Mr. Hicks.

Rel. 303. The Teachings of Jesus. 0-3-0

Prerequisite: Junior or Senior standing.

The ethical and religious teachings of Jesus as recorded in the Synoptic Gospels, with special emphasis on the contrast between the teachings of Jesus and his contemporaries. Mr. Hicks.

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* Not offered in 1941-42.

Rel. 301. Comparative Religion. 0-3-0

Prerequisite: Junior or Senior standing.

Brief history, general characteristics, and social significance of the greater living religions of the world. Mr. Hicks.

Ethics 405. Social Ethics. 0-0-3

Prerequisite: Six term credits in Religion, Psychology, or Sociology.

Review of the ethical codes of the larger professional groups, with analysis of the nature, evolution, and significance of moral values. Mr. Hicks.

Rel. 406. Problems of Religion. 0-0-3

Prerequisite: Six term credits in Religion, Psychology, or Sociology.

Religious verities in an age of science and the perplexing problems of the church in modern times. Mr. Hicks.

Ethics 407. Ethical Problems of Adolescence. 3 credits

Prerequisite: Six term credits in Religion, Psychology, or Sociology.

A study of typical adjustment problems of modern youth, with special consideration to changing sex standards and the evolution of new values in this connection. Mr. Hicks.

Rel. 408. Christian Personality in Its Psychological Aspects. 3 credits

Prerequisite: Six term credits in Religion, Psychology, or Sociology.

An analysis of the psychological validity of the principal ethical teachings of the Sermon on the Mount with emphasis on the relationship of religious attitudes and practices to mental and emotional stability and maturity. Mr. Hicks.

Ethics 409. Problems of Marital Adjustment. 3-0-0 or 0-3-0 or 0-0-3

Prerequisite: Six term credits in biological or social science. Sections limited to 25 students.

The practical application of pertinent findings of biological and social science to personal problems of premarriage and postmarriage adjustment. Lectures, discussions, and personal conferences. Mr. Hicks.

EXPERIMENTAL-STATISTICS

Courses for Graduates and Advanced Undergraduates

Stat. 401, 402. Statistical Laboratory. 1-1-0

To accompany Stat. 412, 413 or Ec. 408, 409.

Use of calculating machines and of punched card tabulation equipment. Short cut machine methods. Experience in handling large sets of data. Miss Cox.

Stat. 411. Introduction to Experimental-Statistics 3-0-0

Prerequisite: Graduate standing.

Collection, tabulation, presentation, and interpretation of experimental data. A course designed for advanced students in applied sciences who have had no theoretical background in statistics. Miss Cox.

Stat. 412, 413. Experimental-Statistics. 0-3-3

Prerequisite: Stat. 411 or Ec. 409 and Graduate Standing.

The application of statistical techniques such as sampling, regression and analysis of variance and covariance to experimental data. Miss Cox.

Stat. 421, 422, 423. Mathematical Statistics. 2-2-2

Prerequisite: Math. 303.

Averages, moments, correlation, probability, the binomial, normal and Poisson laws. Distribution of statistics, sampling of population, Sheppard's corrections and curve fitting. Mr. Clarkson.

Stat. 431. Design of Experiments. 3-0 0 or 0-0-3

Prerequisite: Stat. 412.

Fundamental principles of designs. Randomized blocks, Latin squares, split-plot and factorial designs. Individual comparisons, components of error and confounding. Application to problems in biological and applied fields. Mr. Rigney.

Stat. 441. Statistical Analysis of Economic Data. 3 0-0 or 0-0-3

Prerequisite: Stat. 412.

Index numbers, time series analysis and analysis of variance. Relationships between acreage, production data and farm prices. Application to problems in the fields of economics and crop estimation.

Stat. 451. Statistical Analysis of Social Data. 3-0-0 or 0-0-3

Prerequisite: Stat. 412.

Sampling social data, rural surveys and testing methods. Analysis of variance and relationships. Population studies. Application to problems in the fields of sociology, psychology and education. Mr. Hamilton.

Courses for Graduates Only

Stat. 531. Design and Analysis of Samplings. 3-0-0

Prerequisite: Stat. 441.

Sampling from a homogeneous population. Size of sample. Structure of sampling investigations.

Stat. 532, 533. Crop Forecasting and Estimation. 0-3-3

Prerequisite: Stat. 531.

Methods used to select variables related to crop forecasting and estimating. Selection techniques.

Stat. 542, 543. Experimental Designs. 0-3-3

Prerequisites: Stat. 413, 431.

Confounding, quasi-factorial designs, incomplete blocks and lattice squares. Pasture, field, greenhouse, animal, human and long-time experiments. Survey of type of designs available. Experimental results with appropriate methods of analysis and valid interpretations. Miss Cox.

Stat. 552, 553. Econometric Methods. 0-3-3

Prerequisites: Stat. 413, 441.

Mathematical formulation and exposition of demand, laws of production, monopoly and taxation. Time series, random element, seasonal and cyclical variations. Trend, orthogonal polynomials and correlation of time series.

Stat. 562. Psychometric Methods. 0-3-0

Prerequisites: Stat. 413, 451.

Rating scales. Mental-test methods, item and factor analysis. Standard partial regression coefficients. Functional relationships.

Stat. 571, 572, 573. Advanced Mathematical Statistics. 3-3-3

Prerequisite: Stat. 423.

Theory of errors, maximum likelihood, estimation, least squares and distribution theory.

Stat. 581, 582, 583. Seminar. 1-1-1
Staff.

Stat. 591, 592, 593. Research. F. W. S. 1-3 as arrange.
Staff.

FIELD CROPS (AGRONOMY)

Courses for Undergraduates

F. C. 202. General Field Crops. 0-3-0 or 0-0-3

Required of sophomores in Agriculture.

A standard introductory course, with emphasis given to the economic production of field crops as used in well-balanced cropping systems.
Messrs. Rigney, Stuart.

F. C. 211. Cotton. 3-0-0

Required of sophomores in Textiles.

Lectures and recitations on the history, botany, and physiology of the cotton plant; comparative study of varieties; microscopic studies of the fiber, and a study of the physical properties of the fiber as it affects milling quality.
Mr. Stuart.

F. C. 212. Cotton Classing I. 0-3-0

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

A study of the universal standards of American upland cotton for grade and staple; factors that determine grade, and their relative value; practice in classing and stapling from three to five thousand samples of cotton.
Mr. Holman.

Courses for Advanced Undergraduates

F. C. 302. Cereal Crops. 0-3-0

Required for Field-Crop majors.

Advanced study of the various factors to be considered in the economic production of corn and small grains. Mr. Middleton.

F. C. 312. Tobacco Production. 0-3 0

Lectures and recitations on the history, production, adaptation, type, and varieties of tobacco; its cultivation, harvesting, grading, and marketing. Laboratory consists of variety studies and the grading of tobacco.
Messrs. Floyd, Weeks.

F. C. 323. Cotton Production. 0-0-3

Lectures and recitations on the history, production, adaptation, type, and varieties of cotton; its cultivation, harvesting, grading, and marketing. Laboratory consists of variety studies, and the classing of cotton lint.
Mr. Stuart.

Courses for Graduates and Advanced Undergraduates

F. C. 402. Cotton Classing II. 0-3-0

A study of the universal standards of American upland cotton for grade and staple; factors that determine grade and how to improve them. Practice consists of classing from three to five thousand samples of North Carolina cotton. Mr. Holman.

F. C. 441. Seed Judging. 3-0-0

Advanced study of quality in crop seeds and the standards for seed certification. Arranging and judging of crop exhibits. Messrs. Rigney, Stuart.

F. C. 443. Pastures and Forage Crops. 0-0-4

Prerequisite: F. C. 202.

Required of Field Crop, Soil, and Animal Production majors.

An advanced study of the production and preservation of the principal forage crops. Special attention is given to the production and maintenance of pastures. Messrs. Lovvorn, Rigney.

F. C. 451. Market Grading of Field Crops. 3-0-0 or 0-3-0

Required of students in Animal Production.

A study and application of the Federal Standards for Market grades as applied to field crops. Messrs. Rigney, Stuart.

F. C. 461. Taxonomy of Field Crops. 3-0-0 or 0-0-3

A study of the origin, botanical classification, identification, and adaptation of the commercially important crops and their varieties grown in America. Messrs. Rigney, Stuart.

F. C. 463. Plant Breeding. 0-0-3

Prerequisite: Zool. 411.

Required of students in Field Crops, Floriculture, Plant Pathology, Pomology and Vegetable Gardening.

Lectures, field and laboratory exercises, including methods and principles of plant breeding. Mr. Harvey.

F. C. 491, 492, 493. Special Problems. 3-3-3

Prerequisite: Admitted only with consent of instructor.

Special problems in various phases of crop investigation. Problems may be selected or will be assigned. Emphasis will be placed on review of recent and current research. Staff.

Courses for Graduates Only

F. C. 503. Research Methods in Agronomy. 0-0-3

Prerequisite: Stat. 412.

Planning and conducting research work and interpretations of the data in Agronomic Fields. Mr. Rigney.

F. C. 523. Cytogenetics. 0-0-4

Prerequisite: Zoöl. 411; recommended Bot. 451 or Zoöl. 441.

Given coöperatively by Agronomy and Botany Departments.

The principles and techniques of cytology as they are related to the genetics of economic plants. A survey of the major cytogenetic contributions to plant improvement and to theories of phylogeny. Mr. Smith.

F. C. 531, 532, 533. Seminar. 1-1-1

Prerequisite: Fifteen credit hours in Field Crops.

Scientific articles, progress reports in research, and special problems of interest to Agronomists will be assigned, reviewed, and discussed by students and members of the Agronomy Staff. Staff.

F. C. 541, 542, 543. Research. 3 3-3

Prerequisite: Fifteen credit hours in Field Crops.

A study of special problems and methods of investigation. A student may select a problem in any phase of crop production or breeding. Staff.

FORESTRY

Courses for Undergraduates

For. 101, 102, 103. Elementary Forestry. 1-1-1

Required of freshmen in Forestry.

Study of the nature and development of forests of the world, with special study of the forests of the United States; a correlation of all sciences required in forestry; field trips included. Mr. Hofmann.

For. 111. Principles of Forestry. 3-0-0

Required of sophomores in Agriculture.

Elective for junior and senior students not in Forestry.

The theory and practice of forestry with special reference to the handling of farm woodlands and the utilization of their products.

Messrs. Slocum, Miller.

For. 202. Wood Technology. 0-3-0

Prerequisite: Bot. 203.

Required of sophomores in Forestry.

Microscopic slides of the conifers and broad-leaved trees are studied in order to determine the occurrence, form, and structure of the wood elements. Identification by means of the hand lens is especially emphasized.

Mr. Slocum.

For. s204. Silviculture. 3 credits

Prerequisites: Bot. 211, 213.

Sophomore summer camp.

Study of growth and development of forest stands; establishment and measurement of sample plots. Messrs. Miller, Slocum.

For. s214. Dendrology. 3 credits

Prerequisites: Bot. 211, 213.

Sophomore summer camp.

Identification and study of trees in Piedmont, Coastal, and Mountain sections of North Carolina. Messrs. Slocum, Miller.

For. 301. Timber Preservation. 3-0-0

Prerequisite: For. 202.

Elective for juniors and seniors in Forestry.

Lumber and timber preservatives and their use; methods of preservation; relation of preservation to forestry and industry. Mr. Slocum.

Courses for Advanced Undergraduates

For. s304. Mensuration III. 3 credits

Prerequisites: C. E. 221, 222.

Sophomore summer camp.

Collection of field data for stand and yield tables, stem analysis, and timber surveys. Messrs. Slocum, Miller.

For. 311. Silviculture I. 3-0-0

Prerequisite: For. s204.

Required of juniors in Forestry.

Factors affecting tree growth and distribution; forest regions, sites, stands, and types; silvical requirements of important tree species. Mr. Miller.

For. 312. Silviculture II. 0-3-0

Required of juniors in Forestry.

Production, collection, extraction, storage, and planting of forest-tree seeds. Mr. Slocum.

For. 313. Nursery Practice. 1 or 1 or 1

Preparation, seeding, watering, and weeding of seed beds in school nursery. Mr. Slocum.

For. 321. Forest Products. 3-0-0

Prerequisite: For. 202.

Required of seniors in Forestry.

A study of the source and method of obtaining derived and manufactured forest products other than lumber. Mr. Wyman.

For. 322. Naval Stores. 0-3-0

Elective for juniors in Forestry.

Methods of turpentining woods practices. Factors influencing oleoresin yields. Stilling practices. Integration with other forest products utilization. Mr. Wyman.

For. 323. Forest Utilization. 0-0-2

Required of seniors in Forestry.

The problems of more complete utilization of forest resources. Utilization of present waste in commercial practice. Mr. Wyman.

For. 332. Forest Policy. 0-3-0

Elective for juniors in Forestry.

The development of the forestry movement in the United States; forest legislation.

For. 333. Methods of Research in Forestry. 0 0 3

Prerequisite: For. s204.

Elective for juniors in Forestry.

Methods of research used by the United States Forest Service, experiment stations, the Madison Laboratory, and State and private research organizations; sample plot technique. Mr. Miller.

For. 342. Forest Protection and Improvements. 0-3-0

Prerequisite: For. s204.

Required of juniors in Forestry.

Organization and operation of fire prevention and control methods. Forest road and telephone construction and maintenance. Mr. Hofmann.

Courses for Graduates and Advanced Undergraduates

For. 402, 403. Mensuration I, II. 0-3-3

Prerequisite: For. s304.

Required of juniors in Forestry.

The measurement of timber, both standing and felled; log rules, form factors, stem analysis and growth.

Methods of making volume, growth, and stand tables; increment and yield studies.

Development of stand and yield tables from field data. Mr. Slocum.

For. 411. Silviculture III. 3-0-0

Prerequisite: For. 312.

Required of seniors in Forestry.

Methods of cutting to secure natural regeneration; intermediate cuttings and their effect on the stand; slash disposal. Mr. Miller.

For. 412. Silviculture IV. 0-3-0

Prerequisite: For. 411.

Required of seniors in Forestry.

The application of silvicultural methods in the forests of the United States. Mr. Miller.

For. 421. Logging. 3 0 0

Prerequisite: For. 311.

Required of seniors in Forestry.

The logging industry and transportation methods. Logging costs. Application of methods to specific conditions. All forest regions are covered, discussing the problems of each. Mr. Wyman.

For. 422. Lumbering. 0-3 0

Elective for seniors in Forestry.

The manufacture and re-manufacture, transportation and handling of lumber. Grades and grading of lumber. Mr. Wyman.

For. 423. Lumber Seasoning. 0-0-2

Elective for seniors in Forestry.

Air-seasoning and kiln-drying of lumber. Kiln construction and operation. Defects and their control. Mr. Wyman.

For. 431, 432. Forest Management. 3-3 0

Prerequisite: For. 311.

Required of seniors in Forestry.

The principles of management of timber lands for economic returns. The normal forest is taken as the ideal. The application of regulation methods to the forest. A typical working circle as developed by the United States Forest Service is studied for each forest region. Mr. Hofmann.

For. 433. Advanced Wood Technology. 0-0-3

Prerequisite: For. 202.

Elective for juniors and seniors in Forestry.

Advanced microscopic identification of the commercial woods of the United States. Microscopic work in anatomy and identification. Mr. Slocum.

For. 442. Forest Finance. 0-3-0

Prerequisite: For. 311.

Required of juniors in Forestry.

Forests as investments: interest, carrying charges, financial maturity, and relation of intermediate to final and net incomes. Forest taxation, hazards in forest investments, and forest insurance. Mr. Wyman.

For. 443. Timber Appraisal. 0-0-2

Required of seniors in Forestry.

Field and office methods of valuing timber lands, with special reference to stumpage appraisal; the evaluation of damages to timber and forest property. Mr. Wyman.

For. 452. Seminar. 0 2-0

Required of seniors in Forestry.

A round-table discussion of forestry problems, trends of development in forestry and related sciences. Forestry Faculty.

For. 453. Senior Field Trip 0-0-3

Required of seniors in Forestry.

An extensive survey of logging, lumbering and utilization of forest products throughout the Southeast. A complete series of reports covering all plants and operations visited is required. Mr. Wyman.

For. 461, 462, 463. Forestry Problems. 3 3 3

Elective for seniors in Forestry.

Assigned or selected problems in the field of silviculture, logging, lumber manufacturing, or forest management. Staff.

Courses for Graduates Only

For. 501, 502, 503. Advanced Forest Management Problems. 3-3-3

Complete management program for a specific forest area. Mr. Hofmann.

For. 511, 512, 513. Advanced Silviculture Problems. 3-3-3

Advanced problems or experiments in silviculture. Mr. Miller.

For. 521, 522, 523. Advanced Logging Problems. 3-3-3

Selected research logging problems of an advanced nature. Mr. Wyman.

For. 531, 532, 533. Advanced Lumber Manufacturing. 3-3-3

Selected advanced problems dealing with the manufacture and seasoning of lumber. Mr. Wyman.

For. 541, 542, 543. Advanced Utilization Problems. 3-3-3

Problems of an advanced grade in some phase of forest utilization.
Mr. Wyman.

For. 551, 552, 553. Forest Valuation. 3-3-3

Planning, organizing, and conducting, under general supervision, an important research project in one of the fields of valuation. Mr. Wyman.

For. 561, 562, 563. Problems in Research. 3-3-3

Specific forestry problems that will furnish material for a thesis.
Mr. Miller.

GEOLOGY

Courses for Undergraduates

Geol. 101. Earth History. 0-3-0

Elective. Not to be taken after Geol. 120, 220, and 222.

Introductory course in General Geology: changes in the earth, and underlying physical and life processes. Bradley, *The Earth and Its History.*
Mr. Stuckey.

Geol. 120. Physical Geology. 4 or 4 or 4

Required of freshmen in Basic Agriculture and Agricultural Education, and of sophomores in Forestry and Landscape Architecture.

Dynamic processes acting on and within the earth; materials and make-up of the earth's crust. Lectures, laboratories and field trips. Longwell, Knopf and Flint, *Outlines of Physical Geology.*
Messrs. Stuckey, Parker, West, Harrington.

Geol. 207. Ex. Physical Geography. 3-3-0

A. The processes and forces involved in the development of land forms.

B. The physiographic provinces of the United States and their importance. Some special study of the physical geography of North Carolina.
Mr. Stuckey.

Geol. 220. Engineering Geology. 3-0-0 or 0-0-3

Prerequisite: Chem. 101.

Required of sophomores in Agricultural, Ceramic, Civil, Geological, Highway and Sanitary Engineering.

The principles of general geology and their application to engineering problems. Lectures, laboratories and field trips. Ries and Watson. *Elements of Engineering Geology.*
Messrs. Stuckey, Parker, West, Harrington.

Geol. 222. Historical Geology. 0-3-0

Prerequisite: Geol. 120 or 220.

Required of sophomores in Geological Engineering.

Major events in the history of North America; rise and development of main animal and plant groups. Lectures, laboratories and field trips. Schuchert, *Outlines of Historical Geology.* Mr. Parker.

Geol. 223. Geomorphology. 0-0-3

Prerequisite: Geol. 120 or 220.

Required of sophomores in Geological Engineering.

A systematic study of land forms and their relations to processes and stages of development and adjustment of topography to structure. Lectures, map interpretations and field trips. Lobeck, *Geomorphology.*

Mr. Stuckey.

Geol. 230. Mineralogy. 3-0-0 or 0 0-3

Prerequisite: Chem. 101, 103, 105.

Required of sophomores in Ceramic and Geological Engineering, and of seniors in Chemical Engineering.

Crystallography, and Physical and Chemical Mineralogy. Lectures and laboratory work. Kraus and Hunt, *Mineralogy.*

Messrs. Stuckey, Parker, West.

Geol. 325. Geology and Mineral Resources of North Carolina. 3-0-0

Prerequisite: Geol. 222.

Physical geography, general geology, common rocks and minerals, and mines and quarry products of the State. Lectures, laboratories and field trips. Mr. Stuckey.

Geol. 332. Advanced Mineralogy. 0-3-0

Prerequisite: Geol. 230. Required in Geological Engineering.

A continuation of Geol. 230. Special attention to chemical and blowpipe properties of a larger group of important minerals. Lectures and laboratory work. Mr. Stuckey.

Geol. 338. Thermal Mineralogy. 0-3-0

Prerequisites: Geol. 230 and Chem. 231.

Required of juniors in Cer. E.

A study of the behavior of ceramic materials as controlled by variations in composition, temperature and pressure. Mr. Stuckey.

Geol. 352. Structural Geology. 0-4-0

Prerequisite: Geol. 120 or 220.

Required in Geological Engineering.

The arrangement and deformation of the different rock masses composing the earth's crust. Lectures, laboratories and field trips. Nevin, *Principles of Structural Geology.* Mr. Parker.

Geol. 353. Geophysics. 0-0-4

Prerequisites: Geol. 352, Phys. 203, C. E. 226.

Required of juniors in Geological Engineering.

Discussion of the fundamental principles underlying all geophysical methods. Procedure and instruments involved in gravitational, magnetic seismic and electrical methods. Study of applications and interpretation of results. Mr. West.

Geol. 361. Stratigraphy and Index Fossils. 3-0-0

Prerequisite: Geol. 222.

Required of juniors in Geological Engineering.

Distribution and conditions of origin of principal geologic formations in Southeastern United States. Key fossils characteristic of each period. Mr. Parker.

Courses for Graduates and Advanced Undergraduates

Geol. 411, 412, 413. Economic Geology. 3-3-3

Prerequisites: Geol. 120 or 220; Geol. 230; Chemistry 103.

Required of seniors in Geological Engineering.

Mode of occurrence, association, origin, distribution and uses of economically valuable minerals. Lectures, laboratories and field trips. Ries, *Economic Geology,* 7th Edition. Mr. Stuckey.

Geol. 431, 432, 433. Optical Mineralogy. 3-3-3

Prerequisites: Geol. 230, and Phys. 203.

Required of seniors in Ceramic and Geological Engineering.

Theory of light as applied to the polarizing microscope, practice in determining minerals in thin sections and by immersion methods. Lectures and laboratory work. Rogers and Kerr, *Thin-Section Mineralogy.* Messrs. Stuckey, Parker.

Geol. 443. Petrology. 0 0-4

Prerequisites: Geol. 120 or 220; Geol. 230; and Chemistry 103.

Required of juniors in Geological Engineering.

Materials of the earth's crust; composition, texture, classification, identification and alterations of the principal igneous, sedimentary and metamorphic rocks. Lectures, laboratories and field trip. Grout, *Kemp's Handbook of Rocks.* Mr. Parker.

Geol. 462. Advanced Engineering Geology. 0-3-0

Prerequisite: Geol. 220.

Required of seniors in Geological Engineering.

The application of geologic principles to civil engineering practice. Analysis of geologic factors and processes affecting specific engineering projects. Legget, *Geology and Engineering.* Mr. West.

Geol. 463. Geological Surveying. 0 0-4

Prerequisites: Geol. 352 and 443.

Required of seniors in Geological Engineering.

Methods of field observation and the use of geologic surveying instruments. Construction of a complete geologic map of a specific area. Lectures, laboratories and field trips. Mr. Parker.

Geol. 471, 472, 473. Mining Engineering, Mine Design, Ore Dressing. 3 3 3

Prerequisites: Geol. 230 and 352; C. E. 222 and 225.

Required of seniors in Geological Engineering.

Mining methods, both open pit and underground. Mine examination and valuation. Principles of ore dressing. Problems in mine design. Young, *Elements of Mining.* Mr. West.

Courses for Graduates Only

Geol. 511, 512. Advanced Economic Geology. 3 3 9

Prerequisites: Geol. 411, 412, 413.

Detailed study of the origin and occurrence of specific mineral deposits. Mr. Stuckey.

Geol. 543. Advanced Petrography. 0-0 3

Prerequisites: Geol. 433, 443.

Application of the petrographic microscope to the systematic and descriptive study of rocks. Messrs. Stuckey, Parker.

Geol. 591, 592, 593. Geological Research. 3-3-3

Prerequisite: Permission of the Instructor.

Lectures, reading assignments, and reports. Special work in Geology to meet the needs and interests of the students.

Messrs. Stuckey, Parker, West.

HIGHWAY ENGINEERING

Courses for Advanced Undergraduates

H. E. Ex. 101. Accidents and Their Prevention. 3 credits

A general study of the problem of accidents and their prevention, including accidents in the home, in industry, in transportation and public accidents.

H. E. 322, 323. Highway Engineering I. 0-3-3

Prerequisite: C. E. 221, 222, 223.

Required of all juniors in Civil Engineering.

History, economics, and administration of highways; construction and maintenance of highways; field and office methods; grading and drainage. Bruce, *Highway Design and Construction.* Mr. Tucker.

H. E. 332, 333. Materials Testing Laboratory. 0-1-1

Prerequisite: C. E. 321.

Required of seniors in Civil Engineering and one term only for juniors in Arch. E. and Cer. E.

The testing of materials used in construction: for the students in Civil and Highway Engineering, emphasis is placed on those materials used in road construction; for the students in Architectural and Construction Engineering, emphasis is placed on those materials used in the building industry. Tucker, *Manual in the Testing of Materials.* Mr. Tucker.

Courses for Graduates and Advanced Undergraduates

H. E. 421, 422. Highway Engineering II. 3-3 0

Prerequisites: H. E. 322, 323.

Required of seniors in H. E.

Highway administration and finance; the economic location of highways; cost of vehicular operation on grades; the selection of pavements. The administration of city streets; the street system, design, construction and maintenance; types of pavements, materials, and design of surfaces; drainage; traffic regulation and control. *Lectures and Notes.* Mr. Tucker.

H. E. 423. Transportation. 0-0-3

Prerequisites: H. E. 322, 323.

Required of seniors in C. E. and H. E.

The transportation systems; development and uses; operation and maintenance; control and methods of taxation. *Lectures and Notes.* Mr. Tucker.

H. E. 425, 426. Highway Office Practice and Design. 1-1-0

Prerequisites: H. E. 322, 323.

Required of seniors in H. E.

The preparation of road plans, the calculation of yardage and balancing of quantities; the design of sections; plans for drainage structures and short-span bridges. *Lectures and Notes.* Mr. Tucker.

Courses for Graduates Only

H. E. 511, 512, 513. Highway Research. 3 3-3

Prerequisite: Eighteen term credits in H. E.

A study of the important research projects in the field of highway transport or that of highway engineering. The first term is usually given to the preparation of a bibliography of highway research projects; the second term is devoted to the preparation of papers on the results of specified research projects; the third term is devoted to original research and investigation. Mr. Tucker.

HISTORY AND POLITICAL SCIENCE

Courses in History

Hist. 101, 102, 103. Economic History. 3-3-3

An examination of the important changes in European society and the forces which produced these changes during the periods of expansion and industrialization, as a background for a general treatment of the agricultural, industrial, and commercial development of the United States.

Messrs. Barnhardt, Bauerlein, Lockmiller, Seegers.

Hist. 104. World History. 2-2-2

Required of freshmen or sophomores who do not take Military Science.

A general survey of Western civilization from its beginning to the present day. Mr. Barnhardt.

Hist. 200, 201, 202. History of the United States. 3-3-3

Elective for one, two, or three terms.

A chronological treatment of the political, diplomatic, and constitutional history of the United States in the light of its economic and social significance. Mr. Bauerlein.

Hist. Ex. 203. Medieval History. 3 credits

A survey of the political, social, economic, ecclesiastical, and cultural history of Europe from the fourth century to the close of the fifteenth centry. Mr. Barnhardt.

Hist. 204. History of Modern Europe. 0-0-3

Elective.

A survey of the economic, political, and social developments in Europe from the age of the great discoveries to the close of the eighteenth century. Mr. Barnhardt.

Hist. 205. History of Modern Europe. 0 3-0

Elective.

A survey of European history during the nineteenth century, political, economic, and social movements being emphasized in proportion to their international or European importance. (Not offered in 1941-42). Mr. Barnhardt.

Hist. 206. Contemporary Europe. 0-0-3

Elective.

A survey of the contemporary history of the principal European states and their international relations in the twentieth century. (Not offered in 1941-42.)

Hist. 303. North Carolina History. 0-3-0

Elective.

A general survey of the political, social, economic, and cultural developments in North Carolina, with special emphasis on the nineteenth and twentieth centuries. Mr. Barnhardt.

Hist. Ex. 307, 308, 309. Economic and Social History of the South. 9 credits

A study of the economic and social history of the Southern States. Lectures, readings, and reports. Mr. Lockmiller.

Hist. Ex. 310. American Biography. 3 credits

Representative men and women in American politics, law, religion, agriculture, industry, commerce, science, literature, and art. Mr. Lockmiller.

Hist. 319. History of American Agriculture. 0-0-3

Required of juniors in Rural Sociology; elective for others.

Main trends in agriculture in the United States, and the place of agriculture in the economic life of the nation; special emphasis on the period since the Civil War. Mr. Seegers.

Hist. Ex. 320. History of Modern England. 3 credits

Survey of English political, social, economic, and diplomatic history, with emphasis on the nineteenth and twentieth centuries. Mr. Barnhardt.

Hist. Ex. 321. The Latin American Republics. 3 credits

Social, economic and political development of Latin America since 1810. Mr. Lockmiller.

Hist. Ex. 322. Contemporary History of the United States. 3 credits

Significant developments in the United States since 1914, with particular emphasis on post-war problems, foreign affairs, and the New Deal. Mr. Lockmiller.

Courses in Political Science

Pol. Sc. 200. American National Government. 3 0 0

Elective.

A study of the origins, organization, and functions of the government of the United States, including constitutional decisions and the New Deal. Mr. Lockmiller.

Pol. Sc. 201. State Government and Administration. 0-3-0

Elective.

A study of Federal-State relations, and the organization and administration of state and county governments. Special attention will be given to problems of government in North Carolina. Mr. Lockmiller.

Pol. Sc. 202. Municipal Government and Administration. 0 0-3

Elective.

A study of the history, organization, and administration of American municipal corporations. Lectures, readings, and reports. Mr. Lockmiller.

Pol. Sc. 203. American Political Parties. 3-0-0

Elective.

The origin and development of political parties in the United States: their functions, organization, regulation, campaign methods, and elections. (Not offered in 1941-42.) Mr. Lockmiller.

Pol. Sc. 206. European Governments. 3-0-0

Elective.

A study of the governments of England, France, Germany, Italy, and Russia. Mr. Barnhardt.

HORTICULTURE

Courses for Undergraduates

Hort. 203. General Horticulture. 0-0-3

Required of sophomores in Agriculture.

A course designed to give a general insight into the field of horticulture, including geographic centers of production, and the elements of the culture of fruit, vegetable, and flower crops. Messrs. Gardner, Randall, Weaver.

Hort. 301. Plant Propagation and Nursery Practice. 3 or 3 or 3

Required of students majoring in Horticulture; elective for other juniors and seniors in Agriculture and Forestry.

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

Hort. 302. Vegetable Forcing. 0-3-0

Prerequisite: Hort. 203.

Required of students majoring in vegetable growing; elective for other juniors and seniors in Agriculture.

Production and management of vegetable crops under glass. Practice in growing vegetables under protection. Mr. Randall.

Hort. 303. Vegetable Gardening. 0-0-4

Prerequisite: Hort. 203.

Required of students majoring in vegetable growing and fruit growing; elective for other juniors and seniors in Agriculture.

Location, soil preparation, fertilization, irrigation, and general culture applicable to vegetable production. Messrs. Randall, Weaver.

Hort. 311. Small Fruits and Grapes. 3-0-0

Prerequisite: Hort. 203.

Required of students majoring in fruit growing and vegetable growing; elective for other juniors and seniors in Agriculture.

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

Hort. 312. Floral Design. 0-1-0

Required of students majoring in floriculture; elective for other juniors and seniors in Agriculture.

Principles and practices in the art of floral design; corsages, wreaths, sprays, baskets and special arrangements. Mr. Weaver.

Hort. 313. Home Floriculture. 0-0-3

Required of students majoring in vegetable growing; elective for other juniors and seniors in Agriculture.

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

Hort. 321. Fruit and Vegetable Judging. 2-0-0

Prerequisite: Hort. 203.

Elective for juniors and seniors in Agriculture.

Practice in variety identification, and in judging plates, collections, boxes, and commercial exhibits of fruits and vegetables. Messrs. Gardner, Randall.

Hort. 323. Ornamental Horticulture. 0-0-2

Prerequisites: Hort. 301 and L. A. 402.

Elective for juniors and seniors in the School of Agriculture.

The planting, transplanting, pruning, feeding and protection of ornamental plants used in the construction and maintenance of rural home grounds. Lawn grasses and lawn-making. Mr. Harris.

Hort. 331. Fruit Growing. 4-0-0

Prerequisite: Hort. 203.

Required of students majoring in fruit growing, vegetable growing, poultry, and animal husbandry; elective for other juniors and seniors in Agriculture.

A study of factors underlying fruit production; temperature and moisture relations; culture, fertilization, pruning, fruit setting, yield, and storage. Messrs. Gardner, Weaver.

Hort. 341. Commercial Floriculture. 4-0-0

Prerequisites: Hort. 203, 301.

Required of students majoring in floriculture; elective for other juniors and seniors in Agriculture.

A study of the commercial production of the principal floral crops under protection and in the open, including actual planting and care of the crops. Mr. Randall.

Hort. 351. Fruit and Vegetable Utilization. 3-0-0

Elective for juniors and seniors in Agriculture.

Principles and methods involved in the commercial utilization of surplus and off-grade products. Extraction and preservation of juices, quick freezing methods, sweet-potato starch production and other manufactured products and by-products. Staff.

Courses for Graduates and Advanced Undergraduates

Hort. 401. Systematic Pomology (offered in alternate years). 2 0-0

Prerequisite: Hort. 331.

Required of students majoring in pomology.

Fruit varieties: their description, identification, nomenclature, and classification; their relationships and adaptations. Judging methods and standards. Mr. Gardner.

Hort. 411. Systematic Olericulture (offered in alternate years). 2 0-0

Prerequisite: Hort. 303.

Required of students majoring in vegetable growing.

Vegetable varieties: their description, identification, nomenclature, and classification; their relationships and adaptations. Mr. Randall.

Hort. 412. Experimental Horticulture. 0-3-0

Prerequisite: Hort. 331, 303, 341.

A systematic study of the sources of knowledge and results of experiments in fruit growing, vegetable growing, and floriculture.
Messrs. Gardner, Randall, Weaver.

Hort. 421, 422, 423. Horticultural Problems. 2-2-2

Prerequisite: twelve credit hours in Horticulture.

Required of all students majoring in Horticulture.

Systematic investigation of some phase of horticulture. Each student chooses his own subject of study and pursues it independently, under direction of the instructor. Messrs. Gardner, Randall, Weaver.

Hort. 431, 432, 433. Senior Seminar. 1-1-1

Prerequisite: twelve credit hours in Horticulture.

Required of all students majoring in Horticulture.

A discussion of problems of interest to horticulturists. Discussion topics are assigned to students and members of the Horticultural staff.
Mr. Gardner.

Courses for Graduates Only

Hort. 501, 502, 503. Methods of Horticultural Research. 3-3-3

Prerequisite: eighteen credit hours in Horticulture.

A study of methods and procedure, outlining problems, assembling and analyzing data, and presenting results; critical review of experiment station work. Staff.

Hort. 511, 512, 513. Seminar. 1 1-1

Prerequisite: eighteen credit hours in Horticulture.

Required of graduate students only.

Assignment of scientific articles of interest to horticulturists for review and discussion; student papers and research problems for discussion.
Mr. Gardner.

Hort. 521, 522, 523. Research. 3 5, 3-5, 3-5

Prerequisite: eighteen credit hours in Horticulture.

Graduate students will be required to select problems for original research in fruit growing, vegetable growing, or floriculture. The work and presentation of results should be of such merit as to be worthy of publication.
Staff.

INDUSTRIAL ENGINEERING

Courses for Undergraduates

I. E. 101, 102, 103. Industrial Organization. 3-3-3

Required of sophomores in I. E.

Engineering methods in studies of industrial enterprises. Kimball, *Industrial Organization,* and Folts, *Introduction to Industrial Management.*
Mr. Groseclose.

I. E. 201, 202, 203. Management Engineering. 3 3 3

Prerequisite: I. E. 103.

Required of juniors in I. E.

Principles of management, administration, production, and sales; executive control, industrial relations, incentives, normal capacities, standard costs, and pricing; budgeting and planning. Gilman, *Analyzing Financial Statements,* and Alford, *Principles of Industrial Management for Engineers.*
Mr. Shaw.

Courses for Advanced Undergraduates

I. E. 301. Engineering Economics. 3-0-0 or 0-3-0 or 0-0-3

Prerequisite: Econ. 202 or 205.

Required of seniors in E. E., I. E., and in M. E., Furniture Option, elective for others.

Principles of investments, costs, and utility, with applications to engineering practice; choice of investments and replacements. Grant, *Principles of Engineering Economy.* Mr. Groseclose.

I. E. 312, 313. Industrial Engineering Problems. 0-3-3

Prerequisites or concurrent: I. E. 201, 202, 203.

Required of seniors in I. E.

Detailed study of problems of moment in this rapidly developing field. Mr. Shaw.

Courses for Graduates and Advanced Undergraduates

I. E. 402. The Electrical Industry. 0-3-0

Prerequisite: I. E. 301.

Required of seniors in E. E. and I. E.

The operation, practices, management, and performance of electric light and power companies and other electrical industries. Factors, indexes, and comparisons. Services and prices. Cost analyses and predeterminations. *Uniform System of Accounts for Public Utilities and Licensees.* Mr. Shaw.

I. E. 412, 413. Engineering Economics Advanced. 0-3-3

Prerequisite: I. E. 301.

Elective.

Comprehensive study of the application of economics to the practice of engineering. Mr. Shaw.

I. E. 421, 422, 423. Public Utilities. 3-3-3

Prerequisite or concurrent: I. E. 301 or senior standing.

Elective for seniors or graduate students.

Public utilities and their regulation; services, rates, rate bases, and returns, leading cases; current problems. Mosher and Crawford, *Public Utility Regulation.* Mr. Shaw.

I. E. 433. Investigation and Report. 0-0-3

Prerequisite: I. E. 312.

Required of seniors in I. E.

Investigation of a selected and approved problem. Mr. Shaw.

Courses for Graduates Only

I. E. 501, 502, 503. Industrial Engineering Research. 3-3-3

Prerequisite: Graduation in Engineering.

Investigation of a problem of major importance in the field of Industrial Engineering. Mr. Shaw.

LANDSCAPE ARCHITECTURE

Courses for Undergraduates

L. A. 101, 102, 103. Arboriculture. 1-1-2

Required of freshmen in Landscape Architecture; elective for other students in Agriculture.

Culture of plant materials: their planting, transplanting, training, fertilization, protection from pests; tree surgery, lawn making.
Messrs. Pillsbury, Weaver.

Courses for Advanced Undergraduates

L. A. 201, 202, 203. Plant Materials: Woody Plants. 2-2-2

Prerequisite: Bot. 203.

Required of sophomores in Landscape Architecture and juniors in Floriculture; elective for students in other curricula.

Trees, shrubs, and vines: their distribution, form and habits of growth, size, texture, color, and other characteristics determining use in planting design. Mr. Randall.

L. A. 212, 213. Theory of Landscape Design. 0-3-3

Required of sophomores in Landscape Architecture; elective for students in other curricula.

Introduction to the study of landscape design: its theoretical basis; the meaning of taste; historic styles; elements, and landscape composition; planting design, and analyses of typical problems in landscape design.
Mr. Pillsbury.

L. A. 303. Plant Materials: Herbaceous Plants. 0-0-2

Required of juniors in Landscape Architecture; elective for students in other curricula. Prerequisite: Bot. 203.

Ornamental perennial and annual plants: height, habit of growth, texture, color, and other characteristics determining use in planting design.
Mr. Randall.

L. A. 311, 312. History of Landscape Design. 3-3-0

Prerequisites: L. A. 212, 213.

Required of juniors in Landscape Architecture.

History of the art of landscape design from antiquity to modern times; sketching from illustrations of design in important periods. Mr. Pillsbury.

L. A. 321, 322, 323. Landscape Design I. 4-4-4

Prerequisites: L. A. 311, 312.

Required of juniors in Landscape Architecture.

Problems in presentation, and in consecutive design of small properties, gardens, and other special areas and suburban estates. Mr. Pillsbury.

L. A. 402. Ornamental Plants. 0-2-0

Prerequisite: Bot. 203.

Required of seniors in Vegetable Gardening and Pomology; elective for juniors or seniors in other curricula.

Ornamental trees, shrubs, and vines: their characteristics of use in planting design for home, school, church, and community-center grounds, and farmstead landscapes. Mr. Randall.

L. A. 403. Landscape Gardening. 0-0 3

Prerequisites: L. A. 402, or 201, 202, 203.

Required of seniors in Vegetable Gardening, Floriculture, and Pomology; elective for seniors in all other curricula.

Landscape planning and planting design applied to the improvement of home, school, church, community-center grounds, and farmsteads; practice in methods of making measured surveys, mapping, and designing improvements and planting. Mr. Pillsbury.

L. A. 411, 412, 413. Planting Design. 3-3-3

Prerequisites: L. A. 201, 202, 203, and 303.

Required of seniors in Landscape Architecture.

Problems in composition with plant materials, presentation, the preparation of planting plans, and cost data. Mr. Pillsbury.

L. A. 421, 422, 423. Landscape Design II. 4-4-4

Prerequisites: L. A. 321, 322, 323.

Required of seniors in Landscape Architecture.

Problems in presentation, and in the design of small parks and other public grounds, and institutional groups. Mr. Pillsbury.

L. A. 432. City Planning. 0-3-0

Required of seniors in Landscape Architecture; elective for seniors in all schools.

Origins and types of urban communities; modern city and town planning; legal, economic, social, and aesthetic phases and their interrelationships; fundamental data required; methods of planning and financing; zoning; city and regional planning legislation. Mr. Pillsbury.

L. A. 442. Suburban Design. 0-4-0

Prerequisite: L. A. 321, 322, 323, and 432.

The subdivision of land as related to suburban development and urban growth. Mr. Pillsbury.

L. A. 451, 452, 453. Landscape Construction. 2-2-2

Required of seniors in Landscape Architecture. Prerequisite: C. E. 224, 225, 226, and 227; and L. A. 321, 322, 323.

Problems in design of ground surface, walks, and drives; preparation of plans for grading and drainage; estimates of materials and costs, and methods of execution of landscape designs. Mr. Pillsbury.

L. A. 463. Office Practice. 0-0-1

Prerequisite: L. A. 451, 452, 453.

Arrangement of equipment, supplies, data, and illustrative and other material in landscape offices; methods of professional procedure, and professional ethics. Mr. Pillsbury.

MATHEMATICS

Courses for Undergraduates

*Math. 111. Algebra. 4-0-0

Review of elementary topics, such as Factoring, Fractions, Simple Equations, Exponents, and Radicals. Topics then taken up are Quadratic Equations, Solution of Higher-Degree Equations, Simultaneous Quadratic Equations, Logarithms, the Binomial Theorem, Arithmetic and Geometric Progressions, Permutations, Combination, and the Elementary Theory of Probability. Fisher, *College Algebra*.

* This course will be repeated the following term.

***Math. 112. Trigonometry.** 0-4-0

Prerequisite: Math. 111.

The study of the Trigonometric Functions with their applications to the solution of the right and oblique triangles, with numerous problems. Also a brief study of Trigonometric Equations, and Identities and Inverse Functions. Practical Mensurations of Solids is taken up. Clarkson and Bullock, *Trigonometry*.

***Math. 113. Mathematics of Finance.** 0-0-4

Prerequisite: Math. 112.

Simple and Compound Interest, Annuities, Sinking Funds and Amortization, and the Valuation of Bonds and other applications. Smail, *Mathematics of Finance*. Staff.

***Math. 101. Algebra for Engineers.** 6-0-0

Required of freshmen in the Schools of Engineering, and in the Departments of Industrial Management, Industrial Arts, and Landscape Architecture.

Quadratic equations, the progressions, the binomial theorem, permutations and combinations, logarithms, the general theory of equations, the solution of higher equations, determinants and partial fractions. Fisher, *College Algebra*. Staff.

***Math. 102. Trigonometry for Engineers.** 0-6-0

Prerequisite: Math. 101.

Required of freshmen in the Schools of Engineering, and in the Departments of Industrial Management, Industrial Arts, and Landscape Architecture.

The trigonometric functions, derivation of formulae, the solution of plane and spherical triangles, with practical applications, slide rule, complex numbers, and hyperbolic functions. Clarkson and Bullock, *Plane and Spherical Trigonometry*. Staff.

***Math. 103. Analytical Geometry.** 0-0-6

Prerequisites: Math. 101, 102.

Required of freshmen in the School of Engineering and in the Departments of Industrial Management, Industrial Arts, and Landscape Architecture.

Loci of equations, the straight line, circle, parabola, ellipse, hyperbola, the general equation of the second degree, polar coördinates, transcendental curves, parametric equations, coördinates in space, planes and surfaces. Smith, Gale and Neelley, *Elements of Analytical Geometry*. Staff.

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* This course will be repeated the following term.

***Math. 201. Calculus I.** 4-0-0

Prerequisite: Math. 103.

Required of sophomores in Engineering.

A course in the fundamental principles of the Calculus, including the formulas for differentiation and for integration of polynomial functions, with applications to Geometry and to problems in rates, maxima and minima, curve tracing, curvature, areas, volumes, work, pressure, velocity and acceleration. Smith, Salkover, Justice, *Calculus.* Staff.

***Math. 202. Calculus II.** 0-4-0

Prerequisite: Math. 201.

Required of sophomores in Engineering.

A continuation of Calculus I. Methods of integration, and the study of the definite integral, with applications to problems in areas, volumes, lengths of arcs, surfaces, centroids, moments of inertia, radii of gyration, approximate integration. Smith, Salkover, Justice, *Calculus.* Staff.

***Math. 303. Calculus III.** 0-0 4

Prerequisite: Math. 202.

Required of sophomores in Engineering.

A continuation of Calculus II. Indeterminate forms, infinite series, expansion of functions, hyperbolic functions, partial differentiation, double and triple integrals, and differential equations. Smith, Salkover, Justice, *Calculus.* Staff.

Courses for Graduates and Advanced Undergraduates

Math. 431-a. Differential Equations. 3-0 0

Prerequisite: Math. 303.

Required of juniors in Electrical Engineering and elective for others.

Solution of standard types of equations; numerous examples in the field of Electrical Engineering. Kells, *Differential Equations.* Mr. Bullock.

Math. 431-b. Differential Equations. 3-0 0

Prerequisite: Math. 303.

Elective. Principally for students in Chemical Engineering.

A study of the equations that occur in Applied Chemistry. Much emphasis on graphic methods and numerical work. Phillips, *Differential Equations.* Mr. Winton.

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* This course will be repeated the following term.

Math. 432. Advanced Differential Equations for Electrical Engineers. 0-3-0

Prerequisite: Math. 431-a.

Elective.

A continuation of the work given in Math. 431-a. Series solutions, approximate methods, partial differential equations, hyperbolic functions, and other topics will be studied with special emphasis on applications to problems in Electrical Engineering. Students not taking Electrical Engineering may register for the course and will be assigned individual problems in their particular field. Lecture notes. Mr. Bullock.

Math. 402. Graphical and Numerical Methods. 0 3-0

Prerequisite: Math. 303.

Elective.

Graphical and numerical approximate methods in differentiation, integration, and the solution of both ordinary and differential equations. Theory of least squares and empirical curve fitting. Numerous examples in the fields of physics, electricity, mechanics, and engineering will be solved. Lipka, *Graphical and Mechanical Computation.* Mr. Cell.

Math. 403. Vector Analysis I. 0-0-3

Prerequisite: Math. 431 (a or b).

Elective.

Different vector products; the calculus of vectors with applications to geometry and mechanics. Phillips, *Vector Analysis.* Mr. Clarkson.

****Math. 411. Advanced Calculus for Engineers.** 3 0-0

Prerequisite: Math. 431 (a or b).

Elective.

Hyperbolic functions, elliptic integrals and functions, partial differentiation of composite functions, differentiation of integrals, implicit functions. Applications to problems in engineering will be emphasized. Reddick and Miller, *Advanced Mathematics for Engineers.* Mr. Levine.

****Math. 412. Advanced Calculus for Engineers.** 0-3-0

Prerequisite: Math. 431 (a or b).

Elective.

Power series, Gamma and Bessel functions, functions of a complex variable, line integrals. Applications to problems in engineering will be emphasized. Reddick and Miller, *Advanced Mathematics for Engineers.*

Mr. Levine.

** Math. 411, 412, 413, may be taken in any order.

**Math. 413. Series for Engineers. 0-0-3

Prerequisite: Math. 431 (a or b).

Elective.

Fourier series, partial differential equations, with applications to problems in physics and engineering. Reddick and Miller, *Advanced Mathematics for Engineers.*

Math. 421. Advanced Analytic Geometry. 3-0-0

Prerequisite: Math. 431 (a or b).

Elective.

The elements of higher plane curves and the geometry of space. Snyder and Sisam, *Analytic Geometry.* Mr. Bullock.

Math. 422. Theory of Equations. 0 3 0

Prerequisite: Math. 431 (a or b).

Elective.

The usual topics in the theory of equations, the solution of higher equations, exponential equations, logarithmic equations, and determinants. Dickson, *First Course in Theory of Equations.* Mr. Mumford.

Courses for Graduates Only

Math. 501. Applied Mathematics I. 3-0-0

Elective for graduate students only. Prerequisite: Math. 413 or the consent of the instructor.

The course will be arranged to fit the engineering interests of the students enrolled.

Catenary cables, straight-and-curved-beam problems, theory of curve fitting, probability and applications, problems in the theory of elasticity, ballistics, vibration theory and problems, electrical circuits, Heaviside operational calculus and applications to electrical engineering and to other engineering problems, calculus of finite differences and applications. Lecture notes. Mr. Cell.

Math. 502. Applied Mathematics II. 0-3-0

Prerequisite: Math. 501.

Elective. For graduate students only.

A continuation of Math. 401. Lecture notes. Mr. Cell.

Math. 503. Applied Mathematics III. 0-0-3

Prerequisite: Math. 502.

Elective. For graduate students only.

A continuation of Math. 402. Lecture notes. Mr. Cell.

** Math. 411, 412, 413, may be taken in any order.

MECHANICAL ENGINEERING

Courses for Undergraduates

M. E. 101, 102, 103. Engineering Drawing I. 2-2-2

Required of freshmen in Textiles.

Drawing-board work on lettering, projections, sections, pictorial drawings, with working drawings related to textile machinery; tracing and blueprinting. French and Svensen, *Mechanical Drawing*. French and Turnbull, *Lessons in Lettering*. Messrs. Briggs, Brown, Adams, Hyde, and Bragg.

M. E. 105, 106. Engineering Drawing II. 3-3-0

Required of freshmen in Engineering, Agricultural Engineering, Industrial Arts, and Landscape Architecture.

Drawing-board work on lettering, projections, sections, revolution, auxiliary views, pictorial drawings, intersection, development, working drawings; tracing and blueprinting. French, *Engineering Drawing*.
Messrs. Briggs, Brown, Bragg, Hyde, Clement, and Adams.

M. E. 107. Descriptive Geometry. 0 0 3

Prerequisite: M. E. 105, 106.

Required of freshmen in Engineering, Agricultural Engineering, Industrial Arts, and Landscape Architecture.

Representation of geometrical magnitudes with points, lines, planes, and solids; the solutions of problems. Warner. *Applied Descriptive Geometry*.
Messrs. Briggs, Brown, Adams, Bragg, Clement, and Hyde.

M. E. 121. Woodwork. 1 or 1 or 1

Required of sophomores in Aeronautical and Chemical Engineering, freshmen in Textiles, and juniors in Farm Bus. Adm.

Use of bench tools, making cabinet joints, operation and care of woodworking machinery; correct methods of staining, varnishing, filling, and gluing various kinds of wood. Mr. Rowland.

M. E. 122. Foundry. 1 or 1 or 1

Required of sophomores in Aeronautical and Chemical Engineering, freshmen in Textiles, and juniors in Farm Bus. Adm.

Demonstration and practice in molding and core making; cupola practice. Stimpson, Grey and Grennan, *Foundry Work*. Mr. Maddison.

M. E. 123. Forge Work. 1 or 1 or 1

Required of sophomores in Aeronautical and Chemical Engineering, and freshmen in Textiles.

Hand forging of simple exercises in mild steel representative of industrial practice; the origin, purification and fabrication of ferrous metals; the identification and uses of these metals. Coleman, *Forge Note Book.*

Mr. Cope.

M. E. 124. Pattern Making. 2 or 2 or 2

Required of sophomores in Mechanical Engineering and in Industrial Engineering.

Deals with elementary joinery, finishing, theory of dry-kilning, wood-turning. Lectures, demonstrations, and practice in hand work and machine methods. Typical patterns and core boxes are constructed, such as solid, split, and loose piece. Turner and Town, *Pattern Making.* Mr. Rowland.

M. E. 125. Foundry Practice. 2 or 2 or 2

Required of sophomores in Industrial and Mechanical Engineering.

Lectures, demonstrations, and practice in molding and core making, cupola operations, melting and casting of ferrous and nonferrous metals and their alloys. Instructions and practice in the testing of molding sands. Wendt, *Foundry Work.* Mr. Maddison.

M. E. 126. Forging and Welding. 2 or 2 or 2

Required of sophomores in Industrial and Mechanical Engineering.

A study of the principles and practices of forging. Hand forging as correlated with the industrial processes of hammering, rolling, and pressing. Lectures, demonstrations and practice in forge, oxy-acetylene, and electric welding. Johnson, *Forging Practice.* Mr. Cope.

M. E. 127. Woodworking. 0-3-0

Required of juniors in Architectural Engineering.

Elementary joinery, cabinet joints, reading blueprints, and wood-turning; theory of dry-kilning and wood finishing. Lectures, demonstrations, and practice in hand and machine methods. Mr. Rowland.

M. E. 128. Forge and Welding Practice. 2 or 2 or 2

Required of sophomores in Electrical Engineering.

Hand forging of exercises in mild and tool steel is correlated with the industrial methods of hammering, rolling and pressing; principles and modern practices; identification of ferrous metals. Practice is given in forge, oxy-acetylene and electric welding. Johnson, *Forging Practice.*

Mr. Cope.

M. E. 211, 212, 213. Mechanical Drawing. 2 2-2 or 0 2-2

Prerequisites: M. E. 105, 106, 107.

Six credits required of sophomores in Mechanical Engineering, juniors in Industrial Ed., and four credits required of juniors in Ceramic Engineering.

Drawing-board work on machine fastenings, pipe fittings, cam design, technical sketching, applied descriptive geometry, and working drawings; tracing and blueprinting. French, *Engineering Drawing*. Mr. Satterfield.

M. E. 215, 216, 217. Elementary Mechanism. 1-1-1

Prerequisites: M. E. 105, 106, 107.

Required of juniors in Electrical Engineering.

The study of linkages, cams, gears, belting, gear trains, and other simple mechanisms; design and drawings of simple machine parts. Keown and Faires, *Mechanism*. Messrs. Adams, Brown.

M. E. 222, 223. Metallurgy. 0-3-3

Prerequisites: Chem. 101, 102, 103.

Required of juniors in Aeronautical and Mechanical Engineering.

The study of metals and alloys; smelting, refining, shaping, and heat treating. Crystallography of metals. Stoughton and Butts, *Engineering Metallurgy*. Mr. Lee.

M. E. 224. Factory Equipment. 0-0-3

Prerequisites: M. E. 124, 125, 126.

Required of juniors in Industrial Engineering.

To summarize and coördinate all previous shop courses and show their relation to manufacturing processes. The essential principles of machine-tool operation is covered; machine-tool selection and application for economic production. Roe and Lytle, *Factory Equipment*. Mr. Wheeler.

M. E. 225, 226. Machine Shop I. 1-1-0

Prerequisites: M. E. 121, 122, 123.

Required of juniors in Chemical Engineering.

Chipping, filing, scraping, and babbitting; general machine work, including straight and taper turning, drilling, shaper work, and gear cutting. Mr. Wheeler.

M. E. 227, 228, 229. Machine Shop II. 1-1 1

Prerequisites: M. E. 121, 122, 123, or M. E. 124, 125, 126.

Required of juniors in Industrial and Mechanical Engineering and Yarn Manufacturing.

Practice in laying out work, grinding tools, chipping, drilling, tapping, babbitting bearings, and scraping. Machine work, including centering, straight and taper turning, chucking, screw cutting, shaper work, planer work and index milling, and gear cutting. Turner, *Machine Tool Work.*

Mr. Wheeler.

M. E. 235, 236. Metal Shop. 3-3-0

Prerequisite: Ed. 106.

Required in Industrial Arts.

Use of hand and machine tools in problems for secondary schools. Kaup, *Machine Shop Practice.* Mr. Wheeler.

M. E. 241, 242, 243. Oxy-Acetylene and Electric Welding. 1 1-1

Prerequisite: M. E. 126 or M. E. 128.

Elective.

Fundamental methods and principles of fusion welding; welding symbols, economic and metallurgical considerations, selection of method and type of welding. Emphasis is placed on oxy-acetylene welding practice. Plumley, *Oxy-acetylene Welding and Cutting.* Mr. Cope.

M. E. 303. Heat Engineering II. 0 0-3

Prerequisites: Phys. 201, 202, 203, Math. 201, 202, 303.

Required of juniors in Civil, Geological, and Highway Engineering.

Nature and measurement of heat, work, and power; fuels and combustion, steam and steam boilers, and boiler-room auxiliaries. Potter and Calderwood, *Elements of Steam and Gas-Power Engineering.* Mr. Cheatham.

M. E. 305, 306. Engineering Thermodynamics I. 3-3-0

Prerequisites: Phys. 201, 202, 203, Math. 303.

Required of juniors in Ceramic Engineering, and seniors in Chemical Engineering.

Nature and measurement of heat, work, and power; fuels and combustion, heat transfer and insulation. Elementary thermodynamics of gas and vapor cycles. Severns and Degler, *Steam, Air and Gas Power.* Mr. Lee.

M. E. 307, 308, 309. Engineering Thermodynamics II. 3-3-3

Prerequisites: Phys. 201, 202, 203, Math. 303.

Required of juniors in E. E., M. E., and I. E.

The study of heat as an engineering medium; combustion, heat transfer, and the laws governing energy transformations; use of the general energy equation in the solution of problems dealing with gases, vapors, and mixtures; application of the principles studied to the design and performance of nozzles, steam engines and turbines, internal-combustion engines, refrigerating machines, and air compressors. Faires, *Applied Thermodynamics.*

Messrs. Hoefer and Rice.

M. E. 311, 312. Mechanical Engineering Laboratory I. 1-1-0

Concurrent with M. E. 305, 306.

Required of juniors in Cer. Engineering.

Calibration of thermometers and gauges, use of planimeters and indicators; coal and gas analyses; tests of lubricating oils. Testing of steam engines, turbines, and pumps. Rice, *Experimental Engineering.*

Messrs. Bridges, Cheatham, Rice, and Lee.

M. E. 313, 314, 315. Mechanical Engineering Laboratory II. 1-1-1

Concurrent with M. E. 307, 308, 309.

Required of juniors in Electrical, Industrial and Mechanical Engineering.

Calibrating pressure, temperature, speed, and power-measuring instruments; the study of steam-generating equipment; the testing of fuels, lubricants, pumps, compressors, steam engines and turbines, heating and ventilating equipment, hydraulic machinery, and internal-combustion engines. Rice, *Experimental Engineering.*

Messrs. Bridges, Cheatham, Rice, and Lee.

M. E. 317, 318, 319. Kinematics. 3-3-3

Prerequisites: M. E. 211, 212, 213.

Required of juniors in Mechanical Engineering.

A study of the science of the motion of machine parts, with emphasis on belts, pulleys, cams, gears, chain drives, shafts, and links. Schwamb, Merrill, and James, *Elements of Mechanism.* Mr. Fornes.

M. E. 341, 342, 343. Furniture Designs and Rod-Making. 3-3-3

Prerequisites: M. E. 124, 125, 126 and M. E. 211, 212, 213.

Required of juniors in Mechanical Engineering II.

Principles of elementary freehand design. Methods of dry-kilning, finishing, filling and staining, and rod-making. Dean, *Modern American Period Furniture.* Mr. Rowland.

M. E. 350. Advanced Engineering Drawing. 0-3 or 3

Prerequisites: M. E. 105, 106, 107 and E. M. 311, 312 or M. E. 101, 102, 103 and one of the following: Tex. 304, 310, 335, 381.

Elective: For advanced undergraduates.

Drawing-board work on drafting problems as related to plant machinery, equipment, schematic drawing, organization charts, and special problems in the various engineering and textile fields. The course will include laboratory work, lectures, recitations, and individual conferences.

Mimeographed problem sheets, handbooks and reference material will be used. Messrs. Briggs, Moose, and Brown.

Courses for Graduates and Advanced Undergraduates

M. E. 401, 402, 403. Power Plants. 3-3-3

Prerequisites: M. E. 307, 308, 309 and M. E. 313, 314, 315.

Required of seniors in Mechanical Engineering.

A critical study of fuels and combustion, heat balance, steam boilers, prime movers and auxiliaries, as applied to power generation. Morse, *Power Plant Engineering and Design.* Mr. Vaughan.

M. E. 404. Heating and Air-Conditioning I. 0-3-0

Prerequisites: M. E. 307, 308, 309.

Required of seniors in Mechanical Engineering I.

Principles of heating and ventilation; warm air, steam, and hot-water heating systems; air-conditioning. Severns, *Heating, Ventilating, and Air-Conditioning Fundamentals.* Mr. Vaughan.

M. E. 405. Refrigeration. 0-0-3

Prerequisites: M. E. 307, 308, 309.

Required of seniors in Mechanical Engineering I.

Theory of refrigeration; types of ice-making and refrigerating machinery; special emphasis upon cooling for air conditioning; installation, management, and cost of operation. Sparks, *Mechanical Refrigeration.*
Mr. Vaughan.

M. E. 407, 408, 409. Mechanical Engineering Laboratory III. 1-1-1

Prerequisites: M. E. 313, 314, 315.

Required of seniors in Mechanical Engineering.

Advanced study and testing in the fields of power plants, air-cooled and liquid cooled internal-combustion engines, heating and ventilation, metallurgy, fluid flow, compressed air, fuels and combustion, and lubrication. Rice, *Experimental Engineering.* Messrs. Bridges, Cheatham, Rice, and Lee.

M. E. 411, 412, 413. Machine Design. 3-3-3

Prerequisites: M. E. 317, 318, 319, E. M. 213, E. M. 222.

Required of seniors in Mechanical Engineering I.

Application of mechanics, kinematics, strength of materials, and metallurgy to the design of machinery. Determination of proper materials, shape, size, strength, motion, and relationship of various machine parts. Vallance, *Design of Machine Members.* Mr. Fornes.

M. E. 421, 422, 423. Internal Combustion Engines. 3-3-3

Prerequisite: M. E. 307, 308, 309.

Required of seniors in Aeronautical Engineering.

Thermal and mechanical characteristics of internal combustion engines; with special reference to the design, construction, operation and performance of automotive, aircraft and Diesel engines and their accessories. Lichty, *Internal Combustion Engines;* Current Periodicals. Mr. Rice.

M. E. 425, 426, 427. Internal Combustion Engines Laboratory. 1-1-1

Prerequisites: M. E. 307, 308, 309.

Concurrent with M. E. 401, 402, 403 or M. E. 421, 422, 423.

Advanced study and testing of internal combustion engines, their auxiliaries, and the materials used in their construction; fuels and lubricants. Rice, *Experimental Engineering.* Messrs. Bridges and Rice.

M. E. 445, 446, 447. Furniture Design and Construction. 3-4-5

Prerequisites: M. E. 341, 342, 343.

Required of seniors in Mechanical Engineering II.

Theory and practice in construction and finishing. Factory processes and layout for quantity production. Dean, *Modern American Period Furniture.* Mr. Rowland.

M. E. 451, 452, 453. Heating and Air-Conditioning II. 3-3-3

Prerequisites: M. E. 307, 308, 309 and M. E. 313, 314, 315.

Required of seniors in Mechanical Engineering III.

Principles of heating, ventilation, and refrigeration as applied to air-conditioning; study of design and operation of air conditioning systems. Allen and Walker, *Heating and Air-Conditioning.* Messrs. Rice and Vaughan.

M. E. 455, 456, 457. Heating and Air-Conditioning Lab. 1-1-1

Prerequisites: M. E. 313, 314, 315.

Required of seniors in Mechanical Engineering III.

Testing of heating and air-conditioning units, systems and controls; the testing of refrigerating equipment, ducts, methods of air-distribution, fuel-burning equipment, dust-control equipment and heat-resisting materials. *American Society of Heating and Ventilating Engineers Guide* Mr. Rice.

M. E. 458, 459. Heating and Air-Conditioning Design. 0-3-3

Prerequisites: M. E. 307, 308, 309 and M. E. 313, 314, 315.

Required of seniors in Mechanical Engineering III.

Design calculations made from given conditions for a heating plant and an air-conditioning system; materials listed and cost of installation estimated. *American Society of Heating and Ventilating Engineers Guide.* Messrs. Rice and Vaughan.

M. E. 461, 462, 463. Experimental Engineering. 3-3-3

Prerequisites: M. E. 313, 314, 315 or equivalent as approved by faculty group.

A course in advanced engineering principles applied to a specific project dealing with heat, power, hydraulic machinery, metallography, aerodynamics, or general experimental work. A seminar period is provided and a written report required. Messrs. Rice, Vaughan, and Wheeler.

Courses for Graduates Only

M. E. 501, 502, 503. Advanced Engineering Thermodynamics. 3-3-3

Prerequisites: M. E. 307, 308, 309 and M. E. 407, 408, 409.

Development of the thermodynamic equations and their application to advanced engineering problems. Messrs. Hoefer and Rice.

M. E. 505, 506, 507. Internal Combustion Engine Design. 3-3-3

Prerequisites: M. E. 421, 422, 423 and 407, 408, 409.

A thorough study of the field of internal-combustion engines together with the design of an engine to meet specific requirements. Pye: *Internal Combustion Engines* Vol. I and II. Mr. Rice.

***M. E. 513, 514, 515. Power Plant Design.** 3-3-3

Prerequisites: M. E. 401, 402, 403 and M. E. 307, 308, 309.

The design of a plant to fulfill conditions obtained by investigation and research; specifications for design, and installation.

Messrs. Hoefer and Vaughan.

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* Only one of these courses to be offered during any College year.

***M. E. 517, 518, 519. Design of Heating and Ventilating System.** 3-3-3

Prerequisites: M. E. 404 or M. E. 451, 452, 453 and M. E. 407, 408, 409.

The design of a heating system for specific conditions; specifications for installation, and performance tests of heating equipment.

Messrs. Rice and Vaughan.

M. E. 521, 522, 523. Mechanical Engineering Research. 3-3-3

Prerequisites: M. E. 401, 402, 403 and M. E. 404.

Research and thesis in connection with M. E. 513, 514, 515 or M. E. 517, 518, 519 or M. E. 505, 506, 507. Messrs. Rice, Vaughan.

MILITARY SCIENCE AND TACTICS

Mil. 101, 102, 103. Military Science I. 2-2-2

This, the first-year basic course, is required of all physically fit freshmen.

The National Defense Act and the R. O. T. C., Military Courtesy and Discipline, Military Hygiene and First Aid, Leadership, Rifle Marksmanship, Map Reading, Military Organization, Current International Situation, Military History and Policy, and Obligations of Citizenship.

Mil. 201, 202, 203. Military Science II. 2-2-2

This, the second-year basic course, is required of all physically fit sophomores who have completed Military Science 101.

Leadership, Musketry, Automatic Rifle, Scouting and Patrolling, Combat Principles of the Rifle Squad and Platoon; Interior Guard Duty and Military History.

Mil. 301, 302, 303. Military Science III. 3-3-3

Prerequisite: M. S. II.

This, the first-year advanced course, is elective for selected juniors.

Aerial Photograph Reading, Leadership, Machine Gun, 37 MM. Gun, Three-inch Trench Mortar, Combat Principles, Supply and Mess Management, Field Fortifications, Care and Operation of Motor Vehicles, and Defense Against Chemical Warfare.

Mil. 401, 402, 403. Military Science IV. 3-3-3

Prerequisite: M. S. III.

This, the second year advanced course, is required of all seniors who have completed the first-year advanced course.

Military Law, Officers Reserve Corps Regulations, Military History and Policy, Anti-Aircraft Defense, Leadership, Combat Principles of the Rifle Company, Heavy Weapons Company, Tanks and Mechanization, Combat Intelligence, and Signal Communications.

* Only one of these courses to be offered during any College year.

Full credit will be given for work at other institutions maintaining a *Senior* unit of the Reserve Officers Training Corps as shown by the student's record, Form 131 A. G. O., kept by the Professor of Military Science and Tactics.

MODERN LANGUAGES

Basic Courses

French

***M. L. 101, 102. Elementary French.** 3-3-0

Lectures on the structure, diction, pronunciation, and other matters of technique of the French language, supplemented by easy readings and translations. No previous training in the language necessary. Individual reports and conferences required. Messrs. Ballenger and Garodnick.

***M. L. 201. Elementary French Prose.** 0-0-3

Prerequisites: M. L. 101, 102 or equivalent.

Reading and translation of easy French; lectures on the structure of the French language, diction, and pronunciation. The student's choice in reading material is a matter of individual need. Individual reports and conferences required. Mr. Ballenger.

M. L. 202. Intermediate French Prose. 3-0-0

Prerequisite: M. L. 201 or equivalent.

A study of prose reading material, largely historical in nature. Attention given to the acquisition and extension of the student's basic vocabulary. Individual translation, parallel readings, and reports required.

Mr. Ballenger.

German

***M. L. 103, 104. Elementary German.** 3-3-0

Lectures on the structure and technique of the German language, supplemented by easy readings and translations. No previous training in the language necessary. Individual reports and conferences required.

Messrs. Hinkle and Garodnick.

***M. L. 203. Elementary German Prose.** 0-0-3

Prerequisites: M. L. 103, 104 or equivalent.

Reading and translation of easy German, supplemented with lectures on the structure and idiom of the German language. The student's choice of reading material, a matter of individual need. Individual reports and conferences required. Mr. Hinkle.

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* Two years of high-school work will ordinarily be considered the equivalent of M. L. 101, 102, and 201; and of 103, 104, and 203.

M. L. 204. Intermediate German Prose. 3-0-0

Prerequisite: M. L. 203 or equivalent. (1)

A study of prose reading material, largely historical in nature. Attention given to the acquisition and extension of the student's basic vocabulary. Individual translations, parallel readings, and reports required.

Mr. Hinkle.

Spanish

***M. L. 105, 106. Elementary Spanish.** 3-3-0

Lectures on the structure, diction, pronunciation, and other matters of technique of the Spanish language, supplemented by easy readings, and translations. No previous training in the language necessary. Individual reports and conferences required. Messrs. Ballenger and Garodnick.

***M. L. 205. Elementary Spanish Prose.** 0-0-3

Prerequisites: M. L. 105, 106 or equivalent.

Reading and translation of easy Spanish; lectures on the structure of the language, diction and pronunciation. The student's choice of reading material, matter of individual need. Individual reports and conferences required.

Mr. Ballenger.

M. L. 206. Intermediate Spanish Prose. 3-0-0

Prerequisite: M. L. 205 or equivalent.

A study of prose reading material, largely historical in nature. Attention given to the acquisition and extension of the student's basic vocabulary. Individual translations, parallel readings, and reports required.

Mr. Ballenger.

**Technical or Scientific Courses

M. L. 301. Technical French. 0-3-0

Prerequisite: M. L. 202 or equivalent.

Readings and translations of relatively simple technical French, supplemented by lectures on technical terminology, vocabulary analysis, and other matters of linguistic technique. Designed to meet the needs of students whose interest in the language is primarily that of the acquisition of a reading ability. Choice of reading material adjusted to individual needs; may be taken by students of varying degrees of previous linquistic training.

Mr. Ballenger.

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* Two years of high-school work will ordinarily be considered the equivalent of M. L. 105, 106, and 205.

** Students registered in advanced technical and scientific courses are given the opportunity of doing a translation project in connection with the Translation Service of the department. When such project is satisfactorily completed and accepted, it may be substituted in lieu of an examination as evidence of reading ability. This procedure is recommended as the preferable method of preparation, for the acquisition of a reading knowledge of the language concerned.

M. L. 302. Introductory Scientific French. 0 0-3

Prerequisite: M. L. 202 or equivalent.

A study of scientific French of intermediate difficulty, supplemented with lectures on scientific terminology and other matters of linquistic technique. The needs of students whose interest is that of the acquisition of a reading knowledge of the language constantly kept in view. Basic techniques of translation explained and demonstrated by means of personal conferences.

Messrs. Ballenger and Garodnick.

M. L. 401, 402, 403. Advanced Scientific French. 3-3-3

Prerequisite: M. L. 301 or 302 or equivalent.

A study of French scientific literature appearing in current bulletins, magazines and technical journals. Students given the opportunity of working a translation project in connection with their subject of major interest. Special attention given to the comprehension of the thought of the article under consideration and its accurate rendition into English. Parallel readings, reports, and conferences required. Messrs. Hinkle and Ballenger.

M. L. 303. Technical German. 0-3-0

Prerequisite: M. L. 204 or equivalent.

Readings and translations of relatively simple technical German, supplemented by lectures on technical terminology, word order, vocabulary analysis and other matters of linguistic technique. Designed to meet the needs of students whose interest in the language is primarily that of the acquisition of a reading ability. Choice of reading material adjusted to individual needs; may be taken by students of varying degrees of previous linguistic training.

Mr. Hinkle.

M. L. 304. Introductory Scientific German. 0-0-3

A study of scientific German of intermediate difficulty supplemented with lectures on scientific terminology and other matters of linguistic technique. The needs of students whose interest is that of the acquisition of a reading knowledge of the language constantly kept in view. The basic techniques of translation explained and demonstrated by means of personal conferences.

Messrs. Hinkle and Garodnick.

M. L. 404, 405, 406. Advanced Scientific German. 3-3-3

Prerequisite: M. L. 303 or 304 or equivalent.

A study of German scientific literature appearing in current bulletins, magazines, and technical journals. Students given the opportunity of working a translation project in connection with their subject of major interest. Special attention given to the comprehension of the thought of the article under consideration and its accurate rendition into English. Parallel readings, reports, and conferences required.

Messrs. Hinkle and Garodnick.

M. L. 305. Technical and Industrial Spanish. 0-3-0

Prerequisite: M. L. 206 or equivalent.

A study of technical and industrial literature. Particular attention given to the special terminology characteristic of such literature with a view to the acquisition of a practical vocabulary. Individual conferences and reports required. Mr. Ballenger.

M. L. 306. Introductory Scientific Spanish. 0-0-3

Prerequisite: M. L. 206 or equivalent.

Readings and translations of relatively simple scientific Spanish, supplemented by lectures on scientific terminology, vocabulary analysis, and other matters of linguistic technique. Designed to meet the needs of students whose interest in the language is primarily that of the acquisition of a reading ability. Choice of reading material adjusted to individual needs; may be taken by students of varying degrees of previous linguistic training. Mr. Ballenger.

M. L. 407, 408, 409. Advanced Scientific Spanish. 3-3-3

Prerequisite: M. L. 305 or 306 or equivalent.

A study of Spanish scientific literature appearing in current bulletins, magazines, and technical journals. Students given the opportunity of working a translation project in connection with their subject of major interest. Special attention given to the comprehension of the thought of the article under consideration and its accurate rendition into English. Parallel readings, reports, and conferences required. Messrs. Ballenger and Garodnick.

General Courses

M. L. 410. Masterpieces of French Literature. 3-0-0

Prerequisite: Junior or Senior Standing.

The study of outstanding masterpieces of French literature. A brief outline of French literary development given. Parallel reading either in translation or in French. An open elective. No language prerequisites. Mr. Hinkle.

M. L. 411. Masterpieces of German Literature. 0-3-0

Prerequisite: Junior or Senior Standing.

The study of outstanding masterpieces of German literature. A brief outline of German literary development given. Parallel readings either in translation or in German. An open elective. No language prerequisites. Mr. Hinkle.

M. L. 412, 413. Masterpieces of Spanish Literature. 0-3-3

Prerequisite: Junior or Senior Standing.

The study of outstanding masterpieces of Spanish literature. A brief outline of Spanish literary development given. Parallel readings either in translation or in Spanish. An open elective. No language prerequisites. Mr. Hinkle.

M. L. 414. French, German and Spanish Civilization. 3-0-0

Prerequisite: Junior or Senior Standing.

A course dealing with the development of French, German, and Spanish civilizations. Reading material supplemented by lectures and reports on the manners and customs of the respective cultures under consideration. Topics, such as racial stocks, people, social classes, governments, politics and education given special consideration. Parallel readings, reports, and conferences required. An open elective. No language prerequisites. Mr. Hinkle.

M. L. 415. The Development of Language. 0-3-0

Prerequisite: Junior or Senior Standing.

A course covering the various phases of linguistic growth, with the object of providing a basis for intelligent language appreciation. Problems as to the origin of language, linguistic change, grammatical categories, dialects, standard language, word order, inflection, isolation, agglutination, etymology, and other linguistic processes given special consideration. Parallel readings, reports, and conferences required. An open elective. No language prerequisites. Mr. Hinkle.

M. L. 416. Masterpieces of Foreign Literature. 0-0-3

Prerequisite: Junior or Senior Standing.

A study of outstanding literary productions in each of the various types of literature, and lectures on the cultural background out of which they have developed. Designed primarily to meet the needs of students who wish to supplement their knowledge of their own literature with a survey of similar contributions in the literature of other civilizations. Special attention is given to the literary monuments of France, Germany, Spain, and Italy. No foreign language prerequisites are necessary. Daily reports and conferences required. Mr. Hinkle.

PHYSICAL EDUCATION AND ATHLETICS

Courses and Activities

P. E. 101, 102, 103. Fundamental Activities and Hygiene. 1-1-1

Required of all freshmen except those excused on the recommendation of the College physician.

Individual health and physical efficiency of each student based on standardized athletic, gymnastic, and efficiency tests. Lectures on personal hygiene required in one term only. Mr. Miller and Staff.

P. E. 201, 202, 203. Sports Activities. 1-1-1

Prerequisites: P. E. 101, 102, 103.

Required of all sophomores except those excused upon recommendation of the College physician.

Election is permitted in popular sports for healthful exercise and a fair degree of skill in them. Mr. Miller and Staff.

P. E. 111, 112, 113. Restricted Activities. 1-1-1

Required of all freshmen excused from P. E. 101, 102, 103.

Special activities for those students who cannot meet the requirements of the regular course because of physical handicap. Mr. Miller and Staff.

P. E. 211, 212, 213. Restricted Activities. 1-1-1

Required of all sophomores excused from P. E. 201, 202, 203.

Special activities for those students who cannot meet the requirements of the regular course because of physical handicap. Mr. Miller and Staff.

P. E. 301, 302, 303. Theory and Practice First Aid. 1 or 1 or 1

Elective for juniors and seniors.

Hours by arrangement.

Anatomy and physiology sufficiently to proceed with bandages, dressings, wounds, shock, injuries to bones, joints, muscles, poisons, unconsciousness, artificial respiration, and common emergencies. Students completing the course are awarded the American Red Cross Certificate.

Messrs. Warren, Winkler and Bartlett.

P. E. 401. Social Recreation. 0-0-3

Elective for juniors and seniors in Agr. Educ.

Purpose: To prepare teachers of agriculture to assume leadership in social and recreational activities. The organization, supervision, and practice work in athletic and social activities for parties, picnics, campus banquets and similar occasions. Mr. Miller.

PHYSICS

Courses for Undergraduates

Phys. 102. Physics Survey. 0-3-0

An introductory survey of physical phenomena, with the scientific method developed and conclusion drawn therefrom; designed for the enrichment of the student's thinking. Mr. Heck.

Phys. 105, 106, 107. General Physics. 4-4-4

A general survey of the phenomena, laws, and devices of modern physical science. Foley, *College Physics.* Messrs. Stainback and Bartlett.

Phys. 111, 112, 113. Physics for Textile Students. 4-4-4

Required of freshmen in Textiles.

Industrial Physics, with emphasis on practical applications to the textile industry. Foley, *College Physics,* 2nd edition.

Messrs. Meares, Lancaster, Bessey, Hopkins.

Phys. 115. Physics for Agricultural Students. 5 or 5 or 5

Required of sophomores in Agriculture.

Elements of machines, physics of heat and weather, and applications of light and electricity on the farm. Henderson, *The New Physics of Everyday Life.* Messrs. Heck, Stainback, Bartlett.

Phys. 123. Descriptive Astronomy. 0-0-3

Elective.

An elementary nonmathematical survey of the sun and planets, the stars and modern research in astronomy; observations with telescope. Baker, *Introduction to Astronomy.* Mr. Heck.

Phys. 201, 202, 203. Physics for Engineers. 4-4-4

Prerequisite: Math. 102.

Required of sophomores in Engineering.

General Physics, with emphasis on problems in engineering applications, and the subjects of acoustics and light not otherwise appearing in the curriculum of most engineers. Hausman and Slack, *Physics* (2nd edition).

Messrs. Heck, Derieux, Meares, Lancaster, Stainback, Bartlett, Hopkins, Bessey.

Phys. 205, 206, 207. Physics for General Engineering. 5-5-5

Prerequisite: Math. 102.

Required of sophomores in General Engineering.

Similar to Physics for Engineers but including broader development and more applications of the subject. Messrs. Bartlett and Bessey.

Phys. 306. Electron Tubes and Their Application to Industry. 0-0-3

Prerequisites: Phys. 113 or 203. Math. 103.

Elective.

Thermionic emission, various thermionic emitters, secondary emission. space charge, discharge in gases, photoelectricity, photoconductivity, and the photovoltaic effect. Laboratory substituted for lectures as needed. Fink, *Engineering Electronics.* Mr. Stainback.

Phys. 311. Light in Industry. 3-0-0 or 0-0-3

Prerequisite: Phys. 113 or Equivalent.

Required of Textile students; elective for all other students.

Fundamentals of light, illumination, and color; psychology of color; standardized color theory, with principles applied to selection, mixing, matching, lighting, pigments, contrast, and harmony.

Text: *Light and Color in Industry.* Mr. Lancaster.

Phys. 322. Meteorology. 0-3-0

Required of juniors in Forestry, and designed as an elective for other students.

Causes of weather change, methods of forecasting, and peculiarities of the weather of North Carolina. Blair, *Weather Elements.* Mr. Heck.

Phys. 332. Photography. 0-3 or 3

Prerequisite: Phys. 113 or equivalent.

Elective.

A general study of cameras, lenses, exposure, development, printing types of emulsion, color sensitivity and color filters. Boucher, *Fundamentals of Photography.* Messrs. Meares, Bartlett.

Phys. 402, 403. Mechanics. 0-3-3 or 0-4-4

Prerequisites: Phys. 203. Math. 303.

Elective.

The Physics principles of mechanics. Edser, *Physics for Students.*

Mr. Meares.

Phys. 405, 406. Electricity and Magnetism. 3-3-0 or 4-4-0

Prerequisites: Phys. 203. Math. 303.

Elective.

Fundamental principles of the subject in a more specialized but intermediate manner. Laboratory, if taken, increases the course to 4 credits. Gilbert, *Electricity and Magnetism.* Mr. Lancaster.

Phys. 407. Elementary Modern Physics. 3 or 3 or 3

Prerequisites: Physics 203. Math. 303.

Required of juniors in Electrical Engineering and of seniors in Ch. E.

Evolution of the electron theory, constitution of matter, conduction in gases, conduction in nonmetallic liquids, conduction in solids, radiation, photoelectric emission, thermionic emission, X-rays, radioactivity, cosmic rays, transmutation. Hull, *Modern Physics,* or Pittsburgh Staff, *Atomic Physics.* Mr. Derieux.

Phys. 413. Acoustics. 0-3-0

Prerequisites: Phys. 203. Math. 303.

Elective.

Production, propagation, transmission, and reception of sound, with special applications to architectural and electrical transmission problems. Watson, *Sound.* Mr. Bartlett.

Phys. 415, 416. Light. 0-3-3 or 0-4 4

Prerequisites: Phys. 203 or 207. Math. 303.

Elective.

Introduction to principles of geometrical and physical optics. Edser, *Light for Students.* Mr. Derieux.

Phys. 417. Heat. 3-0 0

Prerequisites: Phys. 203 or 207. Math. 303.

Elective.

Methods of temperature measurement, specific heats, thermal expansion in solids, in liquids, and in gases, conduction, radiation, kinetic theory of gases, change of state, continuity of state, thermodynamics, low temperatures, high temperatures. Cork, *Heat.* Mr. Bartlett.

Phys. 421, 422, 423. Theoretical Mechanics. 3 3 3

Prerequisites: Phys, 203. Math. 303.

Gyroscopic motion, spiral orbits, compound pendulum, bifilar suspensions, coupled systems, damped and forced oscillations, elasticity, surface tension, osmosis, motion of fluids, viscosity, and wave motion. Preston, *Mechanics of Particles and Rigid Bodies.* Mr. Derieux.

Phys. 426. Spectroscopy in Industry. 0 3 0 or 0-4-0

Prerequisites: Phys. 203. Math. 303. Chem. 212.

Elementary principles, spectroscopic equipment, spectra, spectrum analysis, quantitative spectroscopy, industrial applications of emission, spectrum analysis, spectrophotometry, obsorption spectroscopy, application of absorption spectroscopy, concluding survey. Judd Lewis, *Spectroscopy in Science and Industry,* Brode, *Chemical Spactroscopy.* Mr. Derieux.

Phys. 427. Geometrical Optics. 3-0-0

Prerequisites: Phys. 203. Math. 303.

Photometry, intrinsic energy, luminosity, curved mirrors, refraction through a prism, refraction at curved surface, thin lens, lenses in system of thick lenses, the eye and spectacles, dispersion, aberrations, resolving power, achromatic lenses, and optical instruments. Houston. *A Treatise on Light.* Mr. Derieux.

Phys. 428, 429. Physical Optics. 0-3-3

Prerequisites: Phys. 203. Math. 303.

Velocity of light, composition of wave, velocity of wave transmission, wave theory of light, spectra, Doppler effect, absorption, anomalous dispersion, interference, interferometers, color photography, diffraction, and gratings, polarization, and saccharimetry. Houston, *A Treatise on Light.* Mr. Derieux.

Phys. 431, 432, 433. Modern Physics. 3-3-3

Prerequisites: Phys. 203 or 207. Math. 301.

Elective.

Alternating currents, electromagnetic radiation, moving charge, the electron, kinetic theory of gases, thermionics, photoelectric effect, X-rays, spectra, atomic structure, ionizing potential, radio and television, radioactivity, isotopes, geophysics, astrophysics, relativity, specific heats, high-frequency sound, recent ideas. Ritchmeyer, *Modern Physics.* Mr. Derieux.

Phys. 438, 439. Experimental Optics. 0-2-2

Prerequisites: Phys. 203. Math. 303.

Laboratory work with the photometer, spectrometer, gratings, Fresnel byprism and mirrors, polarimeter, saccharimeter, and interferometer. Mann, *Manual of Optics.* Mr. Derieux.

Phys. 443. History of Physics. 0-0-3

Prerequisite: One course in College Physics.

Elective.

Development of Physics from its beginnings to the present time. Crew, *Rise of Modern Physics.* Mr. Heck.

Phys. 445, 446, 447. Research. 3-3-3

Prerequisite: Phys. 203 or 207 or 213.

Elective.

Undergraduate research given according to the student's ability.

Mr. Heck.

Phys. 451, 452, 453. Physics Colloquium.

Current research reviewed by department and advanced students; meets weekly at night throughout the year. Mr. Heck.

Phys. 463. Industrial X-rays. 0-0-3

Nature of X-rays, their production, X-ray tubes, high tension equipment, detection, recording, photographic procedure; interpreting photographs as to defects in welds, castings, forgings; detection of stresses in wires and fibers; defraction of X-ray by crystals, crystal analysis, experimental method of crystal analysis, interpretation of patterns, results of analysis. Clark. *Applied X-rays* and St. John, *Industrial Radiography.* Mr. Derieux.

Phys. 514, 515, 517. Advanced Theory of Electricity and Magnetism. 3-3-3

Prerequisites: Phys. 203. Math. 301.

Theorem of Gauss, energy in media, boundary conditions, condensers, elec trometers, dielectric constants, migration of ions, thermodynamics of reversible cells, thermoelectricity, galvanometers, magnetic circuits, growth and decay of currents, oscillatory discharge, and alternating currents. Starling, *Advanced Theory of Electricity and Magnetism.* Staff.

Phys. 522. Discharge of Electricity in Gases. 0-3-0

Prerequisites: Phys. 213. Math. 203.

Production of ions in gases, motion of ions, velocity in an electric field, diffusion, recombination, determination of atomic charge, ionization by collision, discharge tubes, cathode rays, positive rays, and X-rays. Crowther, *Ions, Electrons, and Ionizing Radiations.* Mr. Derieux.

Phys. 525. 3-0-0

Prerequisite: Phys. 312.

Elective.

Bohr's model, spectral formula, elliptical orbits, fine structure of spectral lines, Stark effect, Zeeman effect, Roentgen rays, Moseley's law, periodic system, isotopes, radioactivity, atomic nuclei, ionization, spectra and atomic structure, fluoroscence, atomic magnetism. White, *Atomic Spectra.* Staff.

Phys. 531, 532, 533. Research. 3-3-3

Graduate students sufficiently prepared may undertake research in some particular field of Physics. At least six laboratory hours a week must be devoted to such research. Messrs. Heck and Derieux.

POULTRY

Courses for Undergraduates.

Poul. 201. General Poultry. 3-0 0

Required of sophomores in Agriculture.

Fundamental principles of poultry production.

Messrs. Williams and Dearstyne.

Poul. 301. Poultry Judging. 4-0 0

Prerequisite: Poul. 201.

Required of juniors in Poultry Production; elective for others.

Poul. 303. Incubation and Brooding. 0-0-3

Prerequisites: Phys. 115. Poul. 201.

Required of juniors in Poultry Production; elective for others.

Principles of incubation and brooding; feeding, housing, and rearing baby chicks. Mr. Williams.

Poul. 311, 312. Poultry Anatomy and Physiology. 3-3-0

Prerequisites: Poul. 201. Zool. 202.

Required of juniors in Poultry Science; elective for others.

A foundation for courses in poultry diseases and nutrition. Mr. Cook.

Poul. 322. Poultry Production. 0-4-0

Prerequisite: Poul. 201.

Elective.

Developed for vocational teachers of agriculture. Poultry disease problems; nutritional problems; judging methods.

Messrs. Dearstyne and Williams.

Poul. 332. Preparation and Grading of Poultry Products. 0-3-0

Prerequisite: Poul. 201.

Required of juniors in Poultry; elective for others.

Commercial fattening; grading and marketing eggs; refrigerating and storage; markets. Mr. Williams.

Poul. 333. Poultry Nutrition. 0-0-4

Prerequisites: Chem. 101. Zool. 101 and 102. Poul. 201.

Required of juniors in Poultry Production; elective for juniors in Agriculture.

Feeds and feeding: Physiology of digestion, absorption, and elimination; mineral and vitamin requirements. Messrs. Dearstyne and Cook.

Poul. 342. Turkey Production. 0-3-0

Prerequisites: Poul. 101. Zool. 411.

Required of seniors in Poultry Science; elective for others.

Selection and mating of turkeys; incubation and brooding turkey poults; turkey nutrition; grading and marketing turkeys. Mr. Nesbit.

Courses for Advanced Undergraduates

Poul. 401, 402. Poultry Diseases. 4-4-0

Prerequisites: Poul. 201. Zool. 102. Poul. 401 prerequisite to Poul. 402.

Required of seniors in Poultry Science; elective for others.

Sanitation, parasite infestations and control, contagious and noncontagious diseases of the fowl. Mr. Gauger.

Poul. 403. Sero-Diagnosis in Poultry Diseases. 0-0-3

Prerequisites: Poul. 401, 402. Bot. 402.

Required of seniors in Poultry Science.

Basic immunological theory and technique and its application in the therapy and diagnosis of poultry diseases.

Poul. 412. Commercial Poultry Plant Management. 0-3-0

Prerequisite: Poul. 201.

Required of seniors in Poultry Science; elective for others.

Development and maintenance of a commercial poultry plant; custom hatching, and commercial incubation; cost of production. Mr. Williams.

Poul. 413. Selection and Mating of Poultry. 0-0-3

Prerequisites: Poul. 201. Genetics, Zool. 411.

Required of seniors in Poultry Production, elective for juniors in Agriculture.

Methods of recognition and selection for mating from both standard and utility standpoints; study of progeny performance. Mr. Dearstyne.

Poul. 423. Senior Seminar. 0-0-3

Required of seniors in Poultry. Mr. Dearstyne.

Courses for Graduates Only

Poul. 501, 502, 503. Poultry Histology. 3-3-3

Prerequisites: Poul. 311, 312, 401, 402. Zool. 461.

General histology of the tissues, special histology of the various systems of the body. Mr. Cook.

Poul. 511, 512, 513. Poultry Pathology. 3-3-3

Prerequisites: Poul. 311, 312, 401, 501, 502, 503.

Various diseases processes of the bird's body. Mr. Cook.

Poul. 521. Poultry Physiology. 3 0-0

Prerequisites: Poul. 311, 312, 401, 402, 501, 502.

Histology and pathology, emphasizing the effects of diseases on normal physiology. Mr. Cook.

Poul. 531, 532, 533. Poultry Research. 3-3-3

Prerequisite: Eighteen term credits in Poultry.

Problems in Poultry nutrition, diseases, marketing, and breeding to be conducted on a definitely outlined basis acceptable to the Department. Poultry Staff.

Poul. 541, 542, 543. Seminar. 3-3-3

Prerequisite: Eighteen credit hours in Poultry. Mr. Dearstyne.

Poul. 551, 552, 553. Production Studies and Experiments. 3-3-3

Prerequisites: Poul. 201, 333, 401, 402.

Problems in Poultry nutrition, and breeding, and in commercial poultry production and marketing. Mr. Dearstyne.

PSYCHOLOGY

Courses for Undergraduates

Psychol. 200. Introduction to Psychology. 3 or 3 or 3

A study of the general characteristics and development of human behavior, emphasizing the problems of motivation, emotion, learning, and thinking. Mr. Moffie.

Psychol. 201. Elementary Experimental Psychology. 3-0 0 or 0-0-3

Introduction to experimental psychology. One lecture and two laboratory periods per week. Mr. Moffie.

Psychol. 202. Psychology of Personality and Adjustment. 0-3-0

Prerequisite: Phychology 200.

A study of the factors involved in the development of the normal personality. Mr. Moffie.

Psychol. 303, 304. Educational Psychology. 3-3-0

Required of students in Education; elective for others.

The meaning of education, child development, problems of adjustment and educational guidance; problems of learning, motivation, interests, and the measurement of educational efficiency. Mr. McGehee.

Psychol. 337. Applied Psychology. 0-3-0 or 0-0-3

Prerequisite: Psychology 200.

The practical application of psychological principles in special fields: analysis of problems arising in business, professional, and everyday life; special reference to the psychological aspects of personnel selection. Mr. Moffie.

Psychol. 338. Industrial Psychology. 0-3-0 or 0-0-3

Prerequisite: Psychology 200.

The application of psychological principles to the problems of modern industry; factors involved in industrial learning, methods of work, monotony, fatigue, illumination, accidents, morale of workers. Mr. McGehee.

Psychol. 390. Social Psychology. 0-0-3

Prerequisite: Psychology 200.

Social applications of psychology: social stimulation, response, and attitudes. Mr. McGehee.

Courses for Advanced Undergraduates and Graduates

Psychol. 470, 471, 472. Psychodiagnostic Techniques. 3-3-3

Prerequisite: Six hours in Psychology.

Techniques of measuring intelligence, personality, aptitudes, and achievement. Practice in administration and interpretation of psychological tests. Messrs. McGehee, Moffie.

Psychol. 476. Psychology of Adolescence. 0-0-3

Prerequisites: Ed. 303, 304, and six credits in Education or Psychology.

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

Psychol. 478. Individual Differences. 0-3-0

Prerequisite: Six hours in Psychology.

Nature, extent, and practical implications of individual differences and individual variation. Mr. McGehee.

Courses for Graduates Only

Psychol. 511. Rural Mental Traits and Attitudes. 3-0 0

For description of this course, see Rural Sociology 511. Mr. McGehee.

Psychol. 512, 513, 514. Problems in Applied Psychology. 3-3-3

Prerequisite: Twelve hours in Psychology.

Individual and group research problems in educational, industrial, and social psychology. Students will be expected to make a final report of research in form acceptable for publication in a professional journal.
Messrs. McGehee, Moffie.

RURAL SOCIOLOGY

Courses for Undergraduates

Rural Soc. 302. Rural Sociology. 3 or 3 or 3

Prerequisites: Soc. 202, 203 or Econ. 201, 202, 203.

Required of juniors in Rural Sociology, seniors in Agricultural Economics, and juniors in certain Education curricula.

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

Courses for Graduates and Advanced Undergraduates

Rural Soc. 411. Rural Population Problems. 3-0-0

The number and distribution in relation to natural resources; physical and demographic characteristics; marriage rates; natural increase; migration; morbidity; mortality; occupations; rural-urban comparisons; trends; and national policies. Messrs. Hamilton, Winston.

Rural Soc. 413. Community Organization. 0-0-3

Prerequisite: Rural Soc. 302.

Required of seniors in Rural Sociology and in Agricultural Teaching.

Community organization in North Carolina and other states. Community structure and size, community institutions and service agencies, community disorganization, techniques and methods of community organization, leadership and the relation of community organizations to State and national agencies. Mr. Mayo.

Rural Soc. 422. Social Aspects of Land Tenure. 0-3-0

The character and history of different types of land tenure; origins and growth of farm tenancy in the United States; social correlatives of land tenure; landlord-tenant relationships; the farm lease the problem of ownership; farm mortgages; land tenure reform programs.

Messrs. Hamilton, Forster.

Rural Soc. 432. Rural Poverty and Relief. 0-3-0

Origin, extent, and character of rural poverty; types and extent of relief; problems of prevention; public policies and programs. Mr. Mayo.

Rural Soc. 451. Agricultural Extension and Education. 3-0-0

A study of the history, objectives, and methods of agricultural extension and education in the United States. Mr. Hamilton and Extension Staff.

Courses for Graduates Only

Rural Soc. 501. Rural Mental Traits and Attitudes. 3-0-0

The characteristic mental traits and attitudes of rural people in relation to rural social organizations and rural social change.

Messrs. McGehee, Hamilton.

Rural Soc. 502. Farmers' Movements. 0-3-0

The origin, growth, and the present status of such national farmers' organizations and movements as: the Grange, the Farmers' Alliance, the Populist Revolt, the Agricultural Wheel, the Farmers' Union, the Society of the Equity, the Non-Partisan League, the Farm Bureau, the Farm-Labor Union, the Coöperative Marketing Movement. Messrs. Seegers, Hamilton.

Rural Soc. 503. Rural Leadership. 0-0-3

Social role of leadership; types and numbers of leaders; sources and backgrounds; motivation and personal traits; experience, training, and education; how leaders gain and hold power; adjustment of leadership to the changing environment; biographies of different types of leaders; and new opportunities for rural leadership. Messrs. Winston, Hamilton.

Rural Soc. 531. Rural Standards of Living. 3-0-0

An intensive study of theories and surveys of rural standards of living. Special attention given to forces and programs affecting present day standards. Mr. Hamilton.

Rural Soc. 532. The Rural Family. 0 3-0

Historical forms and functions of rural family life; family activities and relationships; stages of family growth; the family-sized farm; effects of technical and economic changes on the rural family; national policies.

Messrs. Hamilton, Winston.

Rural Soc. 533. The Rural Community. 0-0-3

An intensive study of the varying types of rural communities from primitive times until the present. Special attention given to: human ecology, economic and psychological factors, the neighborhood, factors in community solidarity and disorganization, special interest groups, natural leadership, open country versus the village type, Utopian experiments, paternalism, planning, and relation of the rural community to the state and nation. Mr. Mayo.

Rural Soc. 541, 542, 543. Research in Rural Sociology. 3-3 3

Objectives of research; the scientific method; planning, organization, and direction of rural studies; preparation of schedules, interviewing, editing, tabulation, and analysis; field experience; preparation of research reports.

Credit for 543 involves at least 6 weeks' field and laboratory experience.

Staff.

SOCIOLOGY

(For Courses in Rural Sociology see Page 284)

Courses for Undergraduates

Soc. 101, 102, 103. Human Relations. 2-2-2

Required of students in the Schools of Agriculture and Textiles who do not take Military Science. Elective for others. Not open to upperclassmen.

An orientation course to introduce the student to the social problems of our time. Staff.

Soc. 202. Introductory Sociology. 3-0-0 or 0-3-0 or 0-0-3

Required of students in Forestry; elective for others.

The basic principles underlying social life and the factors connected with it. (Identical with the first term of General Sociology.)

Messrs. Winston, Mayo, Hamilton.

Soc. 202, 203. General Sociology. 3-3-0

First term: an analysis of the fundamental factors affecting life in modern society; second term: practical social problems, using the tools developed in the first term. Mr. Winston.

Soc. Ex. 210. General Anthropology. 3 credits

An introduction to the study of man: a consideration of his development from earliest forms to the present. Mr. Winston.

Courses for Graduates and Advanced Undergraduates

Soc. Ex. 400. Criminology. 3 credits

Prerequisite: Soc. 202, supplemented by credits in related fields.

Causes and conditions leading to crime; methods of handling criminals; various factors producing criminal behavior. Mr. Winston.

Soc. 401. Social Pathology. 0-0 3

Prerequisite: Soc. 202, supplemented by credits in related fields.

Pathological problems arising from social life; social and individual adjustments. Mr. Winston.

Soc. Ex. 402. Sociology of City Life. 3 credits

Prequisite: Soc. 202, supplemented by credits in related fields.

Elective.

Problems arising from growth of modern town and city life; city planning in regard to social and industrial progress. Mr. Winston.

Soc. Ex. 403. Leadership. 3 credits

Prerequisite: nine term credits in Sociology, including Sociology 202.

A study of leadership in various fields of American life: analysis of the various factors, inherent or acquired, that are associated with leadership, past and present. Mr. Winston.

Soc. Ex. 404. Educational Sociology. 3 credits

Prerequisite: nine term credits in the Social Sciences, including Sociology 202.

Application of the principles of Sociology to the practical problems of education with emphasis placed on the relationship between adjustment processes in the school and in the larger social world. Mr. Winston.

Soc. 406. The Family Organization. 3-0-0

Prerequisite: Soc. 202, supplemented by credits in related fields.

Premarital, marital, and family relations; effects of present-day social changes; various efforts to stabilize the family. Messrs. Winston, Hamilton.

Soc. 407. Race Relations. 3-0-0

Prerequisite: Soc. 202, supplemented by credits in related fields.

Elective.

Race problems in America and in other countries; social, economic, and educational status of racial groups; international relations.

Mr. Winston.

Soc. Ex. 408. Social Anthropology. 3 credits

Prerequisites: Soc. 202 or Soc. 210, supplemented by credits in related fields.

Analysis of present-day culture, with particular reference to the United States and its regional variations. Mr. Winston.

Soc. 410. Industrial Sociology. 0-0-3

Prerequisite: Soc. 202, supplemented by credits in related fields.

Influence of industrial life; occupations as social and industrial factors; problems arising from our industrial era. Mr. Winston.

Soc. 411. Population Problems. 0-3 0

Prerequisite: Soc. 202, supplemented by credits in related fields.

Analyses of crucial problems connected with the growth and decline of populations in the United States; factors connected with birth and death rates; marriage rates; discussion of the changing quality of population groups. Messrs. Winston, Hamilton.

Soc. 415. Research in Applied Sociology. 2-2-2

Prerequisite: nine hours of Sociology, and permission of the instructor.

Individual research problems in applied fields of sociology, such as problems of the family, of population, of social work; rural-urban relations; student success; American leadership. Mr. Winston.

SOILS (AGRONOMY)

Courses for Undergraduates

Soils 201. Soils. 4 or 0 or 4

Prerequisites: Geol. 120 and Chem. 101, 102, 103.

Required of sophomores in Agriculture and Agricultural Chemistry, and of juniors in Forestry and Wildlife Conservation and Management.

The makeup, origin and classification of soils; the soil as a medium for plant growth. Messrs. Baver, Clevenger.

Soils 221. Soil Fertility. 3-0-0

Prerequisite: Soils 201.

Required of juniors in Pomology, Vegetable Gardening, Floriculture, Field Crops, Vocational Agriculture, and of seniors in Agricultural Engineering.

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

Soils 302. Fertilizers. 0-3 0

Prerequisite: Soils 221.

Required of juniors in Pomology, Vegetable Gardening, Field Crops, Floriculture, and Vocational Agriculture.

Sources, manufacture and characteristics of fertilizer materials; manufacture and evaluation of mixed fertilizers; factors affecting the choice and utilization of fertilizers; time and methods of application. Mr. Collins.

Soils 303. Soil Management. 0-0-3

Prerequisite: Soils 302.

Rotations, fertilizer recommendations, and other practical soil management problems for North Carolina soils and cropping systems.
Mr. Lutz.

Soils 312. The Soils of North Carolina. 0-3-0

Prerequisite: Soils 201. Required of juniors in Soils and Floriculture and of seniors in Wildlife Conservation, Vegetable Gardening, and Agricultural Economics (Farm Business Option).

The origin, characteristics, and classification of North Carolina soils; field trips. Mr. Lutz.

Courses for Advanced Undergraduates and Graduates

Soils 401. Soil Development. 3-0-0

Prerequisites: Soils 303, 312.

Genesis, morphology, and development of the great soil groups of the world as determined by environmental factors. Mr. Lutz.

Soils 421. Soil Fertility Evaluating Methods. 3-0-0

Prerequisites: Soils 302 and Chem. 213.

Analysis for total and available elements in the soil; the use of soil and plant analyses in soil diagnosis. Mr. Piland.

Soils 433. Soil Conservation and Land Use. 0-0-3

Prerequisite: Soils 221.

Required of seniors in Soils and in Agricultural Engineering.

Factors affecting soil deterioration; soil conservation and land use. Mr. Lutz.

Soils. 443. Soil Microbiology. 0-0-3

See Botany 443.

Soils 463. Advanced Soil Fertility. 0-0-3

Prerequisite: Soils 302.

Soil conditions affecting crop growth; the chemistry of soil and plant interrelationships; theoretical and applied aspects of fertilizer usage in relation to plant nutrition. Messrs. Baver, Lutz.

Soils 491, 492, 493. Special Problems. 3-3-3

Prerequisite: Admitted only with consent of the instructor.

Problems involving special library, laboratory or field studies of soils. Staff.

Courses for Graduates Only

Soils 503. Advanced Fertilizers. 0-0-2

Prerequisite: Graduate standing in Soils.

Recent trends in the manufacture, characteristics and utilization of fertilizers; new developments in fertilizer experimentation. Offered in alternate years. Mr. Collins.

***Soils 512. Physical and Colloidal Chemistry of Soils.** 0-4-0

The origin and nature of inorganic and organic soil colloids and their behavior with respect to soil acidity, base exchange, absorption and plant nutrition. Offered in alternate years. Messrs. Baver, Lutz.

Soils 522. Soil Physics. 0-4-0

Prerequisite: Graduate standing in Soils.

Physical constitution of soils, mechanical analysis, consistency and plasticity, structure, water relations, soil air and temperature. Offered in alternate years. Messrs. Baver, Lutz.

Soils 531, 532, 533. Seminar. 1-1-1

Prerequisite: Graduate standing in Soils.

Reports and discussions of problems in Soil Science. Staff.

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* Not given in 1941-42.

Soils 541, 542, 543. Soil Research. 3-3-3

Prerequisite: Graduate standing in Soils.

Research in specialized phases of Soil Science. Staff.

TEXTILES

Courses for Undergraduates

Tex. 101, 102, 103. Textile Principles Laboratory. 1-1-1

Required of freshmen in all Textile curricula.

Operation of plain and automatic looms, and carding and spinning machines. Messrs. Porter, Culberson, Crawley.

Tex. 104. Yarn Calculations. 0 1-0

Required of freshmen in all Textile curricula.

Calculations for gears, pulleys, and machine speeds; systems of numbering yarns, and elementary yarn calculations. Mr. Culberson.

Tex. 131. Cloth Calculations. 0 0-2

Required of freshmen in all Textile curricula.

Harness, reed and fabric calculations; loom production problems. Messrs. Porter, Crawley.

Tex. 205. Yarn Manufacture I. 3-0-0 or 0-0-3

Tex. 201, 203. Yarn Manufacture Laboratory I. 1-0-1 or 0-1 1

Required of sophomores in all Textile curricula.

Mixing of cotton; description and setting of openers, pickers, cards and draw frames; production, speed and draft calculations; operation and fixing of machines; grinding and setting of cards; setting of draw frame rolls and construction of draw frames; weighting of rolls and types of roll covering. Messrs. Hilton, Culberson.

Tex. 211. Knitting I. 2 0 0 or 0-0-2

Tex. 207, 208, 209. Knitting Laboratory I. 1-1-1

Required of sophomores in all Textile curricula.

Selection and preparation of knitting yarns, knitting mechanisms, plain and rib knitting machines, circular ribbers, and circular automatic machines; operation of machines, practical experiments, hosiery analysis, topping, transferring, and looping. Mr. Lewis.

Tex. 234. Power Weaving. 0-2-0

Tex. 231, 232. Power Weaving Laboratory. 1-1-0 or 0-1-1

Required of sophomores in all Textile curricula.

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 motions.

Operation and fixing of plain, automatic and drop-box looms; pattern chain building for drop-box looms. Messrs. Nelson, Porter, Crawley.

Tex. 236, 237. Fabric Structure and Analysis. 0-2-2 or 4-0-0

Required of sophomores in all Textile curricula.

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

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

Tex. 239. Principles of Textile Manufacturing I. 3-0-0

A study of the processes and machines used in textile manufacture, planned as an overview course for those preparing to be teachers of industrial arts in junior and senior high schools or in vocational schools.
Messrs. Nelson, Hilton.

Courses for Advanced Undergraduates

Tex. 304. Yarn Manufacturer II. 0-3-0

Tex. 301, 302, 303. Yarn Manufacture Laboratory II. 1-1-1

Prerequisites: Yarn Manufacture I, Tex. 201, 203, 205.

Required of juniors in Textile Manufacturing. Elective for others.

Tex. 310, 311. Yarn Manufacture III. 0-3-3

Tex. 307, 308, 309. Yarn Manufacture Laboratory III. 2-2-2

Prerequisites: Yarn Manufacture I, Tex. 201, 203, 205.

Required of juniors in Yarn Manufacture.

Construction of sliver lappers; ribbon lappers; combers; mechanical and electrical stop motions; description and setting of the different parts; care of machines; fly-frame builder and differential motions.

Operation and fixing of sliver lappers; ribbon lappers; combers and fly-frames; changing of hank roving, draft and twist; setting of drafting and speeder motions. Messrs. Hilton, Culberson.

Tex. 316. Knitting II. 0-3-0

Tex. 313, 314, 315. Knitting Laboratory II. 1-1 1

Prerequisites: Knitting I, Tex. 207, 208, 209, 211.

Elective for Textile Students.

Advanced circular mechanisms; hosiery design; auxiliary knitting machinery; warp and spring needle knitting; knitting machinery lay-out and organization. Production control and costs. Laboratory experiments.

Mr. Lewis.

Tex. 335. Dobby Weaving. 3-0-0 or 0-0-3

Tex. 331, 332, 333. Dobby Weaving Laboratory I. 1-1-1

Required of juniors in Textile Manufacturing and Yarn Manufacturing. Elective for others.

Tex. 337, 338, 339. Dobby Weaving Laboratory II. 2-2-2

Prerequisites: Power Weaving, Tex. 231, 232, 234.

Required of juniors in Weaving and Designing.

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.

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

Tex. 341, 342. Fabric Design and Analysis I. 3-3-0 or 0-3-3

Prerequisites: Fabric Structure and Analysis, Tex. 236, 237.

Required of juniors in Textile Manufacturing and Weaving and Designing. Elective for others.

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 fabrics from data obtained from sample. Mr. Shinn.

Tex. 343. Fabric Testing. 0-0-1

Prerequisites: Fabric Structure and Analysis, Tex. 236, 237.

Required of juniors in Textile Manufacturing, Textile Chemistry and Dyeing, and Weaving and Designing.

Testing fabrics for strength; effect of heat upon fabrics; effect of regain upon tensile strength; elasticity of fabrics; micrometer and calculated tests for fabric thickness. Mr. Shinn.

Tex. 344. Calculating Fabric Costs. 0-3 0

Prerequisites: Fabric Structure and Analysis, Tex. 236, 237.

Elective for Textile students.

Special attention is given to distribution of costs to various productive processes, summarizing costs, the determination and use of unit costs, and the making of cost reports. Mr. Shinn.

Tex. 345. Textile Calculations I. 0-0-3

Prerequisites: Fabric Structure and Analysis. Tex. 236, 237.

Required of juniors in Textile Manufacturing and Weaving and Designing. Elective for others.

An intensive course in calculations for designing, weaving, and analyzing cotton, rayon, silk, wool, worsted and linen yarns and fabrics; weight of fabrics, ends and picks per inch; costing of fabrics; reed and harness calculations; loom speed and production. Mr. Hart.

Tex. 347. Principles of Textile Manufacturing II. 0-0-3

Prerequisites: Principles of Textile Manufacturing I, Tex. 239.

A study of the operation and care of textile machines, planned for those who are preparing to be teachers in vocational schools.

Messrs. Nelson, Hilton.

Tex. 375. Dyeing I. 3-0-0 or 0-0-3

and

Tex. 371, 372, 373. Dyeing Laboratory I. 1-1-1

Prerequisites: Chemistry 103.

Required of juniors in Textile Manufacturing. Elective for others.

Physical and chemical properties of textile fibres; chemicals used in preparing fibres for dyeing; methods of applying substantive, sulphur, basic, developed, acid, acid chrome, mordant and vat dyes; effect of changes in temperature and volume of the dye bath; theory of dyeing mixed fabrics; theory of mercerizing; tests for the chemical constituents of the fibres; dyeing experiments using all the different classes of dyes on the various fibres; tests showing effect of varying such factors as bath, temperature and time; test for fastness to light, washing, cross-dyeing, and so forth; mercerizing experiment. Messrs. Grimshaw, Hayes.

Tex. 381, 382. Dyeing II. 3-3-0
and
Tex. 377, 378, 379. Dyeing Laboratory II. 2-2-2

Prerequisite: Chemistry 103.

Required of juniors in Textile Chemistry and Dyeing.

Physical and chemical properties of textile fibres; lectures on wool, silk, rayon, and cotton; hydrometers and chemicals used in dying and finishing; application of dyestuffs to different fibres; effect of changing bath, temperature, or time factor; money value and strength tests of dyes; theory of dyeing mixed fabrics; mercerizing.

Microscopic examination of textile fibres; dyeing experiments using different classes of dyes on textile fibres; tests showing the effects of varying such factors as bath, temperature, and time; fastness to light, washing, and cross dyeing; money value and strength of various dyes; mercerizing.

Messrs. Grimshaw, Hayes.

Courses for Graduates and Advanced Undergraduates

Tex. 405. Yarn Manufacture IV. 3-0-0 or 0-0-3

Tex. 401, 402, 403. Yarn Manufacture Laboratory IV. 1-1-1

Prerequisites: Yarn Manufacture, Tex. 301, 302, 303, 304.

Required of seniors in Textile Manufacturing. Elective for others.

Tex. 411, 412. Yarn Manufacture V. 3-3-0

Tex. 407, 408, 409. Yarn Manufacture Laboratory V. 2-2-2

Prerequisites: Yarn Manufacture, Tex. 307, 308, 309, 310, 311.

Required of seniors in Yarn Manufacturing.

Spinning; spooling; warping; twisting; description and setting of different parts; builder motions for warp and filling; bobbin holders, thread guides, traverse motions; ply yarns; calculations for twist, speed, and production.

Practical methods of spinning, warping, spooling, winding and twisting; setting of spinning rolls, spinning frame builder motions for warp, filling, and combination build; the practical application of all machines in Yarn Manufacture.

Messrs. Hilton, Culberson.

Tex. 413. Textile Calculations II. 3-0-0

Prerequisites: Yarn Manufacture II or III, Tex. 304 or 310, 311.

Required of seniors in Yarn Manufacturing. Elective for others.

Principles underlying the calculation of draft, twist, speed, and production; systems of numbering yarns; doubling and twisting yarns; lay, tension, differential, and cone drum calculations; practice in solving practical mill problems.

Mr. Hilton.

Tex. 415. Manufacturing Problems. 0-0-3

Prerequisites: Yarn Manufacture II or III, Tex. 304 or 310, 311.

Required of seniors in Yarn Manufacturing. Elective for others.

Mill organization and administration; machine layout for long and regular draft spinning; production control and costs; making of novelty yarns; making of daily and weekly reports; breaking of single and ply yarns; regular and reverse twisted yarns. Mr. Hilton.

Tex. 416. Wool Manufacture I. 0 3-0

Tex. 417, 418. Wool Manufacture Laboratory I. 1-1-0

Prerequisites: Yarn Manufacture II or III, Tex. 304, or Tex. 310, 311.

Elective for seniors in Textile School.

Physical and chemical properties; reclaimed wool and secondary raw materials; grading; sorting; mixing and blending; oiling and garnetting; description of feeders; cards; tape condensers; card setting; stripping and grinding; woolen spinning; twister head; mechanical details and production; the practical application of machines in Woolen Yarn Manufacture. Mr. Hilton.

Tex. 435. Cotton, Wool and Rayon Weaving. 0-0-3

Tex. 431, 432, 433. Cotton, Wool and Rayon Weaving Laboratory I. 1-1-1

Prerequisites: Dobby Weaving, Tex. 331, 332, 333, 335.

Required of seniors in Textile Manufacturing. Elective for others.

Tex. 437, 438, 439. Cotton, Wool and Rayon Weaving Laboratory II. 2-2-2

Prerequisites: Dobby Weaving, Tex. 335, 337, 338, 339.

Required of seniors in Weaving and Designing.

Principles of loom construction to weave rayon and fine cotton fabrics; pick and pick looms; box and multiplier chain-building; arrangement of colors in boxes to give easy running loom; extra appliances for weaving leno, towel, and other pile fabrics; construction and operation of single, double lift, and rise and fall jacquards; tie-up of harness for dress goods, table napkins, damask, and other jacquard fabrics, such as leno; relative speed of looms; production calculations and fabric costs.

Operation and fixing of dobby, pick and pick, and jacquard looms; preparation of warps to weave rayon, wool and fine cotton fabrics; building of box, dobby, and multiplier chains. Messrs. Nelson, Hart.

Tex. 441. Leno Design. 3-0-0 or 0-3-0

Prerequisites: Fabric Design and Analysis I, Tex. 341, 342.

Required of seniors in Textile Manufacturing and in Weaving and Designing. Elective for others.

Leno weaves with one, two, or more sets of doups; combination of plain and fancy weaves with leno; methods of obtaining leno patterns; methods of making original designs for dress goods, draperies.

Messrs. Nelson, Shinn.

Tex. 443. Dobby Design. 3-0-0 or 0-3-0

Prerequisites: Fabric Design and Analysis I, Tex. 341, 342.

Required of seniors in Textile Manufacturing and in Weaving and Designing. Elective for others.

Designing fabrics, such as fancy crepes, figured double plain, matelasse, velvets, corduroys, pique, lines of samples. Mr. Nelson.

Tex. 445. Jacquard Design. 0-0 3

Prerequisites: Fabric Design and Analysis I, Tex. 341, 342.

Required of seniors in Textile Manufacturing and juniors in Weaving and Designing. Elective for others.

Designing fancy and jacquard fabrics; methods of making original designs for table napkins, table covers, dress goods, draperies.

Messrs. Nelson, Shinn.

Tex. 447, 448, 449. Jacquard Design Laboratory. 1-1-1

Prerequisites: Jacquard Design, Tex. 445.

Required of seniors in Weaving and Designing.

Designing fancy and jacquard fabrics; methods of making original designs by combinations of color, weave, and sketches; designs for table napkins, table covers, dress goods, draperies. Messrs. Nelson, Shinn.

Tex. 451, 452. Fabric Analysis. 2-2-0

Prerequisites: Fabric Design and Analysis, Tex. 341, 342.

Required of seniors in Textile Manufacturing and Weaving and Designing. Elective for others.

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

Messrs. Nelson, Shinn.

Tex. 453. Fabric Design and Analysis II. 0-0-3

Prerequisites: Fabric Design and Analysis I, Tex. 341, 342.

Required of seniors in Weaving and Designing.

Design and analysis of fancy fabrics; making fabrics from sketches and specifications. Mr. Shinn.

Tex. 455, 456. Color in Woven Design. 3-3-0

Prerequisites: Fabric Structure and Analysis, Tex. 236, 237.

Required of seniors in Weaving and Designing. Elective for others.

Pigment and light theories of color; contrast and harmony of color; factors which influence quality, style, and color; methods of applying weaves and color to fabrics for wearing apparel and home decorations. Mr. Hart.

Tex. 457, 458, 459. Textile Testing. 1-1-1

Prerequisite: Fabric Testing, Tex. 343 or equivalent.

Elective for Textile students.

Tests for moisture content, regain, twist, and tensile strength; description and operation of testing equipment; solution and written reports of assigned textile problems. Messrs. Hart, Hilton, Shinn.

Tex. 474. Cotton and Rayon Dyeing I. 0-3-0

Tex. 471, 472, 473. Cotton and Rayon Dyeing Laboratory I. 1-1-1

Required of seniors in Textile Manufacturing. Elective for others.

Prerequisites: Dyeing I, Tex. 371, 372, 373, 375.

Lectures on color mixing, money value of dyes; testing of dyes, water starch, and materials used in sizing; lubricating oils and oil compounds; processes and machinery used in dyeing and finishing; textile printing; apparatus used in research laboratory.

Color matching; testing dyes for strength and money value; physical and chemical examination and application of starches, sizing materials and finishing compounds; examination of textile oils, soap, and all the different rayons; analysis of mixed fabrics. Messrs. Grimshaw, Hayes.

Tex. 475. Textile Microscopy I. 0-0-1

Prerequisites: Dyeing I or II, Tex. 375 or 381, 382.

Required of seniors in Textile Manufacturing. Elective for others.

Instruction in the use of the microscope; examination of fibres; preparation of permanent slides. Messrs. Grimshaw, Hayes.

Tex. 480, 481. Cotton and Rayon Dyeing II. 0-3-3

Tex. 477, 478, 479. Cotton and Rayon Dyeing Laboratory II. 2-2-2

Prerequisites: Dyeing II, Tex. 377, 378, 379, 381, 382.

Required of seniors in Textile Chemistry and Dyeing.

Theories of color matching; lectures on color mixing, water and mold, starch, materials used in sizing; lubricating oils, textile oils and oil compounds; processes and machinery used in dyeing and finishing; method of analyzing textile fabrics; laboratory equipment used in textile research and testing laboratories.

Color matching; physical and chemical examination and application of textile oils, soaps, and finishing compounds; microscopial and chemical tests on rayons; dyeing various types of rayon; operation of dyeing and finishing equipment in the dye house and research laboratories.

Mr. Grimshaw.

Tex. 487. Textile Printing. 3-0-0

Tex. 483, 484, 485. Textile Printing Laboratory. 1-1-1

Prerequisites: Dyeing II, Tex. 381, 382.

The history of printing and the development of machinery used; calico printing with the mordant, basic, and vat colors, analine black, indigo, and insoluble azo colors; resist and discharge styles.

Paste mixing; practical experiments. Messrs. Grimshaw, Hayes.

Tex. 489, 490. Textile Microscopy II. 1-1-0

Prerequisites: Dyeing I or II, Tex. 375 or 381, 382.

Required of seniors in Textile Chemistry and Dyeing. Elective for others.

Instruction in the use of the microscope; examination of fibres; preparation of permanent slides. Messrs. Grimshaw, Hayes.

Tex. 495. Principles of Fabric Finishing. 0-0-3

Tex. 491, 492, 493. Principles of Fabric Finishing Laboratory. 1-1-1

Prerequisites: Dyeing II, Tex. 371, 372.

Elective for Textile students.

A study of machinery used in finishing of textile fabrics and in textile printing, with lectures and pictures; lectures on materials used in the textile finishing and printing industry and experiments. Mr. Grimshaw.

Courses for Graduates Only

Tex. 501, 502, 533. Yarn Manufacture. 3-3-3

Prerequisites: Yarn Manufacture IV, Tex. 405 or equivalent.

A study of breaking strength and related properties of cotton yarns made under various atmospheric conditions; comparison of yarns produced from long and short-staple cotton with regular and special carding processes; efficiency of various roller covering materials at the drawing processes; elimination of roving processes by special methods of preparation; comparison of regular and long-draft spinning. Mr. Hilton.

Tex. 505, 506, 507. Textile Research. 3-3-3

Prerequisite: Graduate standing.

A study of the moisture content of cotton yarns and fabrics; the convolutions in cotton fibres and their relation to spinning, weaving, and dyeing; the effect of mercerization on cotton yarns and fabrics; testing yarns and fabrics under variable conditions for breaking strength and elasticity. Textile Staff.

Tex. 531, 532, 533. Textile Design and Weaving. 3-3-3

Prerequisites: Leno, Dobby and Jacquard Design, Tex. 441, 443, 445 or equivalent.

Study and practice in more advanced designing and analysis of fabrics, such as lenos made with twine and wire doups, lappits, and other fancy fabrics; designing for jacquard dress goods, table covers, reversibles, and other fabrics; making original designs for dobby and jacquard fabrics; fabric costs; weaving fancy and jacquard fabrics.

Messrs. Nelson, Hart, Shinn.

Tex. 535, 536, 537. Seminar. 1-1-1

Discussion of scientific articles of interest to textile industry; review and discussion of student papers and research problems. Textile Staff.

Tex. 571, 572, 573. Textile Dyeing. 3-3-3

Prerequisites: C. & R. Dyeing I, Tex. 474 or equivalent.

The course consists of matching shades from standard and season color cards upon classes of materials which require skill in their dyeing, such as three-fibre, cotton-wool, and half-silk hosiery, woolens and worsteds with effect stripes, and cotton fabrics with woven figures or stripes of the different varieties of rayon; advanced work on chemical and microscopical examination of materials used in dyeing and finishing.

Mr. Grimshaw.

Tex. 575. Advanced Textile Microscopy. 0-0-3

Prerequisites: Textile Microscopy, Tex. 489, 490.

Microscopic study of textile starches, fibres, fabrics, oils, etc.; study of mounting media for above; methods of mounting textile materials; methods of cross-sectioning textile materials; photomicrography. Mr. Grimshaw.

ZOOLOGY

Courses for Undergraduates

Zool. 101. General Zoölogy. 4-0 0

Required of freshmen in General Agriculture, Agricultural Education, Forestry, Wildlife Conservation, and of juniors in Agricultural Engineering.

An elementary study of animals, with special reference in the morphology and physiology of the vertebrates.

Messrs. Metcalf, Mitchell, Meacham, Bostian, McCutcheon, Harkema.

Zool. 102. Economic Zoölogy. 0-4-0

Required of freshmen in Forestry and Wildlife Conservation; of sophomores in General Agriculture, Agricultural Education, and in Agricultural Chemistry; of juniors in Landscape Architecture.

An elementary study of animals with special reference to the more important economic groups; designed to give the student a general knowledge of the animal kingdom.

Messrs. Metcalf, Mitchell, Meacham, Bostian, McCutcheon, Harkema.

Zool. 111. Elementary Wildlife Management. 1 0-0

Required of freshmen in Wildlife Conservation.

An introductory survey of the various branches in the field of wildlife management. Mr. Stevens.

Courses for Advanced Undergraduates

Zool. 202. Animal Physiology. 0-5-0 or 0-0-5

Prerequisites: Zool. 101, Phys. 115, Chem. 101, 102, and 103. Alternate for sophomores in General Agriculture, Agricultural Education and Agricultural Chemistry; required of juniors in Wildlife Conservation.

Comparative physiology of vertebrates, with particular reference to mammals and man. Detailed studies of various functions, with metabolism emphasized. Mr. McCutcheon.

Zool. 213. Economic Entomology. 0 0-4

Prerequisite: Zool. 102.

Required of freshmen in Forestry; juniors in Wildlife Conservation, Landscape Architecture, Agricultural Education, Vegetable Gardening, Pomology, Plant Pathology and Floriculture.

A general study of the insects, including their economic importance and the principles of control. Messrs. Mitchell, Meacham.

***Zool. 222, 223. Comparative Anatomy.** 0-4-4

Prerequisites: Zool. 101, 102.

Required of sophomores in Wildlife Conservation; of juniors in Entomology.

Comparative morphology of vertebrates. Interrelations of organ systems studied for the various groups. Mr. Harkema.

Zool. 241, 243. Beekeeping. 3-0-3

Prerequisite: Zool. 102.

Required of seniors in Entomology.

Designed to give the principles of scientific beekeeping and honey marketing. Mr. Meacham.

Zool. 251, 252, 253. Ornithology. 2-2-2

Prerequisites: Zool. 101, 102.

Required of sophomores in Wildlife Conservation.

A course dealing with the biology and morphology of North American birds. Mr. Metcalf.

Zool. 302. Forest Entomology. 0-3-0

Prerequisite: Zool. 213.

Required of juniors in Forestry.

A special study of forest insects, including the factors governing abundance, and the application of this knowledge in control. Mr. Mitchell.

Zool. 312. Principles of Game Management. 0-3-0

Elective for juniors and seniors not in Game Management.

Brief survey of the field, study of the major principles involved, and the correlation of wildlife management with other land uses. Mr. Stevens.

* Not offered in 1941-42.

Zool. 321, 322, 323. Wildlife Conservation. 3-3-3

Prerequisites: Zool. 251, 252, 253, F. C. 202, Bot. 101, 102, 203.

Required of juniors in Wildlife Conservation and Management.

History of game and wildlife management; relation of wildlife conservation to soil and forest conservation; national and State park, and general farming operations. Mr. Stevens.

Zool. 332. Fur Resources. 0-3-0

Prerequisites: Zool. 321, 322, 323.

Elective for juniors and seniors in Wildlife Conservation.

Study of the fur industry; the life history and management of the important fur-bearing animals; skinning, drying, marketing pelts, and fur farming. Mr. Stevens.

Courses for Graduates and Advanced Undergraduates

Zool. 401, 402, 403. Applied Entomology. 3-3-3

Prerequisites: Zool. 213.

Required of seniors in Entomology.

A survey of crop and animal pests with emphasis on their identification; general principles of insect control and special study of contact insecticides; special study of stomach poisons and fumigants, and insecticide research methods. Mr. Fulton.

Zool. 411. Genetics. 4-0-0

Prerequisite: Bot. 102 or Zool. 101.

Required of juniors in Animal Production, Entomology, Field Crops, Floriculture, Pomology, Poultry Science, and Vegetable Gardening; of seniors in Plant Pathology.

Basic principles of heredity and variation. Students conduct breeding experiments and study inheritance in various animals and plants. Mr. Bostian.

Zool. 412. Advanced Genetics. 0-4-0

Prerequisite: Zool. 411.

Elective for juniors, seniors, and graduates.

Intended for students desiring more thorough and detailed training in fundamental genetics than provided by Zool. 411, with some attention to biometry and recent advances. Mr. Bostian.

Zool. 413. Advanced Physiology. 0-0-3

Prerequisites: Zool. 101, 102, 202.

Elective for juniors and seniors.

Special studies in animal physiology with emphasis on fundamental processes involved. Lectures, reports, and conferences to promote an acquaintance with general literature and recent advances; selected exercises and demonstrations to develop experimental technique. Mr. McCutcheon.

Zool. 421, 422, 423. Systematic Zoölogy. 3-3-3

Prerequisites: Zool. 101, 102.

Required of juniors in Entomology.

The classification of insects or other groups of animals.

Messrs. Metcalf, Mitchell.

Zool. 433. Field Zoölogy. 0-0-4

Prerequisites: Zool. 101 and 213, or 222, 223.

Required of juniors in Wildlife Conservation and seniors in Entomology.

The study of the relation between animals and their environment. Frequent excursions to the field will be taken. Messrs. Metcalf, Bostian.

***Zool. 441, 442. Histology.** 3-3-0

Prerequisites: Zool. 101, 102, 202, 222, 223.

Required of seniors in Entomology.

A study of animal tissues and their preparation. Mr. Harkema.

Zool. 451, 452, 453. Wildlife Management. 3-3-3

Prerequisites: Zool. 321, 322, 323.

Required of seniors in Wildlife Conservation.

Study of the foods and feeding habits of the more important groups of wild animals; field and laboratory studies of wildlife management and research, and the economic relations of game, predatory, and fur-bearing animals. Mr. Stevens.

Zool. 461. Vertebrate Embryology. 5-0-0

Prerequisites: Zool. 101, 102.

Required of juniors in Poultry Science, and seniors in Entomology.

The comparative embryology of the principal groups of vertebrates, with special emphasis on the chick. Mr. Harkema.

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* Not given in 1941-42.

Zool. 462, 463. Advanced Animal Ecology. 0-3-3

Prerequisite: Zool. 433.

Required of seniors in Wildlife Conservation.

A course devoted to animal geography and the factors which influence the distribution of animals. Mr. Metcalf.

Zool. 471, 472, 473. Advanced Wildlife Management. 3-3-3

Prerequisite: Concurrently with or preceded by Zool. 321, 322, 323.

Elective for seniors in Wildlife Conservation.

An assigned problem to be planned and worked out by the student. A term paper covering the procedure. Mr. Stevens.

Zool. 481, 482, 483. Advanced Food Habits Problems. 3-3-3

Prerequisite: Concurrently with or preceded by Zool. 451, 452, 453.

Elective for seniors in Wildlife Conservation.

Assigned or selected problem dealing with the foods and feeding habits of one species of wild animal or a group of similar wild animals.
Mr. Stevens.

Zool. 492, 493. Parasitology. 0-3-3

Prerequisite: Zool. 101, 102, 222, 223.

Required of seniors in Wildlife Conservation.

A study of the structures, life-cycles, and control of animal parasites.
Mr. Harkema.

Courses for Graduates Only

Zool. 501, 502, 503. Systematic Entomology. 3-3-3

Prerequisite: Zool. 421, 422, 423.

Codes of nomenclature, methods of writing descriptions, constructing keys, determining priority, selecting and preserving types, and making bibliographies and indexes. Messrs. Metcalf, Mitchell.

Zool. 511, 512, 513, and Zool. 551, 552, 553. Research in Zoölogy. 3-3-3

Prerequisite: eighteen term credits in Zoölogy.

Problems in development, life history, morphology, physiology, ecology, genetics, game management, taxonomy, or parasitology.
Messrs. Metcalf, Meacham, Mitchell, Bostian, McCutcheon, Harkema, Stevens.

Zool. 521, 522, 523. Seminar. 1-1-1

Prerequisite: eighteen term credits in Zoölogy. Mr. Metcalf.

Zool. 531, 532. Biological Control of Insects. 3-3-0

A study of diseases, predators and parasites of insects; methods of rearing and disseminating for biological control. Messrs. Fulton, Smith.

Zool. 533. Advanced Genetics. 0-0-3

Prerequisite: Zool. 411, 412.

Study of special topics and recent advances, accomplished by lectures, references, conferences, and reports by students, each selecting one or more topics for special study. Mr. Bostian.

Zool. 541, 542. Insect Physiology. 3-3-0

Prerequisite: Zool. 202.

Elective for juniors and seniors.

Study of the mechanisms involved in the life processes of insects.
Mr. McCutcheon.

Zool. 543. Fruit Insects. 0-0-3

Prerequisite: Zool. 213 or equivalent.

A study of the economic importance of insects attacking fruit or fruit trees; their characteristics, habits, ecology, and biology; with most practical control measures. Mr. Smith.

Zool. 551, 552, 553. Research in Zoölogy. 3-3-3

See Zool. 511, 512, 513.

Zool. 561, 562, 563. Insect Biology. 3-3-3

A study of life history, including modes of reproduction, embryology, growth, metamorphosis, protection, food relations, hibernation, social relations, and adaptations. Mr. Mitchell.

Zool. 571, 572, 573. Insect Ecology and Behavior. 3-3-3

A study of the natural activities of insects, feeding, protection, reproduction, reaction to environmental factors, inter-relations, and distribution.
Mr. Fulton.

Zool. 581, 582, 583. Insect Morphology. 3-3-3

A study of the external and internal anatomy of insects and their near relatives. Mr. Metcalf.

Zool. 591. Immature Insects. 3-0-0

Prerequisite: Zool. 102 and 213 or equivalent.

A study of methods of collecting, preserving and determining immature insects. Mr. Smith.

V. SUMMARY OF ENROLLMENT

1940-41*

1. Resident Students		
A. Candidates for Degrees		
1. Freshmen	1,089	
2. Sophomores	606	
3. Juniors	427	
4. Seniors	374	
5. Graduates	122	
6. Candidates for Professional Degrees	7	
Total	2,625	
B. Irregular Students		
†1. Extension Classes in Raleigh and Cary	300	
2. Special Students and Auditors	28	
Total	328	2,953
†2. Nonresident Students		
A. Correspondence Students for College Credit	1,302	
B. Extension Students (Classes outside Raleigh)	664	
C. Correspondence Students in Practical Courses, no credit	58	
Total	2,024	4,977
3. Summer School Students, 1940		
A. Regular Students		
1. Six weeks	792	
2. Three weeks	73	
3. Ten weeks	21	
B. C. C. C. Educational Advisers (Two weeks)	23	
C. Cotton Classing Students, no credit	4	
Total	913	5,890
4. Short Courses and Special Conferences		
1. Institute for N. C. Society of Surveyors (one day)	40	
2. Institute for Engineers (one day)	50	
3. Conference for Plumbing and Heating Contractors (two days)	88	

* Does not include Spring Term, 1940-41.

† Data from January, 1940 to January, 1941.

4.	Water Works School (four days)	80
5.	Institute, Electrical Meters and Relays (four days)	98
6.	Short Course on Oil Burners (four days)	20
7.	Institute for Street Superintendents (two days)	38
8.	Institute for Police Photographers (five days)	8
9.	Institute for Coal Merchants (four days)	65
10.	Institute for Electrical Inspectors and Contractors (two days)	133
11.	Institute for Gas Plant Operators (two days)	101
12.	Older Youth Conference (four days)	87
13.	Tobacco Short Course (four days)	55
14.	Agricultural Teachers (four days)	375
15.	4-H Club (one week)	992
16.	Farm Men and Women (one week)	1,892
17.	Future Farmers of America (three days)	1,050
18.	Safety School for Truck Operators (two days)	86
19.	Nurserymen's Short Course (two days)	50
20.	Veterinarian's Short Course (four days)	70
21.	Farm and Home Agents	335
22.	Vocational Training for National Defense Welders (12 weeks)	45
23.	Vocational Training for National Defense Drafting (12 weeks)	71
24.	Vocational Training for National Defense Auto-Mechanic (12 weeks)	73
25.	Vocational Training for National Defense Armature Rewinding (12 weeks)	15
26.	Vocational Training for National Defense Machine Shop (12 weeks)	24
28.	Vocational Training for National Defense Blacksmithing (12 weeks)	50
	Total	5,991
	Grand Total	11,881

ENROLLMENT BY CURRICULA

Basic Division

Agriculture	398
Engineering	927
Teacher Training	143
Textiles	198
Total	1,666

School of Agriculture and Forestry

Agriculture	8
Agricultural Options	168
Agricultural Chemistry	21
Agricultural Engineering	14
Forestry	43
Landscape Architecture	2
Wildlife Management	6
Total	262

School of Engineering

Architectural	30
Ceramic	25
Chemical	128
Civil	21
Civil Construction Option	23
Civil-Highway Option	2
Civil-Sanitary Option	7
Electrical	77
General	7
Geological	8
Industrial	23
Mechanical	61
Mechanical-Aeronautical Option	32
Total	444

Division of Teacher Education

Agricultural Education	88
Industrial Arts Education	9
Industrial Education	5
Occup. Inf. and Guidance	10
Total	112

School of Textiles

Textiles	8
Textile Chemistry and Dyeing	23
Textile Management	14
Textile Manufacturing	80
Weaving and Designing	11
Total	136

Nonclassified Auditors	29

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Distribution of Graduate students by schools (included in above departmental classifications).

Agriculture	75
Engineering	24
Teacher Training	15
Textiles	8
Candidates for Professional Degrees	7
Total	129

FIFTY-FIRST ANNUAL COMMENCEMENT

Monday Evening, June 3, 1940

DEGREES CONFERRED

SCHOOL OF AGRICULTURE AND FORESTRY

BACHELOR OF SCIENCE

IN AGRICULTURAL CHEMISTRY

Charles Wilburn Glazener — Rosman
Joe Edward Michael, Jr. — Salisbury

IN AGRICULTURAL ENGINEERING

Landy Boyd Altman, Jr. — Raleigh
Ralph Bronson Armstrong, Jr. — Asheville
*Dwight McLean Griffin — Reidsville
William Sheldon Huggins — Clarkton
*Franklin Alford McGoogan — Raleigh
James Arthur Mitchiner — Franklinton
Thomas Long Reeves — Sanford
Oswell Proctor Southerland — Durham

IN ANIMAL PRODUCTION

Earl Geddie Butler — Clinton
Spence Monroe Correll — Woodleaf
Gilbert Halladay Croll — Ridgewood, N. J.
Harry Gentry Davis — Red Springs
Robert Wallace Fleetwood — Mars Hill
Earl Eby Frink — Bladenboro
*Charles Alexander Hunter — Charlotte
Samuel Kaufman — Miami Beach, Fla.
Zeb Edward McDaniel — Clinton
*Kenneth Murchison — Mocksville
Durwood Johnson Murray — Kenansville
David Cleveland Parker — Fountain
*Daniel Hughes Purifoy — Bachelor
Charlie Walker Renn — Winston-Salem
Lawrence Calvin Ross — Greensboro
Cary King Watkins — Blanch

* Honors.

IN DAIRY MANUFACTURING

*Samuel Nicholson Mann	Asheville
James Carroll Plaster	Hickory

IN FARM BUSINESS ADMINISTRATION

Wallace Churchill Alford	Raleigh
William Hoyt Davenport	Kinston

IN FARM MARKETING AND FARM FINANCE

Melzar Pearsall, Jr.	Wilmington
William Edward Pollock	Trenton
*Fred Herbert Price, Jr.	Statesville
Ernest Maylon Stallings	Selma
*William Temple Wesson	Elams

IN FIELD CROPS AND PLANT BREEDING

Charlie Clifton Clark, Jr.	Durham
Henry Lafayette Cooke	Littleton
*James Norwood Edge	Fayetteville
*Oscar Jarman Howell, Jr.	Goldsboro
**Clifford Lafayette James	Oakboro
Hugh Walter McPhaul	Red Springs
Robert Stewart Marsh	Monroe
Theodore Coleman Mattocks	Gillette
Lester Alfred Mullen	Lincolnton
Joseph Mitchell O'Brian	Oxford
William Jennings Page	Autryville
John Sumner Smith	Lincolnton
Robert Spencer Smith	Vanceboro
Samuel Joshua Weeks	Raleigh

IN FLORICULTURE

*Robert Nuell White, Jr.	Winston-Salem

IN FORESTRY

James Locke Bell	Huntersville
*Ralph Wilson Brake	Rocky Mount
**Robert Lee Cain	Fayetteville
George Peter Chaconas	Washington, D. C.
Richard Edwards Davis	Greensboro

* Honors.
** High Honors.

Willard Bruce Dunn ..... Kennerdell, Pa.
*Theodore Edward Gerber ..... Brooklyn, N. Y.
William Edward Gibbons ..... Bogota, N. J.
Benjamin Rudolph Harley ..... Chadbourn
Bert Shears Hays ..... Chattanooga, Tenn.
Sidney Oscar Ingram, Jr. ..... Arden
Max Marton Karlman ..... Hillside, N. J.
Ralph Kenneth Lee ..... Lugoff, S. C.
Paul Jacob Lozier ..... Cliffside Park, N. J.
Mathew Augustus Matson, Jr. ..... Norfolk, Va.
James Frank Needham ..... Raleigh
John F. Nigro ..... Brooklyn, N. Y.
Alexander Anthony Novitzkie, Jr. ..... Maspeth, L. I.
William Elijah Odom, Jr. ..... Asheville
Leo Perks ..... Brooklyn, N. Y.
Lawrence Lee Perry ..... Sanford
*Chester Reed ..... Raleigh
James Ernest Roberts ..... Marshall
Ira Lee Taylor ..... Harrisburg

IN LANDSCAPE ARCHITECTURE

Richard Saunders Clark ..... Winston-Salem
**Sarah Frances Dees ..... Greensboro
*Maxilla Elizabeth Everett ..... Palmyra
**Bert Arthur Heidelbach, Jr. ..... Danville, Va.
*Alfred Lemuel Parker, Jr. ..... Charlotte

IN POMOLOGY

George Washington Davis ..... Arcola

IN POULTRY SCIENCE

**James McGinnis ..... Lincolnton
*Richard William Pearson ..... Highlands
Walter Cleden Smith ..... Rich Square

IN WILDLIFE CONSERVATION AND MANAGEMENT

John Neady Barkdoll ..... Hagerstown, Md.
*Saul Feit ..... Brooklyn, N. Y.
Thomas Crymes Jones, Jr. ..... Asheville
Robert Haywood Witherington ..... Winston-Salem
Frederick Bryan Yates ..... Chadbourn

* Honors.
** High Honors.

SCHOOL OF ENGINEERING

BACHELOR OF ARCHITECTURAL ENGINEERING

William Reid Auman — Biscoe
Leslie Norwood Boney, Jr. — Wilmington
*Charles Craig Davis, Jr. — Wilmington
Samuel Linwood Luck, Jr. — Greensboro
Arthur McKimmon — Raleigh
Edward St. Clair Pugh, Jr. — Elizabeth City

BACHELOR OF CERAMIC ENGINEERING

Stephen Wallace Derbyshire — Raleigh
Charles Manley Gattis, Jr. — Louisburg
Jack Calvin Haynes — Winston-Salem
Charles Wesley Isenhour, Jr. — Salisbury
*Richard Paulett McCabe — Raleigh
William Sheedy McLaughlin — Gloucester, Mass.
*Halfred Fremont Randolph — Raleigh
Gilbert Chase Robinson — Cooleemee
Frank Pierce Sabol — Campbell, Ohio
*James Neal Smith, Jr. — New Bern
Effron Avery Williams, Jr. — Swan Quarter

BACHELOR OF CHEMICAL ENGINEERING

Albert Raymond Anderson — Durham
*Arnold Collison Aspden — Fairhaven, Mass.
Carl Broadus Barnes — Raleigh
George Washington Bethell — Wilmington
Eugene Scott Bowers, Jr. — Jackson
William Welborn Bulla — Scotland Neck
John Mattocks Cannon — New Bern
William Jackson Ervin — Charlotte
Joseph George Filicky — Raleigh
Allen Lewis Frost — New Bedford, Mass.
John Goodman Getsinger — Plymouth
Harold Alan Giller — Montclair, N. J.
Benjamin Franklin Harris, Jr. — Henderson
Cader Perry Harris, Jr. — Elizabeth City
Ross Barton Hoffman — Asheville
*George Thomas Holmes — Snow Hill
Bold Robin Hood, Jr. — Kinston
Edward Izmirian — New Bedford, Mass.
*Theodore Michael Kolarik — Pittsburgh, Pa.

* Honors.

*Luis H. Lim — Manila, Philippines
Eugene Marvin Lockhart, Jr. — Hillsboro
*Henry Deitsch Means — Concord
Marcus Ned Medford — Waynesville
Ernest Edward Morrison — Meridian, Miss.
James Alvis Newnam — Leaksville
*Ray Leonard Overcash — Kannapolis
*Benjamin Skinner Pace — Raleigh
Kenneth Eugene Perry — Millbrook
*Benjamin Bradford Reynolds, Jr. — Wilmington
David Daniel Rowe, Jr. — Hickory
Charles David Runkle — Rockingham
Kervin Bennett Shearon — Raleigh
Carroll Harvey Smith, Jr. — Bachelor
Walter Lee Smith, Jr. — Charlotte
**Ele Eugene Stansbury — Wake Forest
**Nathaniel Stetson — New Bedford, Mass.
*Henry Clay Thomas — Rockingham
*Frank Oliver Truslow — Draper
Francis Herbert Walsh, Jr. — New Bedford, Mass.
**Alfred Benjamin Wester, Jr. — Henderson
John William Womble — Greensboro

BACHELOR OF CIVIL ENGINEERING

William Thurston Blanchard — Rose Hill
John Handley Bowen, Jr. — Atlanta, Ga.
Robert Feaster Coleman, Jr. — Wilmington
Edward Howard Coon, Jr. — Watertown, Conn.
Edward Laval Waldin — Charlotte
Robert Levie Wicker — Sanford

BACHELOR OF CIVIL ENGINEERING, CONSTRUCTION OPTION

Dwight Barton Betts — Greensboro
Henry Wallace Branson, Jr. — Greensboro
Norman Nichols Clark — Allerton, Mass.
*Percival Porcher Gregg, II — Florence, S. C.
*Edison Hubert Johnson — Angier
*James Henry Sawyer, Jr. — New Bern
Lester John Skowronek — New York, N. Y.
*Preston Smith Woodley — Creswell

* Honors.
** High Honors.

BACHELOR OF CIVIL ENGINEERING, HIGHWAY OPTION

Arthur Theron Strickland	Louisburg
Louis Ernest Wooten, Jr.	Raleigh

BACHELOR OF CIVIL ENGINEERING, SANITARY OPTION

James Hollowell Holcombe	Fayetteville

BACHELOR OF ELECTRICAL ENGINEERING

Marvin Galloway Calhoun	Clio, S. C.
Williard Holden Darst, Jr.	Raleigh
Thomas Ransom Frazier, Jr.	Warrenton
Charles Joseph Fritz	Greensboro
Walter Joseph Glod	Castle Hayne
Charlie James Hall	Rockingham
Frederick Randolph Harrelson	Elm City
Thornton Simonton Harrill	Kings Mountain
Wilbert Mason Healy, Jr.	Welch, W. Va.
Marion Hudson Hoyle, Jr.	Cooleemee
William Thomas Hunt, Jr.	Apex
Clyde Wallace Kirkland, Jr.	Bellaire, Ohio
Leonard Hubert Knott	Oxford
*Robert Vaughn Lamb	Elizabeth City
George Carl Mahler	Wilmington
Nicholas Gibbon Moore	Mooresville
David Williams Rouse	Rose Hill
Walter Douglas Sharp	Greensboro
Ross Minish Sigmon, Jr.	Salisbury
Waverly Clyde Simpson, Jr.	Pine Bluff
Wilton Winstead Smith	Ransomville
*Isaiah McPhail Vann, Jr.	Clinton
*John Watson Wilkinson	Burnside, Ky.
Sydney Ray Williams	Essex
George Lake Yingling, Jr.	Salisbury

BACHELOR OF SCIENCE IN GENERAL ENGINEERING

James Watson Rennie	North Plainfield, N. J.

BACHELOR OF GEOLOGICAL ENGINEERING

*Ross Irwin Edwards	Charlotte
Kenneth Wesley Hall	Hiwassee Dam
*John Valentine Hamme	Oxford

* Honors.

BACHELOR OF INDUSTRIAL ENGINEERING

Duane William Arbuthnot ..... Leonia, N. J.
Roger Moore James, Jr. ..... Rocky Mount
Frank Stacey Kugler ..... Raleigh
Hunter Laughton Land ..... Hamlet
John Locke Milholland, Jr. ..... Statesville
Harold Grey Robinson, Jr. ..... Charlotte

BACHELOR OF MECHANICAL ENGINEERING

Harry Vaughan Beck ..... Thomasville
Thomas Harvey Blount, Jr. ..... Washington
Ralph Lea Burt ..... Raleigh
Macon Mitchell Dalton ..... Durham
*Roscoe Whitaker Franck ..... Scotland Neck
Arthur Burton Haseltine ..... Asheville
Frank Ramsey Kennedy, Jr. ..... Waynesville
*Michael William Nakoneczny ..... Burgaw
Arnold Lawrence Patterson ..... Houstonville
Howard Lukens Pearson ..... Highlands
Paul Ray Pittman, Jr. ..... Wilmington
Warren Howard Spear ..... Winston-Salem
Lucius Eugene Stacy, Jr. ..... Chapel Hill
George Allen Suther ..... Charlotte
**Henry Marvin Taylor, Jr. ..... High Point
William Granville Taylor, Jr. ..... Asheville
Theodore Ture Tyren ..... Durham
Daniel Talbot Waynick ..... Greensboro
Lewis Evander Whitfield, Jr. ..... Asheboro

BACHELOR OF MECHANICAL ENGINEERING, AERONAUTICAL OPTION

Daniel Long Belvin ..... Raleigh
Andrew Jackson Bing ..... Hickory
*Joseph Woodrow Brandon ..... Cramerton
Luther Williams Cartwright, Jr. ..... Baltimore, Md.
*Herbert Raymond Crawford ..... Henderson
Luther Macon Epps, Jr. ..... Newton
David Williams Pearsall ..... Rocky Point
Baxter Byerly Redmon ..... Cleveland
Oliver Reino Salmela ..... E. Weymouth, Mass.
**Frank John Zerilli ..... Brooklyn, N. Y.

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* Honors.
** High Honors.

SCHOOL OF SCIENCE AND BUSINESS

(Degree earned prior to June, 1940)

BACHELOR OF SCIENCE

IN BIOLOGY

†Edward Alan Cohan — Brooklyn, N. Y.

DIVISION OF TEACHER TRAINING

BACHELOR OF SCIENCE

IN AGRICULTURAL EDUCATION

Coleman Miller Absher — Statesville
Edward Aaron Adams — Taylorsville
Thomas Walter Bivens — Stanfield
*Stuart Jerome Black — Concord
Paul Archibald Bradley — Jackson
William Raymond Craver — Lexington
*Andrew Leon Curran — Bittinger, Md.
James Adrian Dobson — Statesville
*Ernest Earl Durham — Kernersville
Edwin D. Ellington — Graham
Neill Willis Freeman, Jr. — Star
George Martin Goforth — Shelby
Ed Monroe Greene, Jr. — Peachland
Cecil Irvin Harris — Elizabeth City
William Alex Hash — Piney Creek
Jim Dan Hemmings — Dobson
William Francis Hoyle — Zebulon
Robert Lewis Jones, Jr. — Greensboro
David Webb Kiser — Bessemer City
William Archibald McKay, Jr. — St. Paul
William Argyle McLeod — Taylorsville
*Thomas Johnson Marlowe — Fairview
John Daniel Parker — Murfreesboro
Raiford Gibson Pate — Gibson
James Woodrow Pittman — Fairmont
Claybon Stanley Ragan — Apex
*Raymond Lee Souther — Biltmore
*Marvin Eugene Starnes — Monroe
Rexford Alvin Stevens — Goldsboro

† As of June 6, 1938.
* Honors.

David Arthur Sutton	Goldsboro
Clarence Gordon Townsend	Hamer, S. C.
Sexton Columbus Vinson	Dillard, Ga.
Edwin Hall Wetmore	Woodleaf
*John Fletcher Willey	Gates
Emmett James Withrow	Forest City

IN INDUSTRIAL ARTS EDUCATION

Anthony Albert DiYeso	White Plains, N. Y.
Borah Leonard Kreimer	Bronx, N. Y.
*Peter Stokes Lea	Elkin
Glenn Wilson Mehaffey	Hendersonville
Arthur Edward Rooney	Bellevue, Pa.
Lambert Elon Sikes	Salemburg
Norwood Teague	Raleigh
*Fred Arthur Webb, Jr.	Raleigh

SCHOOL OF TEXTILES

BACHELOR OF SCIENCE

IN TEXTILE CHEMISTRY AND DYEING

Charles Forsyth Henry Begg	Charlotte
**Charles Patton Echerd	Greensboro
Tao Kuang Fang	Tientsin, China
Ellis Wood Fisher	Salisbury
John William Fredericks, Jr.	Wilmington
Richard Bruton Kelly	Rockingham
Thomas Franklin Parks	Lenoir
William Herman Ritter	Greensboro
John Joseph Ryan	New Bedford, Mass.
*Seymour Schandler	Asheville
*Morris Leonard Slesinger	Raleigh
James Eugene Tillman	Wadesboro
*Frederick Albert Walker	New Bedford, Mass.
Charles Kenneth Watson	Red Springs
*Arthur Robinson Williams, Jr.	Greensboro
Leopold Joseph Winiarski	New Bedford, Mass.

IN TEXTILE MANAGEMENT

Howard Bergman	Brooklyn, N. Y.
Paul Thurston Biggers	Sanford, Fla.
Edgar Martin Britt	Winston-Salem

* Honors.
** High Honors.

*Fred Torrence Broyhill	Statesville
Donald Young Buckingham	Jewett City, Conn.
Hal Clifford Byrd	Erwin
Merritt Womble Davis, III	Charlotte
James Toms Dover, Jr.	Shelby
G. H. Fulcher	Leaksville
Palmer Griffin Hill, Jr.	Rocky Mount
Zebulon Bayard Lane, Jr.	Wilson
Thomas Crawford Leake, III	Rockingham
Jose Trevino Madero	Parras, Coah, Mexico
Lloyd Elmer Milks, Jr.	Asheboro
Edmund Bush Morrison	Charlotte
Ben Richard Rudisill	Cherryville
James William Rufty	Spencer
Edward Blake Sauvain	Concord
James Thurman Shaw	Macon
Robert Edward Towers	Rome, Ga.
Charles Paul Weber	Glen Rock, N. J.

IN TEXTILE MANUFACTURING

Charles Carroll Chase	Salisbury
Walter Thomas Cline, Jr.	Raleigh
Ferdinand Arnold Decker, Jr.	Charlotte
John Seaborn Flowe	Raleigh
Sidney Barker Frank	Wilson
Thomas Jack Griffin	Neuse
*Donald Everett Hamilton	Charlotte
Christopher Roy Jennette	New Bern
Walter Newman Lefler	Albemarle
William B. Mattocks	Sanford
**John Mundy Mauney	Lincolnton
Fred Lamon Misenheimer	Salisbury
Raymond Jackson Payne	Kannapolis
*Jones Yorke Pharr, Jr.	Concord
James Ernest Rogers	Concord
Jess Bolt Tatum	McColl, S. C.
Tillett Kirk Taylor	Hanes

IN WEAVING AND DESIGNING

Kiffin Rockwell Craven	Charlotte
**Nathan Herman Goldberg	Brooklyn, N. Y.
John Monroe Harkey	East Spencer
Edward Dale Kearns	Greensboro

* Honors.
** High Honors.

Wallace Whitfield Riddick, Jr. ..... Demopolis, Ala.
Harold Phillips Warner ..... Raleigh
Hubert Cogdell Woodall, Jr. ..... Smithfield

IN YARN MANUFACTURING

Ernest Koella, Jr. ..... Rockford, Tenn.
Charles Sumner Smart, Jr. ..... Concord

ADVANCED DEGREES

MASTER OF SCIENCE

IN AGRICULTURAL CHEMISTRY

Thomas Alexander Bell ..... Spartanburg, S. C.
Margaret Kramer ..... Elizabeth City
Martha Smith Richmond ..... Raleigh
George Mapes Schroder ..... Narberth, Pa.

IN AGRICULTURAL ECONOMICS

Herman Brooks James ..... Oakboro

IN ANIMAL ECOLOGY

Thomas Lavelle Quay ..... Mount Holly, N. J.
Myrtha Mangum Wilson ..... Raleigh

IN FORESTRY

Richard Morrison King, Jr. ..... Concord
William Oscar Ryburn, Jr. ..... Salisbury

IN PLANT BREEDING

Charles Leon Davis ..... Conway, S. C.

IN PLANT ECOLOGY

Joseph Patrick McMenamin ..... DeKalb, Ill.

IN POULTRY

Edwin Pierce Singsen ..... Rumford, R. I.

IN RURAL SOCIOLOGY

Eleanor DeVeaux Carson ..... Rock Hill, S. C.

IN SOIL CHEMISTRY

Felix Raymer Speer ..... Boonville

IN INDUSTRIAL ARTS EDUCATION

Theodore Cecil Brown	Raleigh
Macon Rogers Rowland	Raleigh

IN OCCUPATIONAL INFORMATION AND GUIDANCE

Edwin Rudolph Poole	Raleigh
Ethel Christine Sheridan	Greenwood, S. C.

IN CHEMICAL ENGINEERING

Francis Earl Mask	Raleigh

IN TEXTILES

Seaborn Edgar Bagley, Jr.	Alpharetta, Ga.
Raymond Taylor Clarke	Anderson, S. C.

MASTER OF CERAMIC ENGINEERING

John James Amero	Gloucester, Mass.

MASTER OF CIVIL ENGINEERING

Wilho Nestor Suominen	Rocky Mount

MASTER OF ELECTRICAL ENGINEERING

Lester Radcliffe Crane	Raleigh
Hubert Lee Morgan, Jr.	Canton

MASTER OF MECHANICAL ENGINEERING

Carl Nichols Sanford	Raleigh
Walter Eugene Selkinghaus	Raleigh

PROFESSIONAL DEGREES

MASTER OF AGRICULTURE

William Eugenius Adams	Franklinton
Calvin Winchester Pegram	Raleigh

HONORARY DEGREES

DOCTOR OF ENGINEERING

Clement Leinster Garner	Washington, D. C.

DOCTOR OF TEXTILE SCIENCE

Charles Albert Cannon	Concord

MEDALS AND PRIZES—SCHOLARSHIP DAY, 1940

ETA KAPPA NU AWARD

Eugene C. Denton, Jr., Sophomore in Electrical Engineering, Morganton, N. C.

GAMMA SIGMA EPSILON SCHOLARSHIP CUP

E. G. Hollowell, Junior in Chemical Engineering, Elizabeth City, N. C.

SIGMA PI ALPHA AWARD

R. F. Coleman, Jr., Senior in Civil Engineering, Wilmington, N. C.

ASSOCIATED GENERAL CONTRACTORS' AWARD

Edison H. Johnson, Senior in Civil Engineering, Angier, N. C.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS AWARD

G. S. Achorn, Junior in Chemical Engineering, Danielson, Connecticut

MU BETA PSI (MUSICAL) AWARD

John M. Foster, Senior in Textile Manufacturing, Raleigh, N. C.
G. C. Robinson, Senior in Ceramic Engineering, Cooleemee, N. C.

STATE COLLEGE WOMAN'S CLUB AWARD

Miss Sarah Frances Dees, Senior in Landscape Architecture, Greensboro, N. C.

ORDER OF 30 AND 3 AWARD

Max Sayah, Freshman in Chemical Engineering, Allentown, Pa.

J. C. STEELE SCHOLARSHIP CUP

H. H. Thomas, Junior in Ceramic Engineering, Hyde, Maryland

MOLAND-DRYSDALE SCHOLARSHIP CUP

Addison Hawley, Jr., Freshman in Ceramic Engineering, Goldsboro, N. C.

NATIONAL ASSOCIATION OF TEXTILE MANUFACTURERS' MEDAL

J. M. Mauney, Senior in Textile Manufacturing, Lincolnton, N. C.

SIGMA TAU SIGMA AWARD

J. M. Mauney, Senior in Textile Manufacturing, Lincolnton, N. C.

TAU BETA PI AWARDS

E. L. Bryant, Sophomore in Chemical Engineering, Wilmington, N. C.
Max Sayah, Freshman in Chemical Engineering, Allentown, Pa.

ALPHA ZETA SCHOLARSHIP CUP

Albert E. Johnson, Sophomore in Forestry, Cementon, New York

INTERFRATERNITY SCHOLARSHIP CUP

Alpha Gamma Rho Fraternity

ALUMNI ATHLETIC TROPHY

Edward Howard Coon, Jr., Senior in Civil Engineering, Watertown, Connecticut

PHI KAPPA PHI SCHOLARSHIP MEDALS

Senior: B. A. Heidelbach, Landscape Architecture, Danville, Va.
Junior: C. F. Ireland, Agricultural Chemistry, Franklinton, N. C.
Sophomore: E. L. Bryant, Chemical Engineering, Wilmington, N. C.

PHI KAPPA PHI CASH SCHOLARSHIP

Graduate: Edwin P. Singsen, Poultry Science, Rumford, R. I.

KAPPA PHI KAPPA (EDUCATION) AWARD

Julian Augustus Bell, Sophomore in Industrial Arts Education, Newport, N. C.

ELDER P. D. GOLD CITIZENSHIP MEDAL

Charles A. Hunter, Senior in Animal Production, Charlotte, N. C.

NATIONAL DIRECT CLASH DEBATE CHAMPIONSHIP

1939

Fred H. Price, Jr., Senior in Agricultural Economics, Statesville, N. C.
Cary K. Watkins, Senior in Animal Production, Blanche, N. C.
C. B. Ratchford, Junior in Agricultural Economics, Gastonia, N. C.
D. W. Harris, Sophomore in Animal Production, Newell, N. C.
R. E. Carey, Junior in Forestry, Baltimore, Maryland

NATIONAL DIRECT CLASH DEBATE CHAMPIONSHIP

1940

Fred H. Price, Jr., Senior in Agricultural Economics, Statesville, N. C.
Cary K. Watkins, Senior in Animal Production, Blanche, N. C.

GRAND EASTERN DIRECT CLASH DEBATE CHAMPIONSHIP

Fred H. Price, Jr., Senior in Agricultural Economics, Statesville, N. C.
Cary K. Watkins, Senior in Animal Production, Blanche, N. C.

NATIONAL INDIVIDUAL RANKING IN DIRECT CLASH DEBATING

C. B. Ratchford, Junior in Agricultural Economics, Gastonia, N. C.
Cary K. Watkins, Senior in Animal Production, Blanche, N. C.
Fred H. Price, Jr., Senior in Agricultural Economics, Statesville, N. C.

DIXIE RADIO BROADCASTING CHAMPIONSHIP

Fred H. Price, Jr., Senior in Agricultural Economics, Statesville, N. C.

COLUMBIA AND MUTUAL BROADCASTING CHAMPIONSHIPS
GRAND EASTERN TOURNAMENT

Fred H. Price, Jr., Senior in Agricultural Economics, Statesville, N. C.

MEDAL FOR EXCELLENCE IN ORATORY

Cary K. Watkins, Senior in Animal Production, Blanche, N. C.

DEGREES CONFERRED SEPTEMBER 1940

BACHELOR OF SCIENCE

IN AGRICULTURAL CHEMISTRY

Clarence Hardy Beery, Jr.	Wilmington

IN AGRICULTURAL ENGINEERING

Robert Thurston McNeely	Mooresville

IN ANIMAL PRODUCTION

Esley Hope Forbes, Jr.	Raleigh
John Henry Vanstory	Charles

IN FIELD CROPS AND PLANT BREEDING

Thomas Vance Hardison, II	Morven
James Lloyd Langdon	Selma

IN POMOLOGY

Clyde Miller Waugh	North Wilkesboro

IN SOILS

Zeno Herbert Ponder	Marshall

IN FORESTRY

**John Dillard Atkins, Jr.	High Point
Aby Woodson Simmons	Gulfport, Miss.
Raymond Stanley Swanson	North Belmont

BACHELOR OF CHEMICAL ENGINEERING

Edmund Culpepper Griffin	Monroe
Ralph Otis Williams	Granite Falls

BACHELOR OF CIVIL ENGINEERING, CONSTRUCTION OPTION

John Cavin Holbrooks	Albemarle

BACHELOR OF INDUSTRIAL ENGINEERING

Arthur Garfield Raymond	Raleigh

** High Honors.

BACHELOR OF MECHANICAL ENGINEERING

John Howell Kennedy	Waynesville
Urho Vaino Tommola	Brooklyn, N. Y.
Sam Whitfield Turner	Washington, D. C.

BACHELOR OF MECHANICAL ENGINEERING, AERONAUTICAL OPTION

John Herbert Posten	Atlantic Highlands, N. J.

IN AGRICULTURAL EDUCATION

*Charles Lemuel Batten	Micro
Johnnie James Bridges	Shelby
Willard Bryan Hill	Winterville
George Henry Jordan, Jr.	Cary
Paul Harrington Wetmore	Woodleaf

IN TEXTILE CHEMISTRY AND DYEING

Thomas Edwin Hastings	Camden
**Ernesto Santos y Ventura	Pasay Rizal, P. I.

IN TEXTILE MANAGEMENT

Elmer Jack Bendigo	Greensboro
Wilborn Burroughs Coward	Rocky Mount
John Edward Wayant	Asheville

IN TEXTILE MANUFACTURING

John Milton Foster	Raleigh
Joe Cross Ruark	Southport

IN WEAVING AND DESIGNING

David Lawson McCollum	Wentworth
William James Middleton, Jr.	Raleigh

---

* Honors.
** High Honors.

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING OF THE UNIVERSITY OF NORTH CAROLINA

DEDICATION OF TEXTILE BUILDING

Tuesday, March 5, 1940

Eleven o'Clock, A.M.

MASTER OF CEREMONIES:

COL. J. W. HARRELSON, *Dean of Administration,*
North Carolina State College.

INVOCATION:

REVEREND HOWARD M. MCLAMB, *Pastor,*
Fairmont Methodist Church.

ADDRESS OF WELCOME:

DR. THOMAS NELSON, *Dean of Textile School,*
North Carolina State College.

PRESENTATION OF BUILDING:

Representative of Federal Works Agency.

ACCEPTANCE OF BUILDING:

MR. G. MAURICE HILL, *Assistant Business Manager,*
The University of North Carolina.

DEDICATORY ADDRESS:

JUSTICE HERIOT CLARKSON,
Supreme Court of North Carolina.

GREETINGS FROM TEXTILE MANUFACTURERS:

HUNTER MARSHALL, *Secretary,*
North Carolina Cotton Manufacturers' Association.

BENEDICTION:

REVEREND HOWARD M. MCLAMB, *Pastor,*
Fairmont Methodist Church.

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING OF THE UNIVERSITY OF NORTH CAROLINA

DEDICATION OF WITHERS HALL

Tuesday, March 5, 1940

Ten o'Clock, A.M.

MASTER OF CEREMONIES:

COL. J. W. HARRELSON, *Dean of Administration,*
North Carolina State College.

INVOCATION:

REV. LEE C. SHEPHERD, *Pastor,*
Pullen Memorial Baptist Church.

ADDRESS OF WELCOME:

DR. A. J. WILSON, *Head of Department of Chemistry,*
North Carolina State College.

PRESENTATION OF BUILDING:

Representative of Federal Works Agency.

GREETINGS FROM COLLEGES AND UNIVERSITIES OF NORTH CAROLINA:

PROFESSOR PAUL GROSS, *Professor of Chemistry,*
Duke University.

DEDICATORY ADDRESS:

DR. RALPH W. BOST, *Head of Chemistry Department,*
University of North Carolina.

BENEDICTION:

REV. LEE C. SHEPHERD, *Pastor,*
Pullen Memorial Baptist Church.

INDEX

DIRECTORY

FACULTY AND STUDENTS

OF

NORTH CAROLINA STATE COLLEGE OF

AGRICULTURE AND ENGINEERING

OF THE

UNIVERSITY OF NORTH CAROLINA

1940-1941

State College Station

Raleigh

OFFICERS OF ADMINISTRATION

FOR THE SCHOOL YEAR 1940-1941

Dean of Administration	Colonel J. W. Harrelson
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W. F. Morris, Chairman
J. P. Pillsbury, Secretary
J. W. Goodman
W. H. Hoffman
B. R. Van Leer

DORMITORY TELEPHONES

Location	*2-2853 Extension*
4th	6
5th	7
6th	8
7th, 1st floor	9
7th, 2nd floor	10
7th, 3rd floor	11
8th, 1st floor	12
8th, 2nd floor	13
8th, 3rd floor	14
9th	15
10th	16
1911	23
A, 1st floor	17
A, 2nd floor	18
A, 3rd floor	19
C, 1st floor	20
C, 2nd floor	21
C, 3rd floor	22
South, 1st floor	1
South, 2nd floor	2
South, 3rd floor	3
Watauga, 1st floor	4
Watauga, 3rd floor	5
Mayton, R. L.	24
Mayton, R. L. (Night Number)	2-2858

Operating Schedule:

Monday through Friday: 12 Noon to 11 p. m.

Saturday and Sunday: 12 Noon to 4:00 p. m.; and 6:00 to 10:00 p. m.

Incoming Calls:

Dial 2-2853. When operator answers, the extension or floor and dormitory should be given.

Inter-Dormitory Calls:

Give operator dormitory and floor desired.

Note: The dormitory switchboard is separate from the regular College board. To call from a College extension it will be necessary to dial Outside 2-2853.

DORMITORY ASSISTANTS

1940-1941

R. L. MAYTON, Chief Assistant

107 Ninth Dormitory

Name of Counselor	*Room*
Clevenger, W. L.	208 4th
Regan, P. R.	201 5th
Durham, E. E.	201 6th
Kaufman, Samuel	111 7th
Tinga, Jacob	125 7th
Clay, M. J.	211 7th
Barnes, L. R.	225 7th
Bell, H. B.	211 7th
Bryant, E. L.	325 7th
Sevier, J. R.	9 8th
Phillips, K. L.	23 8th
Denton, E. C.	109 8th
Thompson, W. F.	126 8th
Smith, Ray	209 8th
Taylor, P. H.	226 8th
Wommack, K. L.	309 8th
Stroup, H. W.	326 8th
Bryant, W. E.	206 9th
Thomas, H. H.	306 9th
Reams, W. J.	109 10th
Young, E. O.	240 1911
Gaskins, J. D.	340 1911
Bartlett, G. W.	117 "A"
Riddick, R. G.	217 "A"
Bowles, W. F.	317 "A"
Cameron, H. C.	117 "C"
Ireland, C. F.	217 "C"
Ferree, H. G., Jr.	317 "C"
Jackson, C. M.	22 South
Lee, N. K., Jr.	116 South
Sedberry, G. R.	216 South
Carey, R. E.	316 South
Johnson, T. C.	103 Watauga
Trevathan, L. B.	203 Watauga
Rowland, W. T.	303 Watauga

COLLEGE TELEPHONES

Agriculturist	2-3370
Agromeck	9909
Dining Hall	2-0243
Fieldhouse	6934
Infirmary	7615
Southern Engineer	2-3370
Student Government	8738
Technician	4732
Wataugan	2-3370
Y. M. C. A.	7184

FRATERNITY ROSTER

1940-1941

Organization		*Address*	*Telephone*
Alpha Gamma Rho	(Nat'l)	2008 Hillsboro Street	2-1137
Alpha Kappa Pi	(Nat'l)	6 Ferndell Lane	4035
Alpha Lambda Tau	(Nat'l)	10 Enterprise Street	7016
Delta Sigma Phi	(Nat'l)	2004 Hillsboro Street	2-1873
Kappa Alpha	(Nat'l)	2405 Clark Ave.	2-0737
Kappa Sigma	(Nat'l)	21 Enterprise Street	2-0232
Lambda Chi Alpha	(Nat'l)	2407 Clark Avenue	8218
Phi Kappa Tau	(Nat'l)	104 Logan Court	7422
Pi Kappa Alpha	(Nat'l)	4 Ferndell Lane	5022
Pi Kappa Phi	(Nat'l)	1720 Hillsboro Street	4215
Sigma Alpha Mu	(Nat'l)	2304 Clark Avenue	7638
Sigma Nu	(Nat'l)	1301 Hillsboro Street	2-1972
Sigma Phi Epsilon	(Nat'l)	103 Chamberlain Street	4843
Sigma Pi	(Nat'l)	2513 Clark Avenue	2-0268

FACULTY DIRECTORY

1940-1941

*Adams, A. H. Clerk, Central Stores, Warehouse Building. Extension 272.
Residence: Clayton, N. C. Telephone 2751.

Adams, Hazel C. Clerk & Stenographer, Department of Horticulture, 304 Polk Hall. Extension 275.
Residence: 2602 Clark Ave. Telephone 8221.

*Adams, W. E. Instructor, Mechanical Engineering Department. 207 Page Hall. Extension 247.
Residence: 10 E. Dixie Drive. Telephone 2-1393.

Agricultural Adjustment Administration—West Dining Hall. Telephone 2-0544.
*E. Y. Floyd, State Executive Officer, In Charge.

Allen, Mrs. Leata—Stenographer, Agricultural Extension Service. 303, 1911. Extension 291.
Residence: 4½ Rosemary St. Telephone 9635.

Alston, W. F.—Teaching Fellow, Botany Department. 215 Winston Hall. Extension 267.
Residence: 406 Brooks Ave. Telephone 4802.

*Altman, L. B.—District Agent, Agricultural Extension. 103 Ricks Hall. Extension 212.
Residence: 1210 Cowper Drive. Telephone 2-3204.

*Anderson, D. B.—Professor of Botany, Botany Department. 212 Winston Hall. Extension 267.
Residence: 906 Brooks Ave. Telephone 2-3061.

Andrews, B. G. Field Agent, Agricultural Economics and Rural Sociology Department. 115, 1911. Extension 308.
Residence: 202 Groveland Ave. Telephone 5447.

Arant, Anamerle District Agent. Home Demonstration Division, Agricultural Extension. 201, 1911. Extension 285.
Residence: O 7 Raleigh Apts. Telephone 4076.

Arey, J. A. In Charge Office of Dairy Extension, Dairy Extension, 118 Polk Hall. Extension 277.
Residence: 5 Maiden Lane. Telephone 2-3535.

*Armstrong, L. O.—Assoc. Prof., Division of Teacher Training. 117 Tompkins Hall. Extension 256.
Residence: 400 Dixie Trail. Telephone 2 0063.

*Atkins, Mrs Rupert E.—Stenographer, Extension Marketing. 124, 1911. Extension 306.
Residence: Eton Road. Telephone.

*Atkins, S. W. Associate Agricultural Economist, Agricultural Economics. 107, 1911. Extension 309.
Residence: 1312 Filmore St. Telephone 4783.

Aycock, Robert—Research Fellow, Botany Department. 204 Winston Hall. Extension 267.
Residence: 106 Horne St. Telephone 2-1887.

Babcock, W. F. Instructor, Civil Engineering Department. 209 Civil Engineering Building. Extension 303.
Residence: 1702 Hillsboro St. Telephone 6825.

*Badders, Hal—Power Plant, Assistant Supt. Extension 234.
Residence: 2402 Everett Ave. Telephone 6814.

Bailey, Janie R.—Secretary, Mechanical Engineering Department, 109 Page Building. Extension 246.
Residence: 11 Maiden Lane. Telephone 8472.

*Bain, W. A.—Assistant Professor, Chemical Engineering Department. 107 Winston Hall. Extension 301.
Residence: U-7 Raleigh Apts. Telephone 2-0010.

*Baker, Mrs. Allen L.—P. B. X. Operator, 117 Winston Hall. Extension "O."
Residence: 518 N. Bloodworth St. Telephone 4143.

*Ballenger, Stanley T.—Ass't Prof., Modern Languages. 205 Peele Hall. Extension 231.
Residence: Rosedale Ave. Telephone 9570.

Ballentine, J. B. Fellow in Agronomy. 6 Withers Hall. Extension 209.
Residence: 105 Fourth Dormitory. Telephone 2-2853.

*Barker, W. J. Assistant Forester, Extension Forestry. 307 Ricks Hall. Extension 270.
Residence: 125 Chamberlain St. Telephone 2-3885.

*Barnes, Mrs. Mamie L.—Warp Drawer, Textile School. 2nd floor, Textile Bldg. Extension 273.
Residence: 2220 Hillsboro St. Telephone 6058.

*Barnes, R. C.—Research Fellow, Zoology and Entomology Department. 4 Zoology Building. Extension 239.
Residence:

*Barnhardt, Luther Wesley Assistant Professor, History and Government. 102 Peele Hall. Extension 223.
Residence: 2502 Stafford Ave. Telephone 8796.

Bartlett, Grady W. Instructor, Physics Department. 108 Daniels Hall. Extension 229.
Residence: 117 "A" Dormitory, Box 5453.

*Bauerlein, George, Jr. Asst. Prof., History Department. 107 Peele Hall. Extension 223.
Residence: 310 Pogue St.

*Baumgarten, William L. Assistant Professor, Department of Architecture. 309 Daniels Hall. Extension 250.
Residence: 2509 Country Club Road. Telephone 7486.

*Baver, L. D.—Professor and Assoc. Director, Experiment Station. 118 Ricks Hall. Extension 262.
Residence: 1010 Vance St. Telephone 2 3741.

*Biggs, Mrs. V. L.—Memo. Operator, Agricultural Extension Service. 5 Ricks Hall. Extension 279.
Residence: Boylan Apts. C-103. Telephone 5689.

*Bishop, Mrs. L. W.—Office Secretary. Y. M. C. A. Department. First Floor Y. M. C. A. Bldg. Tel. 7184.
Residence: 2900 Hillsboro St. Telephone 2-0402.

Blair, E. C.—Extension Agronomist, Department of Agronomy. 204 Ricks Hall. Extension 294.
Residence: 125 Glenwood Ave. Telephone 2-1388.

Bledsoe, Miss E. B.—Stenographer, Electrical Engineering Department. 201 Electrical Engineering Bldg. Extension 236.
Residence: Brooks Ave. Telephone 2-0688.

Bledsoe, M. C. M.—Office Assistant & Stenographer, Animal Husbandry and Dairying. 115 Polk Hall. Extension 268.
Residence: Brooks Ave. Telephone 2-0688.

*Boshart, Edward W. Professor in Division of Teacher Training. 101 Tompkins Hall. Extension 258.
Residence: Cameron Court Apt. F-1-B. Telephone 2-2745.

*Bostian, C. H.—Assoc. Prof., Zoology and Entomology Department. 109 Zoology Building. Extension 239.
Residence: 902 Brooks Ave. Telephone 2 2469.

Bowen, A. F.—Treasurer. Business Office. 112 Holladay Hall. Extension 298.
Residence: 20 Ferndell Lane. Telephone 5334.

Brady, Hilda Agricultural Extension Artist. 23 Ricks Hall. Extension 254.
Residence: 201 Chamberlain St. Telephone 2-1143.

*Bragg, F. C. Instructor, Mechanical Engineering Department. 207 Page Hall. Extension 247.
Residence: 1615 Hillsboro St. Telephone 7502.

Bramer, Charles Raymond Assoc. Professor of Structural Engr., Civil Engineering Dept. 209 Civil Engineering. Extension 303.
Residence: Apt. B-6, Raleigh Apts. Telephone 6567.

*Brickhouse, C. M.—District Agent. Agricultural Extension, 101 Ricks Hall. Extension 212.
Residence: 2807 White Oak Rd. Telephone 9585.

*Bridges, W. S. Asst. Prof., Mechanical Engineering Department. 107 Page Hall. Extension 246.
Residence: 125 Chamberlain St. Telephone 4159.

*Briggs, Hermon B.—Professor, Mechanical Engineering Department. 206 Page Hall. Extension 247.
Residence: 1625 St. Mary's St. Telephone 2-1030.

*Brigman. Mrs. H .P. Statistical Clerk, Agricultural Economics. 110. 1911. Extension 309.
Residence: 213 N. Bloodworth St. Telephone 5940.

*Brigman. H. P. Clerk, Poultry Department. 214 Ricks Hall. Extension 280.
Residence: 213 N. Bloodworth St. Telephone 5940.

Britt. Ruth Parham Clerk & Stenographer, Business Office. 109 Holladay Hall. Extension 278.
Residence: H-4 Grosvenor Apt. Telephone 7093.

*Brooks. Mrs. C. C. Night Nurse. Infirmary. Hospital Building. Telephone 7615.
Residence: 1306 Mordecai Drive. Telephone 2 1169.

*Brooks. Dr. E. C. President, Emeritus.
Residence: Sir Walter Hotel. Telephone 7711.

Brooks. Sallie Assistant Extension Nutritionist, Agricultural Extension, Division of Home Demonstration Work. 218. 1911. Extension 242.
Residence: Sec. B Apt. 102 Boylan Apartments. Telephone 9535.

Brooks. Virginia Dormitory P. B. X. Operator. Y. M. C. A. Bldg. Telephone 2-2853.
Residence: 1306 Mordecai Drive. Telephone 2-1169.

*Brown, B. F. Dean, Basic Division of the College. 101 Poole Hall. Extension 223.
Residence: 801 N. Bloodworth St. Telephone 2-0382.

Brown, E. B.—Fellow in Agronomy. 315 Ricks Hall. Extension 262.
Residence: 1715 Park Drive. Telephone 6151.

Brown, Frank B., Jr. Teaching Fellow, Physics Department. 208 Daniels Hall. Extension 229.
Residence: 2100 Hillsboro St. Telephone 7471.

*Brown, Harlan C.—Librarian, D. H. Hill Library. Extension 259.
Residence: 2100 Hillsboro St. Telephone 5985.

*Brown, Robert R. Assoc. Prof. in Electrical Engineering. 104 Daniels Hall. Extension 235.
Residence: 1520 Carr St. Telephone 8924.

*Brown, T. C.—Instructor, Mechanical Engineering Department. 204 Page Hall. Extension 247.
Residence: 910 Canterbury Road. Telephone 2-3277.

*Brown, T. T.—Extension Poultryman. Poultry Department. 210 Ricks Hall. Extension 294.
Residence: 1709 Bickett Blvd. Telephone 9731.

*Brown, Thomas W.—Colonel, Infantry, Professor of Military Science and Tactics (PMS&T), Room 1-A, Holladay Hall (Basement). Extension 233.
Residence: 115 Hawthorne Rd. Telephone 2-3507.

*Browne, Thomas Everett—Director, Division of Teacher Training. 120 Tompkins Hall. Extension 256.
Residence: 1715 Park Drive. Telephone 6151.

*Browne, Wm. Hand, Jr.—Professor & Head of Dept., Electrical Engineering, 203 Daniels Hall. Extension 236.
Residence: 408 Dixie Trail. Telephone 5201.

Bryan, Rose Elwood—Home Agent at Large, Home Demonstration Division, Agricultural Extension. 208, 1911. Extension 244.
Residence: Durham, N. C. Telephone F-9452.

*Buell, Murray F. Asst. Prof. of Botany, Botany Dept., 201 Winston Hall. Extension 267.
Residence: 911 Brooks Ave. Telephone 2-2112.

*Bullard, A. G. Teaching Fellow, Division of Teacher Training. 105 Tompkins Hall. Extension 256.
Residence: 305 Fourth Dormitory. Telephone.

Bullock, Roberts Cozart Associate Professor, Mathematics Department. 218 Tompkins Hall. Extension 228.
Residence: 402 Horne St. Telephone 7127.

Bunkley, Joseph Fellow in Agronomy. 119 Ricks Hall. Extension 262.
Residence: 1806 Hillsboro St. Telephone 2-2565.

Bunn, Charles I.—Research Fellow in Game Management. Zoology and Entomology Department. 203-A Zoology Bldg. Extension 261.
Residence: 104 Fourth Dormitory, Box 3114. Telephone 2-2853.

Bunn, J. C.—Instructor, Mathematics Department. 209 Tompkins Hall. Extension 226.
Residence: 222 Hillcrest Road. Telephone 2-1290.

Burke, Maude—Typist, Purchasing Office. Holladay Hall. Extension 230.
Residence: 2506 Clark Ave. Telephone 4395.

*Burkhart, Leland F.—Assistant Agronomist. 6 Withers Hall. Extension 209.
Residence: 308 Forest Road. Telephone 6278.

Burnette, W. T.—Teaching Fellow, Agricultural Chemistry. 302-A Withers Hall. Extension 297.
Residence: 4th Dormitory. Telephone 2-2853.

Cameron, Kenneth Walter Instructor in English. 7 Pullen Hall. Extension 237.
Residence: 117 Cox Ave. Telephone 6496.

*Campbell, Alton Cook—College Physician, College Infirmary. Telephone 7615.
Residence: 302 Hawthorne Road. Telephone 6849.

*Cantrell, Clyde H.—Circulation Librarian, D. H. Hill Library. Extension 259.
Residence: 125 Brooks Ave. Telephone 4138.

Carroll, C. N.—Custodian of Gym and Athletic Equipment. Gymnasium. Extension 218.
Residence: 1000 West Cabarrus St.

Carroll, K. G. Instructor, Physics Department. 208 Daniels Hall. Extension 229.
Residence: 2 Logan Court. Telephone 2-2673.

Carter, Mary Evelyn—Stenographer, Dept. of Horticulture and Dept. of Cotton Fiber Investigations. 304 Polk Hall. Extension 275.
Residence: 305 S. Person St. Telephone 2-3305.

*Case, L. I.—Animal Husbandry Extension Department. 203 Polk Hall. Extension 269.
Residence: 1425½ Park Drive. Telephone 2-0198.

*Cell, John W. Assoc. Prof., Mathematics Department. 218 Tompkins Hall. Extension 228.
Residence: 602 Dixie Trail. Telephone 2-2528.

Chadbourn C. C.—Instructor in English. Pullen 4. Extension 237.
Residence: 1214 College Place. Telephone 5728.

Chambers, C. L.—Manager, Book Dept., Students Supply Store. Y.M.C.A. Bldg. Extension 225 and Tel. 2-3674.
Residence: 2202 Hillsboro St. Telephone 4509.

Chapman, W. H.—Asst. Agronomist, Agronomy Department. 119 Ricks Hall. Extension 262.
Residence: 6 Enterprise St. Telephone 4788.

Clapp, Byron S.—1st Lieut., Inf-Res., Assistant Professor of Military Science and Tactics (Asst. PMS&T), Room 4, Holladay Hall (Basement). Extension 233.
Residence: 1908 Park Drive. Telephone 2-3257.

*Clark, Joseph D. Professor, English Dept. 106 Pullen Hall. Extension 237.
Residence: 15 Furches, Wilmont. Telephone 7385.

*Clark, J. F. Dray Clerk, Service Department. Warehouse. Extension 272.
Residence: 415½ Cary St.

*Clarkson, John Montgomery—Assoc. Prof. Mathematics Department. 206 Tompkins Hall. Extension 226.
Residence: 2705 Barmettler St. Telephone 8762.

*Clement, S. L.—Assoc. Prof. Agricultural Economics. 116, 1911. Extension 262.
Residence: 2601 Vanderbilt Ave. Telephone 6836.

Clement, W. B.—Instructor, Mechanical Engineering Department. 207 Page Hall. Extension 247.
Residence: Field House (Temporary).

*Clevenger, C. B. Professor of Soils, Agronomy Department. 310 Withers Hall. Extension 222.
Residence: 305 Calvin Rd. Telephone 8141.

*Clevenger, Reba Davis (Mrs.) Reference Librarian, D. H. Hill Library. Extension 259.
Residence: 305 Calvin Rd. Telephone 8141.

Clevenger, W. L.—Professor, Animal Husbandry & Dairying. 211 Polk Hall. Extension 276.
Residence: 208 4th.

*Cloyd, E. L. Dean of Students, Administration Department. 101 Holladay Hall. Extension 215.
Residence: 2224 Hillsboro St. Telephone 5983.

*Cochran, Walter B. Major, Infantry, Assistant Professor of Military Science and Tactics (Asst. PMS&T), Room 12, Holladay Hall (Basement), Extension 233.
Residence: 2530 White Oak Rd. Telephone 2-1520.

*Coffey, Mrs. Thelma W. Secretary to R. W. Shoffner, Agricultural Extension Service. 306-1911. Extension 291.
Residence: 304 Duncan St. Telephone 4918.

Coggin, James Kirk Assoc. Prof., Division of Teacher Training. 104 Tompkins Hall. Extension 257.
Residence: Cary. Telephone 2482.

Cole, Mary Stenographer. Ediphone Room. 213, 1911. Extension 221.
Residence: 2608 Clark Ave. Telephone 8772.

Coleman, Robert F.—Teaching Fellow, Civil Engineering Department. 207 Civil Engineering Building. Extension 303.
Residence: 205 Fourth Dormitory. Telephone 2 2853.

Collins, Emerson R. Agronomist, Agronomy Department. 116 Ricks Hall. Extension 262.
Residence: 2717 Rosedale. Telephone 9715.

Colvin, David Teaching Fellow, Chemistry Department. 19 Withers Hall. Extension 265.
Residence: 2304 Clark Ave. Telephone 7638.

Conley, Mabel C. (Miss)—Secretary, Division of Forestry. 301 Ricks Hall. Extension 270.
Residence: 2303½ Clark Ave. Telephone 8433.

Conner, Norval White—Assoc. Prof., Engineering Mechanics Dept. 101 C. E. Building. Extension 303.
Residence: 2719 Bedford Ave. Telephone 4924.

Cook, F. W.—Instructor, Research worker, Poultry Dept. 213 Ricks Hall. Extension 280.
Residence: 118 Hawthorne Rd. Telephone 2 0880.

Cooke, Henry C.—Instructor, Mathematics Department. 221 Tompkins Hall. Extension 228.
Residence: Raleigh Y.M.C.A.

Cook, Leon E.—Professor of Education, Division of Teacher Training. 118 Tompkins Hall. Extension 256.
Residence: 111 Brooks Ave. Telephone 2-1234.

*Cope, Ralph L.—Instructor in Forge, Department of Mechanical Engineering. Shop. Extension 245.
Residence: 2 Logan Court. Telephone 2-2673.

Cox, Gladys—Secretary, Office of the Dean of Students. Administration Department. 101 Holladay Hall. Extension 215.
Residence: 220 N. East St. Telephone 2-2533.

Cox, Miss Mabel Cashier, Boarding Department. Dining Hall Bldg. Telephone 2-0243.
Residence: 120 Groveland Ave.

*Cox, Paul M.—Machinist, Yarn Mfg. Dept., Textile School. 3rd floor Textile Building. Extension 287.
Residence. 13 W. Dixie Drive.

Cox, Sidney Research Fellow, Botany Department. 212 Withers Hall. Extension 267.
Residence: 2409 Stafford. Telephone 9659.

Crawford, J. W.—Asst. Ext. Leader in Land-Use Planning. 316, 1911. Extension 292.
Residence: 1317 Mordecai Drive. Telephone 5050.

Crawley, W. P.—Instructor in Weaving & Designing. Second floor, Textile Building. Extension 273.
Residence: 16 Enterprise St. Telephone 2-2247.

Creech, W. P.—Cashier and Assistant Superintendent of the Laundry. Dining Hall Building. Extension 283.
Residence: Clayton, N. C. Telephone 2306.

*Criswell, Jack Fowler—Ext. Leader in Land Use Planning. 309-1911. Extension 292.
Residence: 1004 Cowper Drive. Telephone 2-2340.

*Crowder, W. G.—Ass't at Poultry Plant, Poultry Department. Poultry Plant. Telephone 8686.
Residence: Poultry Plant.

*Culberson, Geo. R. Instructor in Yarn Mfg., Textile School. 3rd Floor Textile Bldg. Extension 287.
Residence: 219 Oberlin Road. Telephone 7987.

Current, Miss Ruth—State Agent, Home Demonstration Division, Agricultural Extension. 206 1911. Extension 244.
Residence: S-5 Raleigh Apt. Telephone 6169.

*Davis, Mrs. Gertrude S. Secretary, Textile School. 1st floor Textile Bldg. Extension 273.
Residence: 2230 Hillsboro St. Telephone 2-1565.

*Davis, Philip H. Instructor, English Department. 4 Pullen Hall. Extension 237.
Residence: V-9 Raleigh Apts. Telephone 4827.

Deakyne, C. O. Fellow in Agronomy. 5 Withers Hall. Extension 209.
Residence: 106 Fourth Dormitory. Telephone 2-2853.

*Dearstyne, Roy Styring Professor, Poultry Department. 216 Ricks Hall. Extension 280.
Residence: 2509 Fairview Road. Telephone 2-2764.

*Derieux, John B. Professor, Physics Department. 110 Daniels Hall. Extension 229.
Residence: 2802 Hillsboro St. Telephone 2 0916.

Deyton, Oscar W.—Research Fellow in Animal Husbandry. 216 Polk Hall. Extension 276.
Residence: 108 Fourth Dormitory. Telephone 2 2853.

*Doak, Charles Glenn Asst. Prof. of Physical Education. 1 Gym. Extension 218.
Residence: 120 Woodburn Road. Telephone 2-3701.

*Doody, T. C. Instructor, Chemical Engineering Department. 105 Winston Hall. Extension 301.
Residence: 12½ Enterprise St. Telephone 5884.

Doub, Miss Miriam Stenographer, Ediphone Room, Agricultural Extension Service. 214-1911. Extension 221.
Residence: 3016 White Oak Road. Telephone 6790.

Douglass, Dolly—Secretary, Aeronautical Engineering Department. 105 Page Hall. Extension 248.
Residence: 1924 St. Mary's St. Telephone 2-1615.

Drum, L. F.—Teaching Fellow, Chemical Engineering Department. 6 Winston Hall. Extension 301.
Residence: 101 Fourth Dormitory, Box 3111.

Dudley, Miss Inez S.—Stenographer, Extension Forestry Dept., Ag. Extension Service. 307 Ricks Hall. Ext. 270.
Residence: 1218 Glenwood Ave. Telephone 8898.

*Ellis, Don E.—Extension and Assistant Plant Pathologist, Botany Department, 202 Winston Hall. Extension 267.
Residence: Apt. D-302, Boylan Apt., Telephone 2-2239.

*Ellis, Howard M.—Extension Agricultural Engineer, Extension Agricultural Engineering. 318 Ricks Hall. Extension 274.
Residence: 2706 Hazelwood Drive. Telephone 5887.

*Etchells, John L. Assistant Bacteriologist, U.S.D.A., Food Research Division, Dept. of Hort. 312 Polk Hall. Extension 275.
Residence: F-7 Raleigh Apts. Telephone 6740.

Evans, M. M. Technical Assistant. Botany Dept. 212 Withers Hall. Extension 267.
Residence: Cary, N. C.

Farm Security Administration Patterson Hall. Telephone 2 811.
*H. H. Gordon, Director, In Charge.

*Farnham, F. R.—Extension Dairyman, Dairy Extension. 113 Polk Hall. Extension 277.
Residence: Charlotte, N. C. & State Col. Sta.

Farrior, Julian Fellow in Agronomy. 119 Ricks Hall. Extension 262.
Residence: 2316 Hillsboro St. Telephone 6709.

*Feltner, Charles E.—Asst. Prof., Engr. Mechs. 204 C. E. Bldg. Extension 303.
Residence: 901 Canterbury Road. Telephone 6756.

*Ferguson, B. Troy District Agent. Agricultural Extension. 103 Ricks Hall. Extension 212.
Residence: 2807 White Oak Road. Telephone 2-0617.

*Ferguson, J. C.—Extension Cotton Gin Specialist, Extension Agr. Engr. Dept. 316 Ricks Hall. Extension 274.
Residence: Dixie Trail Extension. Telephone 5888.

*Fisher, H. A.—Professor. Mathematics Department. 201 Tompkins Hall. Extension 227.
Residence: 125 Brooks Ave. Telephone 4138.

Fleming, Margaret K.—Statistician, Agricultural Economics. 122-1911. Extension 262.
Residence: 2608 Clark Ave. Telephone 8772.

*Floyd, E. Y.—Tobacco Specialist, Extension Service, and State Executive Officer, Triple-A. Dining Hall Bldg. Telephone 2-0544 and 2 0545.
Residence: 125 Glenwood Ave. Telephone 2-1388.

*Fontaine, James Ass't Professor. Civil Engineering Department. 202 Civil Engineering Bldg. Extension 303.
Residence: 2712 Everett Ave. Telephone 2 0773.

*Forbes, E. H.—Foreman, Animal Husbandry Farm. 215 Polk Hall. Extension 276.
Residence: Western Blvd. Telephone M. C. Grant's—9927.

*Fornes, Gaston G.—Asst. Prof., Mechanical Engineering Department. 104 Page Hall. Extension 246.
Residence: Knightdale, N. C.

*Forster, G. W.—Head of Department, Agricultural Economics & Rural Sociology. 118-1911. Extension 308.
Residence: 1924 Sunset Drive. Telephone 2-1361.

Fort, Nellie—Secretary and Clerk, Animal Husbandry. 215 Polk Hall. Extension 276.
Residence: 315 N. Boundary St. Telephone 6108.

*Foster, John Erwin—Assoc. in Animal Husbandry Research. 218 Polk Hall. Extension 276.
Residence: Rosedale Ave. Telephone 9881.

*Fountain, Alvin M.—Asso. Prof., English Department. 101 Pullen Hall. Extension 237.
Residence: 211 Groveland Ave. Telephone 6347.

*Fouraker, R. S.—Prof., Electrical Engineering Department. 102 Daniels Hall. Extension 235.
Residence: 601 Brooks Ave. Telephone 6347.

Fox, John W. Assistant Extension Editor. School of Agriculture. Extension 279.
Residence: 113 Chamberlain St. Telephone 2-1381.

Franks, Ross M.—Assistant Steward, Boarding Department, Dining Hall Bldg. Telephone 2-0243.
Residence: Cafeteria Bldg. Telephone 2-0243.

Fulghum, James S., Jr.—Cashier, Business Office. 109 Holladay Hall. Extension 278.
Residence: 1208 Brooks. Telephone.

Fulton, B. B.—Research Entomologist. Zoology and Entomology Department. 208 Zoology Building. Extension 261.
Residence: 600 Brooks Ave. Telephone 2-1868.

Gantt, Miss Elizabeth—Stenographer, Poultry Extension Office. 208 Ricks Hall. Extension 294.
Residence: 402 Horne St. Telephone 2-3179.

Gardner, M. E.—Prof. & Head of Department of Horticulture. 304 Polk Hall. Extension 275.
Residence 2708 Bedford Ave. Telephone 4178.

Garodnick, Irvin O.—Instructor, Modern Language Department. 205 Peele Hall. Extension 231.
Residence: 6 Kirby St. Telephone 5159.

Garrett, E. B. State Coordinator, Soil Conservation Service. 205 Polk Hall. Telephone 4832.
Residence: 223 Hawthorne Road. Telephone 4328.

Garriss, H. R.—Extension Plant Pathologist, Botany Department. 202 Withers Hall. Extension 267.
Residence: 2305 Clark Ave. Telephone 4594.

Gauger, H. C.—Ass't Professor and Disease Research, Poultry Department. 218 Ricks Hall. Extension 280.
Residence: 101½ Chamberlain St. Telephone 2-3020.

Gauger, Mrs. H. G. Stenographer, Ediphone Room. 213, 1911. Extension 221.
Residence: 101½ Chamberlain St. Telephone 2 3020.

Gelbart, A.—Instructor, Mathematics Department. 206 Tompkins Hall. Extension 226.
Residence: 222 Hillcrest Road. Telephone 2-1290.

Gibert, James—Fellow in Agronomy. 113 Ricks Hall. Extension 262.
Residence: 103 Fourth Dormitory. Telephone 2-2853.

Gibson, Harvey T.—Instructor in English, Department of English. 8 Pullen Hall. Extension 237.
Residence: Cameron Park Apts. Telephone 5597.

Gibson, Paul—Assistant Agronomist, Agronomy Department. 114 Ricks Hall. Extension 262.
Residence: Boone, N. C.

Gibson, R. M. Fellow in Agronomy. 318-1911. Extension 262.
Residence: 107 Fourth Dormitory, Box 3120.

Gilbert, Clara L.—Stenographer, Agricultural Economics & Rural Sociology. 117-1911. Extension 308.
Residence: 17 Dixie Trail. Telephone 5933.

Giles, G. Wallace—Asst. Professor, Agricultural Engineering Agronomy. 314 Ricks Hall. Extension 274.
Residence: 304 Horne St. Telephone 2-2988.

Gillenwater, G. A.—Teaching Fellow, Engineering Mechanics. 101 C. E. Building. Extension 303.
Residence: 2228 Hillsboro St. Telephone 4924.

Gilmore, J. F. Teaching Fellow, Engineering Mechanics. 101 C. E. Building. Extension 303.
Residence: 102 Fourth Dormitory, Box 3112.

*Glass, G. G. Clerk, Students Supply Store, Y.M.C.A. Bldg. Extension 225 and Telephone 2-3674.
Residence: 807 E. Edenton St. Telephone 9639.

*Glenn, Karl B.—Ass't Prof., Electrical Engineering Department. 104 Daniels Hall. Extension 235.
Residence: 309 N. Bloodworth St. Telephone 2-1207.

*Godwin, W. L. Superintendent of Laundry. Dining Hall Building. Extension 283.
Residence: 11 Dixie Trail.

*Goodman, John W.—Assistant Director of Agricultural Extension, Agricultural Extension Service. 104 Ricks Hall. Extension 213.
Residence: 2113 Woodland Ave. Telephone 2 2079.

*Gordon, H. H. Director, In Charge Farm Security Administration. Patterson Hall. Telephone 2-2811.
Residence: 408 E. Franklin St. Telephone 5938.

Gordon, Miss Pauline E. Extension Specialist in Home Management, Home Demonstration Division, Agr. Extension. 221-1911. Extension 242.
Residence: 821 Holt Drive. Telephone 8430.

*Grady, Robert H. Research Fellow, Civil Engineering Department. 208 C. E. Building. Extension 303.
Residence: Colonial Road. Telephone 5422.

*Graeber, R. W. Extension Forester. Extension Forestry Department. 307 Ricks Hall. Extension 270.
Residence: 303 Hillcrest Road. Telephone 8126.

*Grant, M. C. College Plumber, Service Dept. & Central Stores. Warehouse. Extension 272.
Residence: College Campus. Telephone 9927.

Greaves, Richard Elliott Assistant Professor and Disease Research. 317 Ricks Hall. Extension 280.
Residence: 2512 Clark Ave. Telephone 2 0019.

*Greaves-Walker, Arthur Frederick — Professor, Ceramic Engineering. Ceramic Building. Extension 249.
Residence: 305 Forest Road. Telephone 6264.

Green, Miss Bebe Stenographer. Agricultural Extension Service. 208 Ricks Hall. Extension 294.
Residence: 130 Woodburn Road. Telephone 4815.

Green, J. W. Asst. Ext. Leader in Land-Use Planning. 315, 1911. Extension 292.
Residence: 10 Dixie Trail. Telephone 2 2314.

Greene, Miss Minda Stenographer, Basic Division of the College. 101 Peele Hall. Extension 223.
Residence: 2303 Clark Ave. Telephone 8083.

*Green, R. W. Assoc. Prof., Economics. 113 Peele Hall. Extension 223.
Residence: "The Willows," White Oak Road. Telephone 8460.

*Greene, R. E. L.—Assoc. Agr. Economist. Agr. Econ. Department. Extension 309.
Residence: 112 Montgomery St. Telephone 8700.

*Grimshaw, Albert H. Prof., Textile Chemistry and Dyeing. Basement Textile Building. Extension 288.
Residence: Mansion Park Hotel. Telephone 7541.

*Grinnells, C. D. In Charge Office of Dairy Investigations. Animal Husbandry Department. 214 Polk Hall. Extension 305.
Residence: 409 Dixie Trail. Telephone 2-1305.

*Groseclose, F. F.—Professor, Industrial Engineering Department. 130 1911. Extension 208.
Residence: 1011 West Peace St. Telephone 7287.

Gull, Dake Periodicals Librarian, D. H. Hill Library. Extension 259.
Residence: 3207 Hillsboro St. Telephone 5772.

*Haig, Frederick Morgan Prof., Animal Husbandry & Dairying Dept. 114 Polk Hall. Extension 268.
Residence: 1803 Fairview Road. Telephone 2 0217.

*Halverson, J. O. In Charge of Animal Nutrition Research, Agricultural Exp. Station, Animal Husbandry Dept. 315 Polk Hall. Extension 241.
Residence: 2813 Mayview Road. Telephone 2-1488.

Hamaker, Miss Margaret—Secretary, Architectural Department. 315 Daniels Hall. Extension 250.
Residence: 2402 Clark Ave. Telephone 2-1830.

*Hamilton. C. Horace Head Dept. Rural Sociology. Extension 309.
Residence: 1535 Iredell Drive. Telephone 2 3383.

*Hamilton, Mrs. W. V. Laboratory and X-Ray Technician. Infirmary. Telephone 7615.
Residence: 6 Hope St. Telephone 8026.

Hand, Miss Douglas—Stenographer, Home Demonstration Division, Agricultural Extension. 203-1911. Extension 285.
Residence: B 102 Boylan Apt. Telephone 9535.

Harden, Katherine—Transcript Clerk, Registration Office. 208 Holladay Hall. Extension 219.
Residence: 1615 Hillsboro St. Telephone 7502.

Hargrove, Beale—Research Fellow in Agronomy. 111 Polk Hall. Extension 220.
Residence: 6 Enterprise St. Telephone 4788.

*Harkema, R. Assistant Professor, Zoology and Entomology Department. 202 Zoology Building. Extension 261.
Residence: 1700 Park Drive. Telephone 2 1857.

*Harrelson, John William Dean of Administration, Administration. 104 Holladay Hall. Extension 210.
Residence: 1903 Hillsboro St. Telephone 6810.

*Harrill, L. R. State 4-H Club Leader. Agr. Ext. Div. 201 Ricks Hall. Extension 214.
Residence: 1607 Iredell Drive. Telephone 7628.

Harrington, John W. Teaching Fellow in Geology. 2 Primrose Hall. Extension 304.
Residence: 302 Fourth Dormitory. Telephone 2 2853.

*Harris, John H. Extension Landscape Specialist. 302 Polk Hall. Extension 275.
Residence: 202 E. Park Drive. Telephone 2 0856.

Harris, Miss Katherine C.—Stenographer, Agronomy Department. 120 Ricks Hall. Extension 262.
Residence: 607 N. Blount Street. Telephone 4406.

Harris, Louis H. Steward, Boarding Department. Dining Hall. Telephone 2-0243.
Residence: Cafeteria Building. Telephone 2 0243.

*Harris, R. J. Ass't Director in Charge Central Station, Experiment Station. Western Boulevard.
Residence: Western Boulevard. Telephone 8901.

*Harrison, Thomas Perrin—Dean Emeritus. Editor of Official College Publications. 106 Peele Hall. Extension 223.
Residence: 1800 Park Drive. Telephone 2-0743.

*Hart, T. R.—Prof. of Weaving & Designing, Textile School. 1st floor Textile Bldg. Extension 273.
Residence: 501 W. Whitaker Mill Road. Telephone 2-1653.

Hartley, Lodwick C.—Professor and Head of the English Department. 102-104 Pullen Hall. Extension 237.
Residence: 205 Woodburn Road. Telephone 2-1698.

Harvard, V. (Miss)—Head Nurse. Infirmary. Hospital Bldg. Telephone 7615.
Residence: Infirmary. Telephone 7615.

*Harvey, Paul H. Associate Agronomist. 315 Ricks Hall. Extension 262.
Residence: 2706 Everett Ave. Telephone 2 0475.

*Hayes, Arthur C.—Instructor, Textile Chem. & Dye. Basement Textile Bldg. Extension 288.
Residence: 3008 Ruffin St.

Hayworth, M. S. Teaching Fellow, Civil Engineering Department. 208 C. E. Building. Extension 303.
Residence: 101 Fourth Dormitory. Telephone 2-2853.

*Heartt, Mrs. Charles Irvin—Secretary, College Extension Division. 201 Library. Extension 260.
Residence: 128 S. Dawson St. Telephone 4057.

Hebert, T. T. Research Fellow. Botany Department. 212 Withers Hall. Extension 267.
Residence: 106 Horne St. Telephone 2-1887.

*Heck, Chas. M.—Professor, Physics Department. 112 Daniels Hall. Extension 229.
Residence: 200 Hawthorne Road. Telephone 9829.

Henson, Mrs. Ruth S. Bookkeeper, Business Office. 109 Holladay Hall. Extension 298.
Residence: 301 Park Ave. Telephone 2 3997.

Herrick, L. W. Assistant at Turkey Plant.
Residence: 2804 Hillsboro St. Telephone 2-2654.

*Hickman, Herman Asst. Coach of Football and Head Coach of Track and Wrestling. Coaches' Office. Field House. Telephone 6934.
Residence: Fincastle Apts., No. 4. Telephone 2-2618.

*Hicks, W. N. Assoc. Professor, Ethics and Religion. 204 Peele Hall. Extension 231.
Residence: 2505 Vanderbilt Ave. Telephone 7750.

*Hildebrand, Mrs. Bruce A. Clerk, Basic Division of the College. 101 Peele Hall. Extension 223.
Residence: 113 Chamberlain St. Telephone 2-1381.

Hill, Miss Randolph—Stenographer. Agronomy Department. 120 Ricks Hall. Extension 262.
Residence: 2200 Hope St. Telephone 2-3466.

*Hilton, John T.—Professor of Yarn Manufacturing, Textile School. 3rd floor Textile Bldg. Extension 287.
Residence: 1610 Ambleside Drive. Telephone 6936.

*Hinkle, L. E.—Prof., Modern Language. 205 Peele Hall. Extension 231.
Residence: 1714 Park Drive. Telephone 2-0380.

*Hiner, Mrs. Foy Pate Cashier, Boarding Department. Dining Hall. Telephone 2-0243.
Residence: Cary, Rt. 1.

*Hocutt, Mrs. John Irving—Record Clerk, Registration Office. 208 Holladay Hall. Extension 219.
Residence: 220 N. East St. Telephone 2-2533.

Hodgen, W. R.—Research Fellow in Agronomy. 6 Withers Hall. Extension 209.
Residence: 104 Fourth Dormitory, Box 3125.

*Hoefer, E. G.—Professor, Mechanical Engineering Department. 205 Page Hall. Extension 302.
Residence: 19 Furches St. Telephone 7072.

*Hoffman, W. H.—Supt. of Grounds, Service Department. Warehouse Extension 272.
Residence: 2704 Bedford Ave. Telephone 2-3424.

*Hofmann, Julius V.—Director, Division of Forestry and Prof. of Forestry. 301 Ricks Hall. Extension 270.
Residence: 2800 Fairview Road. Telephone 2-2993.

*Holler, Dan F.—County Agent at Large. 203 Ricks Hall. Extension 294.
Residence: 511 E. Jones St. Telephone 8149.

Holmes, Miss Darcas—Supervisor Boarding Department, Dining Hall Building. Telephone 2-0243.
Residence: 214 Park Ave. Telephone 7898.

Holt, Virginia (Miss) Clerk, Registration Office. 201 Holladay Hall. Extension 219.
Residence: 2510 Vanderbilt St. Telephone 5416.

*Hopkins, John I.—Instructor, Physics Department. 208 Daniels Hall. Extension 229.
Residence: 222 Chamberlain St. Telephone 6706.

Horne, Louise—Stenographer, Psychology Department. 122 Tompkins Hall. Extension 286.
Residence: 2201 Fairview Road. Telephone 2 2989.

*Hostetler, Earl H.—Prof. Animal Husbandry, In Charge of A. H. research. 215 Polk Hall. Extension 276.
Residence: 3010 White Oak Road. Telephone 5794.

House, Miss Mary Hudson—Asst. Cashier, Business Office. 109 Holladay Hall. Extension 278.
Residence: Cary, N. C.

Howard, Mrs. J. T. Stenographer, Agricultural Extension Service. 111 Ricks Hall. Extension 271.
Residence: 117 Hillcrest Road. Telephone 2-3678.

Hudgins, Madge Stenographer, Agronomy Department. 311 Ricks Hall. Extension 263.
Residence: 402 Horne St. Telephone 2-2129.

Hunt, W. T., Jr. Teaching Fellow, Engineering Mechanics. 101 C. E. Bldg. Extension 303.
Residence: 2212 Hope St. Telephone 8026.

Hunter, Miss Willie N. Extension Specialist in Clothing, Home Demonstration Division, Agr. Extension. 217-1911. Extension 243.
Residence: O 7 Raleigh Apts. Telephone 4076.

*Hutchinson, H. H. Auditor, Ag. Experiment Station. 109 Ricks Hall. Extension 211.
Residence: 7 Enterprise St. Telephone 9886.

*Hutchinson, J. J. Asst. in Poultry Disease Investigation, Poultry Plant. Telephone 8686.
Residence: Cutler St.

*Ison, Wade—Director Athletic Publicity. Holladay Hall. Extension 217.
Residence: 604 Rosemont Ave. Telephone 2-3092.

*Ivey, L. L. Manager, Students Supply Store. Y.M.C.A. Bldg. Extension 225 and Telephone 2-3674.
Residence: 202 E. Park Drive. Telephone 8210.

James, H. B.—Assistant in Farm Management, Agricultural Extension Service. 302-1911. Extension 291.
Residence: 1718 Park Drive. Telephone 2-0713.

*Jeter. Frank H. Editor, School of Agriculture; Director of State College News Bureau. 1 Ricks Hall. Extension 279.
Residence: 304 Forest Road. Telephone 6518.

Johnson, F. C.—Asst. Prof., Chemical Engineering Department. 107 Winston Hall. Extension 301.
Residence: 1710 Park Drive. Telephone 2-1387.

Johnson, Miss Janet—Stenographer. Fish and Wildlife Service. 203 B, Zoology Building. Extension 261.
Residence: 2610 Vanderbilt Ave. Telephone 2-1915.

Johnson, Miss Robbie Stenographer. Business Office. 109 Holladay Hall. Extension 278.
Residence 101 E. Park Drive. Telephone 2-1686.

*Johnson, T. S. Professor of Sanitary Engr., Civil Engineering Dept. 208 C. E. Bldg. Extension 303.
Residence: 1026 Cowper Drive. Telephone 9682.

*Jones. Arthur Dave—Ass't Prof., Chemistry Department. 115 Withers Hall. Extension 265.
Residence: 2708 Vandyke Ave., Forest Hills. Telephone 8716.

Jones, D. E. Extension Rural Electrification Specialist. Extension Agricultural Engineering Department. 318 Ricks Hall. Extension 274.
Residence: 1618 Park Drive. Telephone 9537.

Jones. Miss Georgia Mae Stenographer. College Extension Division. 201 D. H. Hill Library. Extension 260.
Residence: 7 Glenwood Ave. Telephone 8059.

*Jones, I. D. Biochemist in Horticulture. Department of Horticulture. 305 Polk Hall. Extension 275.
Residence: 2714 Rosedale Ave. Telephone 2-3091.

Jones, Miss Margaret Stenographer, Poultry Department. 216 Ricks Hall. Extension 280.
Residence: 8 St. Marys St. Telephone 2-3883.

*Jones, O. C.—Foreman, College Print Shop. Basement Tompkins Hall. Extension 281.
Residence: Western Blvd. Box 1225.

*Jordan. Walter Edward—Assoc. Prof., Chemistry Department. 106 Withers Hall. Extension 265.
Residence: 2600 Rosedale Ave. Telephone 2-3574.

Joyner, Miss Lucille—Stenographer, Chemical Engineering Dept. 111 Winston Hall. Extension 301.
Residence: 2100 Hillsboro St. Telephone 6165.

Judd, Mrs. Lilly B.—Stenographer, Agricultural Experiment Sta. 107 Ricks Hall. Extension 211.
Residence: 309 E. Morgan St. Telephone 8970.

*Keever, Leroy M. Assoc. Prof., Elec. Engr. Dept. 106 Daniels Hall. Extension 235.
Residence: 2200 Carroll Drive. Telephone 9818.

Kelner. Albert—Teaching Fellow. Botany Department. 218-A Winston Hall. Extension 267.
Residence: 304 Fourth Dormitory. Telephone 2-2853.

*Kenyon, Mrs. B. W., Jr.—Stenographer, Zoology and Entomology Department. 101 Zoology Building. Extension 239.
Residence: J-2 Raleigh Apts. Telephone 2-1098.

Kerr, Edward G.—Supt. College Dairy Farm, Animal Husbandry & Dairying. Extension 268.
Residence: Dairy Farm Cottage.

Kerr, Thomas—Cytologist in the U.S.D.A., Cotton Fiber Investigations. 104 Polk Hall. Extension 300.
Residence: 2701 Clark Ave. Telephone 7756.

*Kime, P. H.—Agronomist. 113 Ricks Hall. Extension 262.
Residence: 728 W. Cabarrus St. Telephone 2-2126.

*Kimrey, A. C.—Extension Dairyman, Dairy Extension. 116 Polk Hall. Extension 277.
Residence: 220 E. Park Drive. Telephone 2-0856.

*Kincheloe, Henderson G. Instructor in English, Department of English. 4 Pullen Hall. Extension 237.
Residence: 1615 Ambleside Drive. Telephone 4513.

*King, Edward S.—General Secretary, Y.M.C.A. 2nd floor Y.M.C.A. Bldg. Telephone 7184.
Residence: 121 Chamberlain St. Telephone 4511.

King, Nora Lillington Secretary to Dean of Administration, Administration Office. 104 Holladay Hall. Extension 210.
Residence: 205 Woodburn Road. Telephone 2-1698.

*King, Mrs. Zoie—Cashier, Boarding Department, Dining Hall. Telephone 2-0243.
Residence: 298 Jackson Street.

Kleinkauf, W. A. L.—Fellow in Agronomy. 6 Withers Hall. Extension 209.
Residence:

Knight, Gene—Extension Radio Editor, Agricultural Extension Service. 11 Ricks Hall. Extension 279.
Residence: 1712 Scales St. Telephone 2-3801.

*Knight, Leonard M. Sergeant, DEML, Assistant Instructor of Military Science and Tactics. (Asst. PMS&T). Armory (Gymnasium). Extension 232.
Residence: 3427 Neil St. Telephone 2-1029.

*Kriegel, W. Wurth—Assist. Prof. Ceramic Engineering. Ceramic Building. Extension 249.
Residence: 100 Horne St., Apt 1. Telephone 8120.

*Kutschinski, Christian D.—Musical Director, Music Department. 10 Holladay Hall. Extension 251.
Residence: 1500 Hillsboro St. Telephone 5427.

Lackey, R. O. A. H. & D. Dept. 102 Polk Hall. Extension 268.
Residence: 108 Fourth Dormitory, Box 5127. Telephone 2-2853.

Ladu, Arthur I.—Prof., English Department. 105 Pullen Hall. Extension 237.
Residence: 705 Hllsboro St. Telephone 2-0709.

Lake, R. E. Instructor, Mathematics Department. 221 Tompkins Hall. Extension 228.
Residence: 107 Chamberlain St. Telephone 7468.

Lamb, Robert V.—Teaching Fellow, Mathematics Department. 208 Tompkins Hall. Extension 226.
Residence: 6 Ferndell Lane. Telephone 4035.

*Lambe, C. M.—Asst. Prof., Civil Engr. Dept. 219 C. E. Bldg. Extension 303.
Residence: 413 Calvin Road. Telephone 6565.

*Lancaster, Forrest Wesley Assoc. Prof., Physics Dept. 206 Daniels Hall. Extension 229.
Residence: 2403 Everett Ave. Telephone 6316.

Lancaster, Joseph LeT. Lieut. Colonel, Infantry. Assistant Professor of Military Science and Tactics (Asst. PMS&T), Room 2, Holladay Hall (Basement). Extension 233.
Residence: 117 Woodburn Road. Telephone 8145.

*Larkin, R. C. Field Agent, Agr. Economics. Extension 309.
Residence: 1213 Hillsboro St. Telephone 4241.

*Larkin, Mrs. R. C.—Clerk, Agricultural Extension Service. 5 Ricks Hall. Extension 279.
Residence: Camero Park Apts. No. 15. Telephone 4241.

*Lauer, B. E. Assoc. Prof., Chemical Engineering Dept. 106 Winston Hall. Extension 301.
Residence: 2510 Clark Ave. Telephone 7479.

Leagans, J. P.—Asst. Ext. Leader in Land-Use Planning. 310, 1911. Extension 292.
Residence: 10 Dixie Trail. Telephone 7866.

*Leager, Marc C. Prof., Economics & Statistics. 116 Peele Hall. Extension 224.
Residence: 2718 Bedford. Telephone 6204.

*Lear, John E.—Professor of Electrical Engineering, A-7 Daniels Hall. Extension 235.
Residence: 1812 Park Drive. Telephone 7701.

*Lee, R. T. Instructor, Mechanical Engineering Department. 104 Page Hall. Extension 246.
Residence: 531 E. Franklin St.

*Lee, Wm. D.—Ext. Soil Conservationist, Agr. Extension Service. 206 Ricks Hall. Extension 294.
Residence: 318 Furches St. Telephone 2-3930.

*Lefort, Charles Romeo—Ass't Dean of Students, Administration Office. 101 Holladay Hall. Extension 215.
Residence: 821 Hillsboro St. Telephone 7105.

*Lehman, S. G. Prof. of Plant Path., Botany Dept. 206 Winston Hall. Extension 267.
Residence: 123 Brooks Ave. Telephone 8764.

*Leighton, Henry P.—Staff Sergeant, DEML, Assistant Instructor of Military Science and Tactics. (Asst. PMS&T). Room 1, Holladay Hall (Basement). Extension 233.
Residence: Route 4, Raleigh.

Leipold, John A.—Technical Sergeant, DEML, Assistant Instructor of Military Science and Tactics (Asst. PMS&T). Room 1, Holladay Hall (Basement). Extension 233.
Residence: 2702 Hillsboro St. Telephone 2 2480.

Leoppert, R. H. Instructor in Chemistry. Withers Hall. Extension 264
Residence: 1716 Park Drive. Telephone 6197.

*Levine, Jack—Assoc. Prof., Math Dept. 209 Tompkins Hall. Extension 226.
Residence: 2702 Rosedale Ave. Telephone 8775.

*Lewis, J. G. Asst. Prof. of Knitting, Textile School. 2nd floor Textile Bldg. Extension 273.
Residence: 518 Dixie Trail. Telephone 7783.

*Lineberry, R. A.—Asst. Chemist, U.S.D.A. 311, 1911. Extension 262.
Residence:

*Lockmiller, David A. Assoc. Prof. and Head of History & Political Science Dept. 102 Peele Hall. Extension 223.
Residence: 612 Rosemont St. Telephone 6468.

*Ludington, John R.—Associate Professor in Division of Teacher Training. 102 Tompkins Hall. Extension 258.
Residence: Cameron Court Apt. H-3-B. Telephone 5288.

*Lutz, J. F. Assoc. Prof. of Soils, Agronomy Dept. 115 Ricks Hall. Extension 262 and 111 Polk Hall. Ext. 220.
Residence: Dixie Trail.

Lyell, Frank Hallam—Instructor, English Dept. 5 Pullen Hall. Extension 237.
Residence: 224 Woodburn Rd. Telephone 4698.

Lyle, J. A. Research Fellow, Botany Department. 212 Withers Hall. Extension 267.
Residence: Apt. 1, Wilmont Apt., Hillsboro St. Telephone 8365.

McCabe, R. P.—Teaching Fellow, Department of Ceramic Engineering, Ceramics Building. Extension 249.
Residence: 2209½ Hope St. Telephone 2-0487.

McClain, E. F. Teaching Fellow, Zoology and Entomology Department. 105 Zoology Building. Extension 239.
Residence: 123 Brooks Ave. Telephone 8764.

McClendon, J. D.—Teaching Fellow, Chemistry Department. 322 Withers Hall. Extension 297.
Residence: 220 Cox Ave.

*McCrary, O. F. District Agent, Agr. Extension Dept. 101 Ricks Hall. Extension 212.
Residence: 1029 W. South St. Telephone 9922.

*McCutcheon, F. H. Ass't Prof., Zoology & Ent. Dept. 209 Zoology Bldg. Extension 239.
Residence: 2721 Van Dyke Ave. Telephone 6453.

*McGehee, William—Asso. Prof., Head of Psychology Dept. 123 Tompkins Hall. Extension 286.
T-2 A Cameron Court Apts. Telephone 8017.

MacGregor, Frances Assistant State 4-H Leader, Agricultural Extension, 4 H Club Department. 201 Ricks Hall. Extension 214.
Residence: D-3-A Cameron Court Apts. Telephone 2-2136.

McIntyre, Mrs. F. McP. Secretary, Chemistry Department. 108 Withers Hall. Extension 265.
Residence: 4 Maiden Lane. Telephone 4117.

McIver, Miss Julia Ass't Ext. Spec. in Clothing, Home Demonstration Dept. Agricultural Extension. 217-1911. Extension 243.
Residence: 2202 Ridgecrest Rd. Telephone 2-1904.

*McKimmon, Mrs. K. C. Clerk, Agronomy Dept. 120 Ricks Hall. Extension 262.
Residence: 122 Park Ave. Telephone 6753.

McKimmon, Jane S.—Ass't Director Ext., Agr. Ext., Div. of Home Dem-Work. 105 Ricks Hall. Extension 255.
Residence: 123 New Bern Ave. Telephone 8619.

McLean, Miss Grayce—Junior General Clerk, Business Office. 109 Holladay Hall. Extension 298.
Residence: 1508 Hillsboro St. Telephone 6153.

McLean, Susie—Stenographer, Agr. Ext. Ser. 105 Ricks Hall. Extension 255.
Residence: 1827 Glenwood Ave. Telephone 8721.

McNair, Mary Secretary to J. F. Criswell, Agricultural Extension Service. 3rd floor 1911. Extension 292.
Residence: 2703 Kilgore St. Telephone 5249.

*Macy, Paul F. Instructor in Chemistry. 317 Withers Hall. Extension 297.
Residence: 212 S. Dawson St. Telephone 5557.

*Maddison, C. W. Instructor, Foundry, Department of M. E. Shop. Extension 245.
Residence: 908 W. Johnson St. Telephone 2-2143.

Maddry, Linda Stenographer, Math. Dept. 201 Tompkins Hall. Extension 227.
Residence: Avent Ferry Road. Telephone 5797.

Majure, W. J.—Research Fellow in Game Management, Zoology and Entomology Department. 203 A Zoology Building. Extension 261.
Residence: 2306 Hillsboro St. Telephone 2 1478.

*Mann, C. L. Prof. & Head of Dept., Civil Engr. Dept. 211 C. E. Building. Extension 303.
Residence: 1702 Hillsboro St. Telephone 6825.

*Mann, Julian E. In Charge, Ext. Studies, Agr. Ext. Ser. 108 Ricks Hall. Extension 255.
Residence: 2505 Country Club Road. Telephone 2-3415.

Mann, William R.—Instructor in Flight Training. Aeronautical Engineering Department. 105 Page Hall. Extension 248.
Residence: South Building, Chapel Hill, N. C.

Mappus, W. A.—Teaching Fellow, Chemistry Department. 207 Withers Hall. Extension 264.
Residence: Fourth Dormitory. Telephone 2 2853.

*Marshall, Roger P.—Ass't Prof., English Department. 103 Pullen Hall. Extension 237.
Residence: 1512 Park Drive. Telephone 5297.

*Mask, F. E. Instructor, Math. Department. 208 Tompkins Hall. Extension 226.
113½ Chamberlain St. Telephone 2-3830.

Mason, Mrs. Edna Belle Secretary, Civil Engineering Department. 210 Civil Engineering Bldg. Extension 303.
Residence: Oxford Road West. Telephone 9501.

Mason, Eleanor H. Secretary, Agr. Ext. Div. of Home Dem. Work. 207-1911. Extension 244.
Residence: 421 N. Blount St. Telephone 4950.

Massey, J. T.—Instructor, Engineering Mechanics. 204 C. E. Building. Extension 303.
Residence: 605 N. East St. Telephone 2-1075.

*Maupin, C. J.—Ext. Poultryman, Poultry Dept. 210 Ricks Hall. Extension 294.
Residence: 2806 Hillsboro St. Telephone 8950.

*Mayer, W. L.—Director of Registration, Purchasing Agent. 208 Holladay Hall. Extension 219.
Residence: 20 Bagwell Ave. Telephone 2-0027.

Mayes, Allene Assoc. Nurse, Infirmary. Hospital. Telephone 7615.
Residence: Infirmary. Telephone 7615.

*Mayo, S. C.—Asst. Rur. Sociologist. Rural Sociology Dept. 103, 1911, Extension.
Residence: 16 Glenwood Ave. Telephone.

*Mayton, R. L. Chief Dormitory Assistant. 107 9th Dormitory. Telephone 2-2853, Extension 24.
Residence: 107 Ninth Dormitory.

*Mayton, R. W. Carpenter Foreman, Warehouse. Extension 272.
Residence: Box 129, Cary, N C.

*Meacham. E. H.—Soil Conservation Specialist, Agr. Ext. Ser. Dept. 206 Ricks Hall. Extension 294.
Residence: 825 Holt Drive. Telephone 8430.

*Meacham, F. B. Ass't Prof., Zoology & Ent. Dept. 106 Zoology Bldg. Extension 239.
Residence: 2716 Everett Ave. Telephone 2-0606.

*Meacham, Mrs. Nelle Stenographer, Home Demonstration Division, Agricultural Extension. 209-1911. Extension 243.
Residence: 1508 Hillsboro. Telephone 5163.

*Meares. J. S. Assoc. Prof., Physics Dept. 206 Daniels Hall. Extension 229.
Residence: 2408 Everett Ave. Telephone 5917.

*Meekins, E. N. Dept. of Vocational Agriculture. 106 Tompkins Hall. Extension 282.
Residence: Cary. Telephone 2591.

*Mehlich. Adolf Associate Soil Chemist. 111 Polk Hall. Extension 220.
Residence: 17 Dixie Trail. Telephone 2-1863.

Mercer, Susannah (Miss)—Secretary, Engineering Experiment Station, 207 C. E. Building. Extension 307. Geology Department. 1 Primrose Hall. Extension 304.
Residence: 1700 Par't Drive. Telephone 2 0060.

Merritt, Mrs. Emily W. Bookkeeper. Business Office. 109 Holladay Hall. Extension 298.
Residence: C-2 Wilmont Apt. Telephone 2-1002.

*Metcalf, Z. P. Prof. of Zoology and Entomology, Director of Instruction, School of Agriculture and Forestry, Director of Graduate Studies, Zoology and Entomology Department. 101 Zoology Building. Extension 239.
Residence: 315 Forest Road. Telephone 2-3788.

*Middleton, G. K. Agronomist. Dept. of Agronomy. 119 Ricks Hall. Extension 262.
Residence: 2830 Barmettler St. Telephone 2-2313.

Miles, E. T., Jr.—Instructor Mathematics Department. 206 Tompkins Hall. Extension 226.
Residence: 222 Hillcrest Road. Telephone 2 1290.

*Millar, Marshall W. State College Coordinator of Diversified Occupations. 15 Holladay Hall. Extension 293.
Residence: 2506 Clark Ave. Telephone 4395.

*Miller, Arthur S. Instructor, Economics. 105 Poele Hall. Extension 223.
Residence: 2700 North Drive. Route 6. Telephone 8011.

*Miller, J. F. Prof. and Head of Physical Education Dept. and Athletics. 1 Gym. Extension 218.
Residence: 191 Chamberlain St. Telephone 5823.

*Miller, William D. Assoc. Prof. of Forestry, Division of Forestry. 303 Ricks Hall. Extension 270.
Residence: 1907 Victoria Road. Telephone 2 1066.

Mills, Gordon Asst. Steward. Cafeteria. Telephone 2-0243.
Residence: Cafeteria Building. Telephone 2 0243.

Mitchell, Miss Prentiss Cashier, Cafeteria. Telephone 2-0243.
Residence: 118 Forest Road. Telephone 4800.

*Mitchell, T. B.—Prof. of Zoology and Entomology. Zoology and Etom. Dept. 103 Zoology Bldg. Extension 239.
Residence: 1007 W. Peace St. Telephone 6967.

Moen, R. O.—Prof., Business Administration. 113 Peele Hall. Extension 223.
Residence: 3202 Clark Ave. Telephone 5051.

*Moffie, Dannie J.—Instructor, Psychology Department.
124 Tompkins Hall. Extension 286.
Residence: 211 Groveland Ave. Telephone 6347.

*Moore, J. H. Cotton Technologist, Agronomy Dept. 317 Ricks Hall. Extension 263.
Residence: 2713 Bedford Ave. Telephone 2-3638.

*Moore, James L.—Ass't Dairy Research, Animal Husbandry Dept. 213 Polk Hall. Extension 305.
Residence: 3208 Clark Ave. Telephone 2-0821.

*Moore, Mrs. James L.—Sec., Office of Dairy Extension, Dairy Extension.
117 Polk Hall. Extension 277.
Residence: 3208 Clark Ave. Telephone 2-0821.

*Moose, Perry Earl—Asst. Prof., Mech. Engineering. 206 Page Hall. Extension 247.
Residence: 3113 Stanhope Ave. Telephone 9960.

Morris, Cornelia C. Ext. Economist in Food Conservation & Marketing, Agr. Ext., Div. of Home Demonstration Work. 215-1911. Extension 242.
Residence: Sec. A, Apt. 101, Boylan Apt. Telephone 2-1591.

Morris, H. D. Assistant Agronomist. 114 Ricks Hall. Extension 262.
Residence: 204 Park Ave. Telephone 2-2270.

Morris, W. F. Director Service Department. Warehouse. Extension 272.
Residence: 2509 Vanderbilt Ave. Telephone 5319.

*Morrow, E. B.—Assoc. Horticulturist, Dept. of Horticulture. 307 Polk Hall. Extension 275.
Residence: 2712 Vanderbilt Avt. Telephone 2 1952.

Morton, Laura B. Stenographer, 4-H Club Dept., Agricultural Ext. 201 Ricks Hall. Extension 214.
Residence: 1000 Glenwood Ave. Telephone 2-3686.

Moss, Dan—Teaching Fellow, Textile Chemistry & Dyeing. Basement, Textile Bldg. Extension 288.
Residence: 16 Enterprise St. Telephone 2-2247.

*Mumford, C. G. Assoc. Prof., Math. Dept. 224 Tompkins Hall. Extension 228.
Residence: 712 Brooks Ave. Telephone 5315.

Mumford, Miss Howard—Clerical Assistant in Athletics. 2 Gymnasium. Extension 218, and Telephone 2-2407.
Residence: 1313 Hillsboro Street. Telephone 4142.

Mynes, James F.—Teaching Fellow, Department of Electrical Engineering.
105 Daniels Hall. Extension 235.
Residence: 409 Chamberlain St. Telephone 9565.

*Nahikian, Howard M. Assist. Prof., Math. Dept. 222 Tompkins Hall. Extension 228.
Residence: 3207 Hillsboro St. Telephone 5772.

*Nelson, Thomas Dean, Textile School. Textile Bldg. Extension 273.
Residence: 16 Enterprise St. Telephone 2-2247.

*Nesbit, W. Bryan—Manager Turkey Plant (No telephone).
Residence: 3719 Hillsboro St. Telephone 2-2247.

*Newman, Mrs. C. L.—Stenographer, Dept. of Horticulture. 304 Polk Hall. Extension 275.
Residence: Route 6. Telephone 2-0912.

Newton, Miss Foy—Stenographer, Agricultural Extension. 101 Ricks Hall. Extension 212.
Residence: 319 New Bern Ave. Telephone 2-2096.

*Newton, G. L.—Herdsman, Animal Husbandry. 215 Polk Hall. Extension 276.
Residence: An. Husb. Farm.

*Newton, Williams—Head Football and Baseball Coach, Physical Education Dept. Coaches' Office. Field House. Telephone 6934.
Residence: 318 Morrison Ave. Telephone 2-2504.

*Nichols, John Hervey—Laboratory Asst., Electrical Engr. Dept., 9 Daniels Hall. Extension 235.
Residence: 11 Dixie Oil Drive.

*Niswonger, H. R.—Ext. Horticulturist, Dept. of Horticulture. 301 Polk Hall. Extension 275.
Residence: A 2-A Cameron Court Apts. Telephone 2-3297.

Owen. Miss Elizabeth A.—Sec., Office of Dean of Students. 101 Holladay Hall. Extension 215.
Residence: 131 Hawthorne Road. Telephone 6851.

Page, Norman Research Fellow in Agronomy. 6 Withers Hall. Extension 209.
Residence: 103 Fourth Dormitory, Box 3113.

*Paget. Edwin H.—Assoc. Prof, English Department. 109 Pullen Hall. Extension 237.
Residence 2733 Everett Ave. Telephone 2-3495.

*Park. C. B. Instructor Emeritus of Mechanical Engineering.
Residence: 125 Hawthorne Road. Telephone 6957.

*Park, H. V. Assist. Prof., Math Dept. 222 Tompkins Hall. Extension 228.
Residence: 404 Chamberlain St. Telephone 2-3589.

*Parker, Mrs. A. M.—Auditor, Agri. Extension Service. 111 Ricks Hall. Extension 271.
Residence: Raleigh Apt. A-2. Telephone 9572.

Parker, John Mason, III—Asst. Prof. of Geology. 2 Primrose Hall. Extension 304.
Residence: G-1 Raleigh Apts. Telephone 6754.

Parker, W. J.—Teaching Fellow, Poultry Department. 202 Ricks Hall. Extension 280.
Residence: 117 Chamberlain St.

Parkinson, Leslie R. Head of Dept., Aero Engr. Dept. 105 Page Hall. Extension 248.
Residence: 2824 Bedford Ave. Telephone 2-3422.

*Parrish, Clifton Floyd Ext. Poultryman, Poultry Department. 208 Ricks Hall. Extension 294.
Residence: Western Boulevard, Route No. 4. Telephone 2-2888.

Pate, Nancy Lee—Stenographer in Division of Teacher Training. 103 Tompkins Hall. Extension 257.
Residence: 303 Hawthorne Road. Telephone 2-0080.

Paul, Dan M. Alumni Secretary & Director of Agr. Short Courses. Alumni Office. 205 Holladay Hall. Extension 252.
Residence: 1618 Park Drive. Telephone 9537.

*Paulson, Jehu D. Assoc. Prof., Arch. Engr. Dept. 311 Daniels Hall. Extension 250.
Residence: 2705 Everett Ave. Telephone 8823.

*Pearsall, R. J.—Ass't Prof., Electrical Engr. Dept. 106 Daniels Hall. Extension 235.
Residence: 2012 Fairview Road. Telephone 2 2994.

Pearson, Richard W.—Assistant in Poultry Research, Poultry Plant. Telephone 8686.
Residence: 222 Park Ave. Telephone 5016.

*Peeler, R. J. Assistant State Supervisor of Vocational Agriculture and Executive Secretary of Future Farmers of America. 106 Tompkins Hall. Extension 282.
Residence: 2812 Kilgore St. Telephone 2-3649.

Phelps, Mrs. L. H. Secretary to Registrar. Registration Office. 208 Holladay Hall. Extension 219.
Residence: 2303½ Clark Ave. Telephone 8433.

Phelps, W. R. Clerk, Dormitories & Central Stores, Warehouse. Extension 272.
Residence: 217½ N. Bloodworth St. Telephone 6688.

*Phillips, Llewellyn B. Clerk. Agr. Ext. Service. 20 Ricks Hall. Extension 254.
Residence: 402 Horne St. Telephone 8437.

*Pickering, Mrs. C. B.—Secretary in Division of Teacher Training. 102 Tompkins Hall. Extension 258.
Residence: Raleigh Apts G-4. Telephone 2-3365.

Pierce, J. C., Jr.—Assistant in Animal Husbandry. 216 Polk Hall. Extension 276.
Residence: 107 Fourth Dormitory. Telephone 2-2853.

Pierce, Kathryn Stenographer, Office of Dean of Engineering. 122 C. E. Building. Extension 216.
Residence: 122 Ashe Ave. Telephone 5346.

*Piland, J. R. Ass't Soil Chemist. Dept. of Agronomy. 5 Withers Hall. Extension 209.
Residence: 5 Pogue St. Telephone 9511.

*Pillsbury, J. P. Professor of Landscape Architure. 204 Polk Hall. Extension 296.
Residence: 2715 Hillsboro St. Telephone 6694.

Ponder, Z. H.—Fellow in Agronomy. 111 Polk Hall. Extension 222.
Residence: 2008 Hillsboro St. Telephone 2-1137.

*Porter, J. A., Jr.—Instructor in Weaving & Designing. Second floor, Textile Bldg. Extension 273.
Residence: 2402 Clark Ave., Apt. 7.

Powell, G. B.—Athletic Trainer. 3 Gymnasium. Extension 218.
Residence: Carolina Hotel. Telephone 8811.

*Pratt, J. J. Jr.—Teaching Fellow, Zoology and Entomology Department. 105 Zoology Building. Extension 239.
Residence: 2705 Van Dyke Ave. Telephone 2-3049.

*Quay, T. L.—Research Fellow, Zoology and Entomology Department. 105 Zoology Building. Extension 239.
Residence: 2805 Bedford Ave. Telephone 2-2706.

Rackliffe, Carolyn Stenographer, Industrial Engineering Department. 129, 1911. Extension 208.
Residence: 203 Woodburn Road. Telephone 5304.

*Randall, Glenn O.—Assoc. Prof., Dept of Horticulture. 305 Polk Hall. Extension 275.
Residence: Route No. 6. Telephone County 6211.

*Randolph, E. E. Prof. of Ch. E. and Head of Chemical Engineering Dept. 112 Winston Hall. Extension 301.
Residence: 212 Groveland Ave. Telephone 8992.

*Rankin, W. H.—Agronomist, Dept. of Agronomy. 114 Ricks Hall. Extension 262.
Residence: 2408 Stafford Ave. Telephone 8057.

*Raper, Ralph H.—Agent, U.S.D.A., Agr. Econ. & Rur. Soc. 114-1911. Extension 308.
Residence: 9 Pogue St. Telephone 2-1981.

*Reddish, Mrs. Paul—Stenographer, Dept. of Vocational Agriculture. 106 Tompkins Hall. Extension 282.
Residence: Cary. Telephone 2561.

*Reid, W. A.—Asst. Prof. in Chemistry. 311 Withers Hall. Extension 265.
Residence: 2716 Barmetler St. Telephone 8945.

*Rice, Robert B.—Professor of Experimental Engineering, Mechanical Engineering Department. 107 Page Hall. Extension 246.
Residence: 2902 White Oak Road. Telephone 2-1195.

Richardson, J. B. Asst. Agri. Engineer, 312 Ricks Hall. Extension 274.
Residence: Dixie Trail Extension. Telephone 5888.

*Riddick, Dr. W. C. Professor of Hydraulics, Civil Engr. Dept. 220 Tompkins Hall. Extension 228.
Residence: 225 Woodburn Road. Telephone 2 0429.

*Riddle, A. A.—Superintendent Power Plant, M. E. Dept. Power Plant. Extension 234.
Residence: 2805 Bedford Ave. Telephone 2-2706.

*Rigney, J. A. Instructor in Farm Crops and Plant Breeding. Basement Withers Hall. Extension 263.
Residence: 2707 Bedford Ave. Telephone 2 0340.

Rogers, Mary Anne Stenographer. 9 to 12:30: Physics Department. 112 Daniels Hall. Extension 229. 1:30 to 5:00: Electrical Engineering Department, 201 Daniels Hall. Extension 236.
Residence: 601 Brooks Ave. Telephone 2-3094.

*Rondeau, Henri Pantry, Boarding Department. Dining Hall.
Residence: 115 Oberlin Road.

Rowe, Anna C.—District Agent, Agr. Ext., Div. of Home Dem. Work, 208-1911. Extension 285.
Residence: O-7 Raleigh Apts. Telephone 4076.

Rowe, Beatrice (Miss)—Secretary, English Department. 104 Pullen Hall, A. M., Extension 237 and Modern Language Department. 205 Peele Hall., P. M., Extension 231.
Residence: 2202 Hillsboro St. Telephone 4509.

*Rowell, J. O.—Extension Entomologist, Zoology and Entomology Department. 204 Zoology Building. Extension 261.
Residence: Highland Ridge Road. Telephone 8432.

*Rowland, Macon Rogers—Instructor, Mechanical Engr. Dept. Woodshop. Extension 245.
Residence: 312 Pogue St. Telephone 2-3011.

*Rudy, Dan W.—Clerk, Dept. Agr. Economics. Extension 308.
Residence: 3 S. East St. Telephone 4890.

*Ruffner, R. H. Prof. Animal Husbandry & Dairying Dept. 115 Polk Hall. Extension 268.
Residence: 1910 Park Drive. Telephone 2-0746.

*Ruggles, Edward W. Director, College Extension Division. 204 Library. Extension 260.
Residence: 2411 Everett Ave. Telephone 2-1812.

Sailer, Stephen S.—Business Manager, College Print Shop. 13 Tompkins Hall. Extension 281.
Residence: 301 "C" Dormitory. Telephone 2-2853.

*Salter, R. M.—Director, Agri. Exp. Station. 107 Ricks Hall. Extension 211.
Residence: 2714 Canterbury Road. Telephone 9846.

*Sams, C. L. Extension Apiarist, Zoology and Entomology Department. 204 Zoology Building. Extension 261.
Residence: 2603 Clark Ave. Telephone 2-3079.

Sanford, Carl N.—Assist. Prof., Aero. Engineering Department. 105 Page Hall. Extension 248.
Residence: 2614 Vandyke Ave. Telephone 5785.

*Satterfield, G. Howard—Professor of Biochemistry, Chemistry Department. 201 Withers Hall. Extension 264.
Residence: 407 West Park Drive. Telephone 2-2963.

Satterfield, Howard E.—Professor. Mechanical Engineering Department. 103 Page Hall. Extension 246.
Residence: 201 Groveland Ave. Telephone 7264.

Schaub, Miss Maud—Land Use Specialist in Mapping. 1911.
Residence: Western Boulevard. Telephone 8610.

*Schaub, I. O.—Dean, School of Agriculture and Forestry and Director of Agriculture Extension. 104 Ricks Hall. Extension 213.
Residence: Western Boulevard. Telephone 8610.

Schell, S. C.—Teaching Fellow, Zoology and Entomology Department. 105 Zoology Building. Extension 239.
Residence: 2716 Everett Avenue. Telephone 2-0606.

*Schmidt, Robert Associate Horticulturist, Agricultural Experiment Station, Dept. of Horticulture. 307 Polk Hall. Extension 275.
Residence: 516 Daughtridge St. Telephone 4235.

Scholes, W. A.—Ceramic Research Engineer, Department of Ceramic Engineering. Ceramics Building. Extension 249.
Residence: 1710 Park Drive. Telephone 2-1387.

*Schoof, H. F. Instructor, Zoology and Entomology Department. 105 Zoology Building. Extension 239.
Residence: 2504 Vanderbilt Ave. Telephone 2-1022.

*Schoof, Mrs. H. F.—Clerk and Stenographer, Botany Department. 220 Winston Hall. Extension 267.
Residence: 2504 Vanderbilt Ave. Telephone 2 1022.

*Scott, Mrs. J. K. Stenographer. Agricultural Extension Department. 104 Ricks Hall. Extension 213.
Residence: 1505 Caswell St. Telephone 7931.

Seagraves, W. P. Instructor. Mathematics Department. 224 Tompkins Hall. Extension 228.
Residence: 131 S. Boylan Ave. Telephone 8357.

Seawell, Elizabeth—Stenographer, Agricultural Extension, Division of Home Demonstration Work. 223-1911. Extension 242.
Residence: Wake Forest, N. C.

*Seegers, L. Walter Assistant Professor, History Department. 107 Peele Hall. Extension 223.
Residence: 111 Chamberlain St. Telephone 6238.

Seely, J. F.—Teaching Fellow, Chemical Engineering Department. 6 Winston Hall. Extension 301.
Residence: College Court Apt. 5. Telephone 4244.

*Sewell, Martha B. (Mrs.)—Assistant in Catalog Dept., D. H. Hill Library. Extension 259.
Residence: 2897 Fairview Road. Telephone 7419.

Shackford, J. Atkins—Instructor, English Department. 4 Pullen Hall. Extension 237.
Residence: 1618 Ambleside Drive. Telephone 7836.

*Shanklin, J. A.—Agent U.S.D.A., Agronomy Department. 204 Ricks Hall. Extension 294.
Residence: 5½ Dixie Trail. Telephone 2-0772.

*Shaw, Howard Burton Professor, Industrial Engineering Department. 128-1911. Extension 208.
Residence: 1507 Ambleside Drive. Telephone 6243.

*Shaw, K. J.—Agent in U.S.D.A. Botany Dept. 202 Winston Hall. Extension 267.
Residence: 2409 Stafford Ave. Telephone 9659.

*Shaw, Luther Plant Pathologist, Botany Department. 219 Winston Hall. Extension 267.
Residence: 2720 Kilgore Ave. Telephone 5937.

*Shelley, A. Bernard R. Instructor, English Department. 13 Peele Hall. Extension 223.
Residence: 810 Chamberlain St. Telephone 6235.

*Shepherd, Marshal LeR. 1st Lieut., Inf-Res., Assistant Professor of Military Science and Tactics (Asst. PMS&T). Room 4, Holladay Hall (Basement). Extension 233.
Residence: 111½ Chamberlain St. Telephone 2-2945.

*Sherwood, F W. Associate in Animal Nutrition, Agricultural Experiment Station. 317 Polk Hall. Extension 241.
Residence: 318 N. Boundary St. Telephone 2-0128.

*Shinn, W. E.—Asso. Professor of Weav. & Designing. Textile School. 1st floor Textile Bldg. Extension 273.
Residence: 2709 Bedford Ave. Telephone 2-0387.

*Shirley, Mrs. L. M. Secretary, Future Farmers of America. 106 Tompkins Hall. Extension 282.
Residence: 2515 Clark Ave. Telephone 2-3906.

*Shoffner, R. W. Assistant District Agent, Agricultural Extension Service. 206 Ricks Hall. Extension 221.
Residence: 2810 Exeter Circle. Telephone 7977.

*Showalter, M. F. Associate Professor, Chemistry. 220 Withers Hall. Extension 265.
Residence: 2820 Barmetler St. Telephone 8858.

*Shulenberger, C. B.—Associate Professor, Economics Department. 115 Peele Hall. Extension 224.
Residence: 2501 Stafford St. Telephone 7165.

*Shumaker, Ross—Professor and Head of Department of Architecture, College Architect. 315 Daniels Hall. Extension 250.
Residence: 2702 Rosedale Ave. Telephone 2-1706.

*Shunk, Ivan V.—Associate Professor, Botany Department. 211 Winston Hall. Extension 267.
Residence: 1809 Park Drive. Telephone 7810.

*Slocum, Geo. K.—Assoc. Professor of Forestry. Division of Forestry. 306 Ricks Hall. Extension 270.
Residence: 226 Woodburn Road. Telephone 5508.

Smith, Miss Anne Pauline District Agent, Home Demonstration Division, Agricultural Extension. 204 1911. Extension 285.
Residence: Edenhall Apts., N. Person St.

*Smith, B. W.—Assistant Agronomist. 112 Ricks Hall. Extension 262.
Residence: 1212 College Place. Telephone 9962.

*Smith, C. F. Ass't Research Entomologist, Zoology and Entomology Department. 104 Zoology Building. Extension 239.
Residence: 2714 North Drive.

*Smith, Mrs. Estelle T. District Home Agent, Agricultural Extension, Division of Home Demonstration Work. 202 1911. Extension 285.
Residence: 128 East Edenton St. Telephone 2-0853.

*Smith, F. H.—Assistant, Animal Nutrition, Agricultural Experiment Station. 316 Polk Hall. Extension 241.
Residence: 2506 Stafford Ave. Telephone 6798.

*Smith, G. Wallace—Professor and Head of Engineering Mechanics. 101 Civil Engineering Building. Extension 303.
Residence: 222 Hawthorne Road. Telephone 5120.

Smith, Hattie C. Office Secretary, Extension Agricultural Engineering Department. 318 Ricks Hall. Extension 274.
Residence: 2402 Everett Ave. Telephone 6814.

*Smith, J. Warren—Associate Professor of Industrial Education, Division of Teacher Training. 104 Tompkins Hall. Extension 257.
Residence: 2626 Dover Road. Telephone 2-3654.

Soil Conservation Service—Polk Hall. Telephone 4832.
*E. B. Garrett, State Coordinator, In Charge.

*Stainback, Raymond F. Assist. Prof., Physics Department. 108 Daniels Hall. Extension 229.
Residence: 317 University Drive, Chapel Hill. Telephone 9791.

Stallings, R. L.—Instructor, Economics Department. 104 Peele Hall. Extension 223.
Residence: 2614 Dover Road. Telephone 2-1889.

Steele, Miss Nancy H.—Secretary to Alumni Office, Alumni Department. 203 Holladay Hall. Extension 252.
Residence: M-2-A Cameron Court Apts. Telephone 2-1923.

Steelman, Clarence H., Jr. Research Fellow in Horticulture. 307 Polk Hall. Extension 275.
Residence: 1816 W. Park Drive. Telephone 8075.

*Stevens, R. O.—Associate Professor, Zoology and Entomology Department. 203-A Zoology Building. Extension 261.
Residence: Highland Ridge Road. Telephone 2-1557.

Stott, Estelle Harold (Miss) Stenographer, Division of Publications, Agricultural Extension Service. 5 Ricks Hall. Extension 279.
Residence: 2208 Hope St. Telephone 7056.

Stott, Juanita (Miss)—Asst. Registrar, Registration Office. 202 Holladay Hall. Extension 219.
Residence: 2208 Hope St. Telephone 7056.

*Stuart, A. D. Assoc. Prof., Field Crops. 18 Withers Hall. Extension 263.
Residence: 2504 Vanderbilt Ave. Telephone 2-1022.

*Stuart, N. B. Paint Foreman, Warehouse. Extension 272.
Residence: Cary, N. C., R.F.D. 1.

*Stuckey, Jasper L. Professor of Geology. 1 Primrose Hall. Extension 304.
Residence: 1911 Sunset Drive. Telephone 2-0187.

Sumner, Mrs. Baye Assistant Purchasing Agent. Purchasing Department. Holladay Hall. Extension 230.
Residence: 2510 Vanderbilt Ave. Telephone 5416.

Sutton, Miss Lenora Stenographer, Botany Department. 220 Winston Hall. Extension 267.
Residence: 1616 Hillsboro St. Telephone 2-2420.

*Sutton, Paul Porter Instructor, Chemistry Department. 103 Withers Hall. Extension 265.
Residence: 304 Hillcrest. Telephone 4818.

*Swaffer, C. Dalton—Instructor, Animal Husbandry Department. 217 Polk Hall. Extension 276.
Residence: 204 Park Ave. Telephone 6206.

Sweezy, Henry Lee—Research Fellow, Botany Dept. 212 Withers Hall. Extension 267.
Residence: 414 Chamberlain St. Telephone 7964.

Taylor, H. W.—Extension Marketing Specialist, Agricultural Extension Service. 123-1911. Extension 306.
Residence: 2820 Bedford Ave. Telephone 2 3274.

*Taylor, M. H.—Research Fellow in Game Management. Zoology and Entomology Department. 203-A Zoology Building. Extension 261.
Residence: 2104 Woodland Ave. Telephone 7426.

Thacker, Anne (Miss) Extension Studies, Agricultural Extension Service. 108 Ricks Hall. Extension 255.
Residence: 1031 West South St. Telephone 2-3504.

Thomas, C. D. Assistant Farm Management Specialist, Agricultural Extension Service. 308 1911. Extension 291.
Residence: 107 Chamberlain St. Telephone 7468.

*Thomas, Horace G. Technical Sergeant, DEML, Assistant Instructor of Military Science and Tactics (Asst. PMS&T). Armory (Gymnasium). Extension 232.
Residence: Sunset Terrace, Western Boulevard.

Thomas, Mary E. Extension Nutritionist, Agricultural Extension, Division of Home Demonstration Work. 219-1911. Extension 242.
Residence: 221 Hawthorne Road. Telephone 2-3742.

Thomas, Richard G.—1st Lieut., Inf-Res., Assistant Professor of Military Science and Tactics (Asst. PMS&T), Room 14 Holladay Hall (Basement). Extension 233.
Residence: 2712 Bedford Ave. Telephone 6298.

Thomas, Roy H. State Supervisor of Vocational Agriculture. 106 Tompkins Hall. Extension 282.
Residence: 225 Furches St. Telephone 4098.

Thompson, Daisy W. Chief Clerk, Business Office. 109 Holladay Hall. Extension 298.
Residence: 1117 Hillsboro St. Telephone 9879.

Thompson, Frances Stenographer. Home Demonstration Division, Agricultural Extension. 222-1911. Extension 242.
Residence: 109 E. Whitaker Mill Road. Telephone 4693.

Thompson, J. D. Fellow in Agronomy. 6 Withers Hall. Extension 209.
Residence: 105 Fourth Dormitory. Telephone 2-2853.

Thornton, Mrs. Labon Secretary, Department of Vocational Agriculture. 106 Tompkins Hall. Extension 282.
Residence: 303 Calvin Road. Telephone 2-3850.

Tingen, Edith Stenographer, Agricultural Economics. Extension 308.
Residence: 120 Hawthorne Road. Telephone 2 0876.

Tucker, Miss Caroline E.—Stenographer, Zoology and Entomology Department. 101 Zoology Building. Extension 239.
Residence: St. Mary's School. Telephone 9590.

Tucker, Harry Professor of Highway Engineering, Civil Engr. Dept.; and Director of Engineering Experiment Station. 207 Civil Engineering Building. Extension 307.
Residence: 20 Logan Court. Telephone 6219.

Turner, Miss Anne Leach Order Librarian, D. H. Hill Library. Extension 259.
Residence: 903 W. Johnson St. Telephone 6997.

*Turner, C. W.—Research Fellow in Agronomy. 3 Withers Hall. Extension 209.
Residence: 137 Gardner St. Telephone 7647.

*Upchurch, C. A., Jr.—College News Service. 13 Ricks Hall. Extension 253.
Residence. 2505 Everett Avenue. Telephone 9917.

Valentine, Miss Elizabeth Anna Acting Head of Catalog Department, D. H. Hill Library. Extension 259.
Residence: Route 5, Raleigh. Telephone 6346.

*Van Leer, Blake R.—Dean, School of Engineering. 122 C. E. Building. Extension 216.
Residence: 2830 Exeter Circle, Budleigh. Telephone 2-2767.

*Vann, J. G.—Assistant Controller, Business Office. 109 Holladay Hall. Extension 295.
Residence: 1606 Scales St. Telephone 6240.

*Vaughan, L. L.—Professor and Head of Mechanical Engineering Department. 109 Page Hall. Extension 246.
Residence: 11 Enterprise St. Telephone 5449.

*Veerhoff, Otto—Horticultural Physiologist, Experiment Station, Dept. of Horticulture. 307 Polk Hall. Extension 275.
Residence: 2830 Mayview Road. Telephone 2-2240.

*Vestal, E. V. Ext. Swine Specialist. 201 Polk Hall. Extension 269.
Residence: 3201 Hillsboro St. Telephone 2-0120.

Volkerding, B. F.—Teaching Fellow. Botany Department. 215 Winston Hall. Extension 267.
Residence: 123 Brooks Ave. Telephone 8764.

*Von Glahn, J. L. Business Manager. Athletics. 2 Gymnasium. Extension 218 and Telephone 2-2407.
Residence: Canterbury Road. Budleigh. Telephone 5891.

*Waller, E. M. Assistant Professor of Physical Education. 1 Gym. Extension 218.
Residence: 115 Chamberlain St. Telephone 2-1502.

Walsh, James H. Draftsman. Extension Agricultural Engineering Department. 320 Ricks Hall. Extension 274.
Residence: 127 W Park Drive. Telephone 6755.

*Walter, Robert C.—Teaching Fellow. Mechanical Engineering Department. 104 Page Hall. Extension 246.
Residence: 2406 Hillsboro St. Telephone 2-1797.

Ward, Mrs. Hazel M.—Bookkeper, Business Office. 109 Holladay Hall. Extension 298.
Residence: Boylan Apt. Telephone 2-1842.

*Warren, Robert Sullivan Freshman Football Coach. Head Basketball Coach, and Assistant in Physical Education. 3 Gymnasium. Extension 218.
Residence: 121 Montgomery St. Telephone 9985.

Watson, Charles K.—Teaching Fellow, Textile Chemistry & Dyeing.. Basement. Textile Bldg. Extension 288.
Residence: 2230 Hillsboro St. Telephone 2 1565.

Watson, Mrs. Emma L. Clerk, Business Office. 109 Holladay Hall. Extension 298.
Residence: Cary. Telephone 2841.

*Watson, Lewis P.—Extension Horticulturist. Extension Service. Dept. of Horticulture. 301 Polk Hall. Extension 275.
Residence: 2809 Bedford Ave. Telephone 2-1626.

*Watts, N. B.—Self-Help Secretary, Y. M. C. A., First Floor Y. M. C. A. Building. Telephone 7184.
Residence: 2805 Kilgore St. Telephone 6986.

Weathers, Rachel—Statistical Clerk, Extension Studies. 108 Ricks Hall. Extension 255.
Residence: 1616 Hillsboro St. Telephone 2-2420.

*Weaver, David Stathem—Professor and Head of Agricultural Engineering Department. 316 Ricks Hall. Extension 274.
Residence: 520 Daughtridge St. Telephone 4110.

*Weaver, J. G.—Assistant Professor, Dept. of Horticulture. Greenhouse. Extension 240.
Residence: 707 N. East St. Telephone 2-1440.

*Weeks, Lloyd T.—Tobacco Specialist, Extension Service. Dining Hall Building. Telephone 2-0544 and 2-0545.
Residence: Varina. Telephone 5121.

*Wellons, Turner Tobias—Superintendent of Buildings, Department of Central Stores and Dormitories, Warehouse. Extension 272.
Residence: 3130 Stanhope St. Telephone 2-1906.

Wells, B. W.—Professor of Botany and Head of Dept., Botany Department. 221 Winston Hall. Extension 267.
Residence: 1605 Park Drive. Telephone 8746.

Wells, Miss Pauline—Stenographer, Department of Ceramic Engineering. Ceramics Building. Extension 249.
Residence: 1605 Park Drive. Telephone 8746.

West, Miss Gladys F. Junior Botanist, Cotton Fiber Investigations. 104 Polk Hall. Extension 300.
Residence: 407 Horne St. Telephone 2-1257.

West, J. Frank—Instructor in Geological Engineering. 2 Primrose Hall. Extension 304.
Residence: 510 Dixie Trail. Telephone 2-3063.

*Wheeler, F. B. Superintendent of Shops, Department of Mechanical Engineering. Woodshop. Extension 245.
Residence: Maiden Lane. Telephone 7958.

*Wheless, M. H. Bookkeeper, Students Supply Store. Y.M.C.A. Bldg. Extension 225 and Telephone 2 3674.
Residence: 2504 Vanderbilt Ave. Telephone 2-2369.

Whisnant, Mamie N.—Assistant Extension Specialist in Home Management, Home Demonstration Division, Agr. Ext. 221, 1911. Extension 242.
Residence: S-5 Raleigh Apts. Telephone 6169.

*White, Raymond C. Instructor in Chemistry. 103 Withers Hall. Extension 265.
Residence: 4 Maiden Lane. Telephone 4117.

*Whitehead, L. C. Regional Agent, Fish and Wildlife Service. Dept. of Interior. 203 B Zoology Building. Extension 261.
Residence: 2613 Van Dyke Ave. Telephone 4155.

*Whitford, L. A. Assistant Professor, Botany Department. 201 Winston Hall. Extension 267.
Residence: 2804 Barmettler Rd. Telephone 8189.

Whitley, R. W. Teaching Fellow, Chemistry Department. 208 Withers Hall. Extension 265.
Residence: Fourth Dormitory. Telephone 2-2853.

Whitten, H. A.—Teaching Fellow, Chemistry Department. 202 Withers Hall. Extension 264.
Residence: Fourth Dormitory. Telephone 2-2853.

*Widenhouse, Mrs. M. L. Stenographer. Mornings: College Extension Division. 201 Library Building. Extension 260. Afternoons: N. C. Board of Registration for Engineers and Land Surveyors, 112 Civil Engineering Department. Extension 303.
Residence: 3206 Clark Ave. Telephone 2-1302.

*Williams, C. B. Agronomist. 112 Ricks Hall. Extension 262.
Residence: 1405 Hillsboro St. Telephone 8893.

*Williams, Carlos F. Associate Horticulturist, Dept. of Horticulture. 305 Polk Hall. Extension 275.
Residence: 2711 Everett Ave. Telephone 2-0233.

*Williams, F. Carter, Asst. Prof. Architectural Department. 309 Daniels Hall. Extension 250.
Residence: 1814½ Arlington St. Telephone 7389.

*Williams, H. Page Associate Professor. Mathematics Department. 223 Tompkins Hall. Extension 228.
Residence: 1015 Brooks Ave. Telephone 2-2191.

*Williams, L. F.—Professor of Organic Chemistry. Chemistry Department. 301 Withers Hall. Extension 297.
Residence: 1816 Park Drive. Telephone 8075.

Williams, Lucie R. (Miss)—Stock Room Keeper, Chemistry Department. 217 Withers Hall. Extension 297.
Residence: 1816 Park Drive. Telephone 8075.

*Williams, N. W. Assistant Professor and Poultry Plant Manager, Poultry Department. 214 Ricks Hall. Extension 280.
Residence: Poultry Plant. Telephone 8686.

*Williams, Sam L.—Animal Husbandry Extension Department. 203 Polk Hall. Extension 269.
Residence: 15 Dixie Trail. Telephone 2 0804.

Willis, Mrs. Esther G.—District Agent. Home Demonstration Department. Agricultural Extension. 210, 1911. Extension 243.
Residence: 2902 Fairground Ave. Telephone 2-1476.

*Willis, L. G. In Charge Soil Research Laboratory.
Resdence: Wilmington, N. C. Telephone 7026.

*Wilson, Arthur John—Professor and Head. Chemistry Department. 107 Withers Hall. Extension 266.
Residence: 1808 Park Drive. Telephone 7125.

*Wilson, T. L.—Assistant Professor. English Department. 12 Peele Hall. Extension 223.
Residence: 407 Calvin Road. Telephone 6951.

*Winchester, R. B.—Teaching Fellow in Division of Teacher Training. 105 Tompkins Hall. Extension 257.
Residence: 2409 Stafford Avenue. Telephone 9659.

*Winkler, E. W.—Assist. Prof., Department of Electrical Engineering. 105 Daniels Hall. Extension 235.
Residence: 509 Daughtridge St. Telephone 2-1370.

*Winstead, S. W.—Steam Fitter, Power Plant. Extension 234.
Residence: Route 4, Raleigh.

*Winston, Sanford Professor, Sociology Department. 202 Peele Hall. Extension 231.
Residence: 120 Forest Rd. Telephone 2-1402.

*Winton, Lowell Sheridan Assistant Professor, Mathematics Department. 223 Tompkins Hall. Extension 228.
Residence: 604 Dixie Trail. Telephone 2-2992.

*Witmer, S. B.—Loom Fixer, Textile School. 2nd Floor Textile Building. Extension 273.
Residence: Cary, N. C.

*Wood, Walter A.—Assistant Coach of Football. Coaches' Office, Field House. Telephone 6934.
Residence: 2615 Fairview Rd. Teephone 6066.

*Woodhouse, W. W., Jr.—Associate Agronomist, Department of Agronomy. 114 Ricks Hall. Extension 262.
Residence: 3209 Hillsboro St. Telephone 4544.

Wrenn, R. W.—Teaching Fellow Chemistry Department. 208 Withers Hall. Extension 264.
Residence: 220½ Cox Ave. Telephone 8242.

*Wright, J. B. College Electrician. Service Department and Central Stores, Warehouse. Extension 272.
Residence: Western Boulevard. Telephone 4883.

*Wyman, Lenthall—Professor of Forestry, Division of Forestry. 305 Ricks Hall. Extension 270.
Residence: 1837 White Oak Rd. Telephone 8953.

*Wynn, Willard K.—Assistant Professor, English Department. 107 Pullen Hall. Extension 237.
Residence: 2707 Barmettler St.

Wynne, R. B. Instructor, English Department. 108 Pullen Hall. Extension 237.

*Young, Mrs. C. H.—Stenographer, Dept. of Animal Husbandry Extension. 202 Polk Hall. Extension 269.
Residence: 2303 Clark Ave. Telephone 8083.

Young, Mrs. Charles H.—Clerk of Admissions, Registration Office. 208 Holladay Hall. Extension 219.
Residence: Cameron Court Apt. H-2-A. Telephone 2 2630.

Young, Elizabeth Secretary, Division of Teacher Training. 119 Tompkins Hall. Extension 256.
Residence: Smithfield. Telephone Smithfield, 170-J.

*Zehmer, Mrs. Willis K. Secretary, Office of Dairy Investigations. 213 Polk Hall. Extension 305.
Residence: 2428 East Lake Drive. Telephone 2 1961.

NEW STUDENTS REGISTERED SECOND TERM 1940-41

NAME	CLASSIFICATION			HOME ADDRESS
ADAMS, RICHARD C.	So.,	B. D.	AGRI. EDUC.	RANDLEMAN
ADKINS, JAMES E.	Fr.,	B. D.	MECH. ENGR.	SUMMERFIELD
AMORE, S. THOMAS	AUDITOR			NEW YORK, N. Y.
ARRINGTON, LEONARD J.	GRAD.		AGRI. ECON.	RALEIGH
AUSTIN, ROBERT W., JR.	JUN.		M. E. - AERO. OPT.	ALBEMARLE
BAHEN, JOSEPH B., JR.	So.,	B. D.	CIVIL ENGR.	WASHINGTON, D. C.
BALLANCE, WILBUR C.	JUN.		GEOL. ENGR.	PORTSMOUTH, VA.
BEASLEY, JOE M.	JUN.		IND. ARTS EDUC.	LOUISBURG
BEASLEY, WILSON GLENN	So.,	B. D.	LAND. ARCH.	LOUISBURG
BEIR, ROBERT L.	JUN.		TEX. MFG.	NEW YORK, N. Y.
BOONE, ROY H.	So.,	B. D.	GEOL ENGR.	SPRUCE PINE
BOWEN, EVERETT R.	So.,	B. D.	CHEM. ENGR.	CHARLOTTE
BOWLES, JAMES P.	So.,	B. D.	AN. PROD.	HIDDENITE
BREEZE, WILLIAM H.	So.,	B. D.	AGRI. EDUC.	HURDLE MILLS
BROCKMAN, JACOB S.	Fr.,	B. D.	TEXTILES	RALEIGH
BROMAGE, JOHN STUART	SEN.		M.E. - AERO. OPT.	CRANFORD, N. J.
BROWN, HARLAN C.	GRAD.		ENTOMOLOGY	RALEIGH
BUNN, JAMES C.	GRAD.		GEN. ENGR.	SPRING HOPE
BURGH, JOHN P.	So.,	B. D.	AGRI.	MOUNTAIN PARK
CARSON, HILTON PARKER	JUN.		F. C. & PL. BREED.	STOKES
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GAWKOWSKI, PAUL	JUN.		FORESTRY	NEW YORK, N. Y.
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GENTRY, GERRY M.	So.,	B. D.	MECH. ENGR.	MADISON
GIBSON, PAUL J.	GRAD.		F. C. & PL. BREED.	RALEIGH
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GLAHN, RAYMOND M.	Fr.,	B. D.	FORESTRY	ORLAND PARK, ILL.
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GRIGGS, MARGIE	SEN.		OCCUP. INF. & GUID.	RALEIGH
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HANDY, RUSSELL P.	GRAD.		AGRI. ECON.	RALEIGH
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HOLLOMAN, BORDEN L.	Fr.,	B. D.	AGRI.	GOLDSBORO
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KELLY, JUNIUS C., JR.	JUN.		CHEM. ENGR.	GREENSBORO
KLEINKAUF, WESLEY A. L.	GRAD.		SOILS	TUCSON, ARIZ.
LANGDON, JAMES LLOYD	GRAD.		F. C. & PL. BREED.	SMITHFIELD
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LUMPKIN, GEORGE T.	So.,	B. D.	M. E. -AERO. OPT.	RALEIGH
LYNN, PAUL H.	Fr.,	B. D.	CHEM. ENGR.	RICHMOND, VA.
MCKAY, RICHARD W.	JUN.		CHEM. ENGR.	WARREN, OHIO

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STUDENT DIRECTORY

1940-1941

Name	*Classification*	*School Address*	*Home Address*
Abernathy, J. L.	Fr. M. E.	708 Hillsboro St.	Murphy, N. C.
Abernathy, R. P.	Fr. Ag.	2220 Hillsboro St.	Sjring Hope, N. C.
Abernethy, J. W., Jr.	Fr. Tex.	315 7th. Box 3381	Newton, N. C.
Abrams, J. T.	Fr. Ag. Ed.	26 8th, Box 3826	Macclesfield, N. C.
Abrams, Murry	Fr. M. E.	320 7th, Box 3386	Far Rockaway, N. Y.
Abrams, P. D.	Sen. For.	201 South, Box 3522	Hartford, Conn.
Achorn, G. S.	Sen. Chem. Engr.	117 Forest Road	Danielson, Conn.
Acton, P. A.	Fr. Ind. Engr.	308 N. Person St.	Raleigh, N. C.
Adair, R. B.	Jun. Cer. Engr.	125 Woodburn Road	Beaufort, N. C.
Adams, E. A.	So. M. E.	2220 Circle	Raleigh, N. C.
Adams, H. B.	Fr. Ag.	139 1911, Box 3739	Toronto, Canada
Adams, J. R.	Fr. M. E.	"A" 9th, Box	Greensboro, N. C.
Adams, P. G.	Jun. Tex. Mfg.	303 6th. Box 3263	Greensboro, N. C.
Adams, R. D.	Jun. Ag. Ed.	2 South, Box 3598	Willow Springs, N. C.
Adams, V. D.	Fr. For.	302 7th, Box 3368	Bethesda. Md.
Adams, W. E.	Grad. F. C. & P. B.	Franklinton	Franklinton, N. C.
Adcock, S. E., Jr.	Sen. Ind. Engr.	311 6th, Box 3271	Stokesdale, N. C.
Addington, B. A.	So. Ag.	215 A, Box 4144	Franklin, N. C.
Aheron, W. D.	Fr. C. E.	121 Cox Ave.	Spray, N. C.
Aiken, B. N.	Fr. M. E.	111 South. Box 3511	Fuquay Springs, N. C.
Alexander, J. H., III	Fr. M. E.	232 1911	Scotland Neck, N. C.
Alexander, James W.	Fr. M. E.	121 8th, Box 3721	Charlotte, N. C.
Alexander, John W.	Sen. Tex. Mfg.	1710 Park Drive	Asheboro, N. C.
Alexander, R. L.	Fr. M. E.	2402 Everett Ave.	Warren, Ohio
Alexander, S. D.	Fr. An. Prod.	117 7th, Box 3317	Matthews, N. C.
Alexander, W. D.	Fr. Tex.	2316 Hillsboro St.	Concord, N. C.
Allen, B. H.	So. Ag. Ed.	330 A, Box 4193	Matthews, N. C.
Allen, F. C.	Fr. Tex. Mfg.	305 C. Box 4270	Wadesboro, N. C.
Allen, F. D.	So. Poul. Sci.		Marshville, N. C.
Allen, F. O., Jr.	Fr. Gen. Engr.	900 W. Johnson	Raleigh, N. C.
Allen. H. A., Jr.	Fr. M. E.	110 8th, Box 3710	Charlotte, N. C.
Allen, J. A.	So. Ind. Engr.	2112 Woodland Ave.	Raleigh, N. C.
Allen, J. R.	Sen. Ag. Ed.	18 South, Box 3614	Marshville, N. C.
Allen, R. M., Jr.	So. Chem. Engr.	116 Hawthorn Road	Raleigh, N. C.
Allen, R. R.	Jun. Ag. Ed.	300 E. Whitaker Mill Rd.	Council, N. C.
Allen, W. R.	Fr. E. E.	216 A, Box 4145	Badin, N. C.
Alles, G. J.	Fr. C. E.	326 C, Box 4288	Wilmington, N. C.
Allison, A. D.	Sen. Tex. Mfg.	115 W. Park Drive	Pine Bluff, N. C.
Allison, J. W.	Fr. Ag. Ed.	107 8th, Box 3703	Davidson, N. C.
Allred, W. B.	So. Chem. Engr.	212 6th, Box 3260	Badin, N. C.
Almond, E. K.	Fr. Ag.	2 Gymnasium	Albemarle, N. C.
Alphin, D. W.	Fr. M. E.	2318 Byrd St.	Wendell, N. C.
Alston, W. F.	Grad. Pl. Path.	406 Brooks Ave. care George Moore	Pitman, N. J.
Althaus, K. G., Jr.	So. Chem. Engr.	603 Adams St.	Ft. Sill, Okla.
Altsheler, Seymour	Soph. Tex. C. & D.	2304 Clark Ave.	Newark, N. J.
Ambers, A. A.	Fr. For.	213 7th, Box 3345	Mount Ida, Ark.
Anderson, W. T., Jr.	So. E. E.	324 C, Box 4286	Charlotte, N. C.
Anderssen, G. E.	So. M. E.	14 Dixie Trail	Merchantville, N. J.
Andreacchi, M. J.	Fr. Ind. Engr.	4 Fieldhouse	Brooklyn, N. Y.
Andrews, Curtis H.	So. M. E.	2807 White Oak Road	Kinston, N. C.
Andrews, Clarence H., Jr.	So. M. E.	509 Burton Street	Raleigh, N. C.
Andrews, H. P.	Sen. Ag. Chem.	207 South, Box 3539	Lumberton, N. C.
Andrews, J. L.	Fr. Tex.	1408 Hillsboro St.	Bonlee, N. C.
Andrews, J. Ward	Sen. C. E.	226 South, Box 3558	Wilmington, N. C.
Andrews, J. William	Jun. M. E.	4 Ferndell Lane	Greensboro, N. C.
Andrews, R. C.	Sen. M. E.	106 5th, Box 3206	Mt. Olive, N. C.

Name	*Classification*	*School Address*	*Home Address*
Angelo, W. E.	Jun. Chem. Engr.	211 A, Box 4174	Winston-Salem, N. C.
Ankers, R. E.	Jun. E. E.	206 5th, Box 3218	Falls Church, Va.
Anthony, J. O., Jr.	Fr. Ag. Ed.	122 8th, Box 3722	Wilson, N. C.
Appleberry, C. M., Jr.	Fr. Chem. Engr.	125 7th, Box 3325	Wilmington, N. C.
Aquilino, J. M.	So. Ag. Ec.	2804 Hillsboro	Providence, R. I.
Arden, D. D., Jr.	So. Geol. Engr.	327 C, Box 4289	High Point, N. C.
Arey, J. A., Jr.	So. Tex. Mfg.	5 Maiden Lane	Raleigh, N. C.
Ariail, A. S.	Jun. Chem. Engr.	330 C, Box 4292	Charlotte, N. C.
Armfield, F. S.	Fr. For.	326 1911, Box 3806	Greensboro, N. C.
Armstrong, C. B., Jr.	Fr. M. E.	202 9th, Box 4309	Davidson, N. C.
Armstrong, C. P.	Fr. E. E.	210 5th, Box 3222	Davidson, N. C.
Armstrong, O. E.	So. Chem. Engr.	Halifax Court Apts.	Grensboro, N. C.
Armstrong, T. F.	Sen. C. E.	10 Enterprise, Box 5065	Columbia, N. C.
Arnaiz, Manuel, Jr.	Fr. M. E.	306 E. Martin St.	Raleigh, N. C.
Asbury, T. R.	Fr. Chem. Engr.	135 1911, Box 3735	Charlotte, N. C.
Ashworth, T. J., Jr.	Fr. Ag.	710 N. Bloodworth St.	Raleigh, N. C.
Askey, R. H.	Grad. Occup. Inf.	308 4th, Box 3134	Richlands, N. C.
Ataman, O. S.	Grad. Tex.	123 Brooks Ave.	Tzmir, Turkey
Atkins, S. W.	Auditor	1312 Filmore St.	Lone Mountain, Tenn.
Atkinson, G. S., Jr.	Jun. C. E.	2406 Hillsboro St.	Fayetteville, N. C.
Atkinson, R. A., Jr.	So. Arch. Engr.	107 C, Box 4205	Winston-Salem, N. C.
Atkinson, W. H.	So. M. E.	2410 Everett Ave.	Elizabethtown, N. C.
Auman, F. E.	Jun. Ag. Ed.	Gym	West End, N. C.
Ausman, R. P.	Soph. M. E.	121 South, Box 3521	Phoenix, N. Y.
Austin, L. H.	Sen. Ag. Ed.	104 5th, Box 3204	Mt. Pleasant, N. C.
Austin, R. D., Jr.	So. M. E.	125 Woodburn Road	Winston-Salem, N. C.
Austin, R. G.	Fr. Ag.	133 1911, Box 3733	Laurel Springs, N. C.
Austin, W. R.	Jun. Ag. Ed.	223 Forest Road	Peachland, N. C.
Avent, J. S.	Sen. M. E.	105 5th, Box 3205	Sanford, N. C.
Avera, W. W.	Soph. M. E.	133 A, Box 4127	Rocky Mount, N. C.
Avery, P. S.	Jun. An. Prod.	207 Wattauga, Box 3025	Morganton, N. C.
Avery, R. M., Jr.	Jun. Chem. Engr.	302 A, Box 4168	Winston-Salem, N. C.
Aycock, Robert	Grad. Plant Path.	106 Horne St.	Lisbon, La.
Aydlett, A. L.	Grad. Rur. Soc.	227 W. Edenton St.	
Bacon, G. W.	Fr. M. E.	318 7th, Box 3384	Pee Dee, N. C.
Baggett, D. D.	So. Ag.	225 South, Box 3557	Dunn, N. C.
Bailey, E. A., Jr.	Grad. Ag. Chem.	203 4th, Box 3121	La Grange, Ga.
Bailey, J. R.	Fr. M. E.	220 8th, Box 3759	Rocky Mount, N. C.
Bailey, J. W., Jr.	Fr. Chem. Engr.	617 Aycock St.	Raleigh, N. C.
Bailey, W. H.	Fr. Ag.	110 C, Box 4207	Apex, N. C.
Baise, W. V., Jr.	Jun. E. E.	310 W. Whitaker Mill Rd.	Raleigh, N. C.
Bakan, Alex	Fr. Ag. Chem.	224 8th, Box 3758	Burgaw, N. C.
Baker, H. M.	Fr. M. E.	4 Ferndell Lane	High Point, N. C.
Baker, P. G.	Jun. M. E.	202 6th, Box 3250	Verona, N. J.
Baker, R. L.	Sen. Chem. Engr.	314 Wat., Box 3050	Asheville, N. C.
Baker, W. P., Jr.	Fr. M. E.	3201 Clark Ave.	Raleigh, N. C.
Balamoutis, F. N.	Fr. M. E.	2 Gym	Spartanburg, S. C.
Baldwin, Miss Olive D.	Special	Peace College, Box 65	Whiteville, N. C.
Ball, J. T., Jr.	Fr. M. E.	Box 1626	Raleigh, N. C.
Ball, T. N.	Fr. M. E.	114 N. Bloodworth St.	Raleigh, N. C.
Ball, T. W.	Fr. C. E.	Gym	Charlotte, N. C.
Ballance, H. E.	Sen. Chem. Engr.	2304 Hillsboro St.	Portsmouth, Va.
Ballard, Carl	Fr. M. E.	Fieldhouse	Oxford, N. C.
Ballard, D. J.	So. Ag.	229 South, Box 3561	Newton, N. C.
Ballard, J. P.	Jun. F. Bus. Adm.	117 Wat., Box 3017	Varina, N. C.
Ballard, L. H.	So. Tex. Mfg.	321 C, Box 4283	Wilmington, N. C.
Ballenger, Miss Alberta	So. Flori.	601 Brooks Ave.	Charlotte, N. C.
Ballenger, S. T.	Auditor	Rosedale Ave.	Raleigh, N. C.
Ballenger, W. C., Jr.	Fr. Ag.	202 7th, Box 3334	Charlotte, N. C.
Ballentine, J. B.	Grad. Ag. Chem.	105 4th, Box 4115	Batesburg, S. C.
Balthis, L. H.	Fr. Tex.	101 10th, Box 4401	Gastonia, N. C.

Name	*Classification*	*School Address*	*Home Address*
Bame, E. W.	Fr. E. E.	115 Chamberlain St.	Carolina Beach, N. C.
Banadyga, A. A.	Jun. Hort.	223 South, Box 3555	Burgaw, N. C.
Banks, Mitchiner	So. An. Prod.	312 A, Box 4175	Franklinton, N. C.
Banks, M. K.	Jun. Geol. Engr.	130 Hawthorn Road	Greensboro, N. C.
Bannerman, P. E.	Fr. Cer. Engr.	232 8th, Box 3766	Burgaw, N. C.
Barbee, B. H.	So. E. E.	Wake Forest	Wake Forest, N. C.
Barbee, G. H.	Fr. Tex.	338 1911, Box 3818	Winston Salem, N. C.
Barber, J. C.	Fr. M. E.	122 South, Box 3522	Hamlet, N. C.
Barber, J. E.	Fr. M. E.	229 7th, Box 3361	Clayton, N. C.
Barksdale, W. D.	So. Ind. Engr.	131 A, Box 4126	Bluefield, W. Va.
Barnes, E. R.	Fr. M. E.	238 1911, Box 3778	Greensboro, N. C.
Barnes, F. P.	Fr. C. E.	127 8th, Box 3727	Henderson, N. C.
Barnes, L. R.	Sen. Poul. Sci.	225 7th, Box 3357	Oxford, N. C.
Barnes, Miss Mary Frances	Special	Peace College	Goldsboro, N. C.
Barnes, R. C.	Grad. Entom.	1208 Filmore St.	Summerfield, Ohio
Barnette, J. R.	Sen. Ind. Arts Ed.	202 Wat., Box 3020	Huntersville, N. C.
Barnhardt, W. W.	Fr. Chem. Engr.	225 1911	Winston Salem, N. C.
Barnhill, J. B.	So. An. Prod.	212 5th, Box 3224	Scotland Neck, N. C.
Barr, J. M., Jr.	So. Tex.	239 A, Box 4165	Charlotte, N. C.
Barrett, F. M.	So. Ag. Ed.	312 A, Box 4175	Macon, N. C.
Barrier, G. H.	Jun. Tex. Mfg.	10 N. East St.	Raleigh, N. C.
Bartholomew, H. C.	Fr. M. E.	4 Maiden Lane	Mt. Pleasant, N. C.
Barlett, D. I.	Jun. Tex. Mfg.	130 South, Box 3134	Oldtown, Va.
Barlett, W. D., Jr.	So. M. E.	2407 Clark Ave.	Greensboro, N. C.
Barton, W. J.	Fr. For.	108 7th, Box 3308	Canton, N. C.
Bason, G. R.	Sen. E. E.	2513 Clark Ave.	Charlotte, N. C.
Bass, H. B.	Jun. Ind. Engr.	10 Enterprise St.	High Point, N. C.
Bateman, P. H.	Fr. M. E.	125 Chamberlain St.	Rockingham, N. C.
Baucom, T. C.	Jun. Ag. Ed.	323 South, Box 3587	Polkton, N. C.
Bazemore, J. W.	Fr. M. E.	10 9th, Box 4343	Mount Olive, N. C.
Beam, C. C.	So. Ag. Ed.	301 6th, Box 3261	Lawndale, N. C.
Beam, F. M.	Sen. C. E.	2310 Hillsboro St.	Ellenboro, N. C.
Beam, H. E.	Fr. Ag.	116 8th, Box 3716	Fallston, N. C.
Beaman, A. L., Jr.	So. E. E.	16 South, Box 3612	Snow Hill, N. C.
Beaman, W. J., Jr.	Fr. Arch.	229 1911	Greensboro, N. C.
Bean, J. L., Jr.	Jun. Arch. Engr.	320 South, Box 3584	Cherryville, N. C.
Beard, H. G.	Fr. Ag.	104 7th, Box 3304	Fayetteville, N. C.
Beatty, C. G.	Fr. Cer. Engr.	334 8th, Box 3802	Albemarle, N. C.
Beatty, J. D.	Fr. Tex.	307 4th, Box 3133	Albemarle, N. C.
Beaver, W. E., Jr.	Jun. Tex. Mgt.	224 C, Box 4252	Salisbury, N. C.
Bebo, C. W.	So. Chem. Engr.	Wake Forest Rd., Rt. 1	Raleigh, N. C.
Beeghly, R. E.	Fr. Cer. E.	331 8th, Box 3799	Jacksonville, Fla.
Beeman, C. K.	Jun. Ag. Engr.	124½ Hillcrest Road	Raleigh, N. C.
Beeman, R. C.	So. Dairy Mfg.	124½ Hillcrest Road	Raleigh, N. C.
Bell, F. B.	Fr. M. E.	311 7th, Box 3377	Winston-Salem, N. C.
Bell, F. W., Jr.	Fr. M. E.	553 N. Person St.	Raleigh, N. C.
Bell, H. B.	Sen. Chem. Engr.	311 7th, Box 3377	Winston-Salem, N. C.
Bell, H. C.	Fr. M. E.	323 9th, Box 4323	Leaksville, N. C.
Bell, H. P.	Fr. Ag.	20 8th, Box 3821	Huntersville, N. C.
Bell, J. A.	Jun. Ind. Arts Ed.	208 6th, Box 3256	Newport, N. C.
Bell, J. V., Jr.	Fr. M. E.	332 7th, Box 3398	Boothbay, Maine
Bell, T. A.	Grad. Ag. Chem.	203 4th, Box 3121	Spartanburg, S. C.
Benbenek, Raymond	Fr. Cer. Engr.	Fieldhouse	Jamestown, N. Y.
Bennett, F. M.	Jun. Ag.	2504 Vanderbilt Ave.	Jackson Sprngs, N. C.
Bennett, M. W., Jr.	Fr. M. E.	312 Wat., Box 3048	Raleigh, N. C.
Bennett, S. B.	So. M. E.	212 5th, Box 3224	Burnsville, N. C.
Benton, W. T.	Jun. Chem. Engr.	1720 Hillsboro St.	Wilmington, N. C.
Berger, C. E.	Fr. Ag.	222 7th, Box 3354	Brooklyn, N. Y.
Berger, W. L.	Fr. M. E.	4 8th, Box 3806	Winston-Salem, N. C.
Berkut, M. K.	Sen. Ag. Chem.	Westover, Route 4	Deans, N. J.
Berman, S. M.	So. Tex.	312 Chamberlain St.	Baltimore, Md.
Bernstein, H. S.	Fr. Tex. Mgt.	114 A, Box 4111	Brooklyn, N. Y.

Name	*Classification*	*School Address*	*Home Address*
Berryhill, E. C.	Fr. Ag.	313 8th, Box 3781	Charlotte, N. C.
Berryhill, W. W.	Fr. M. E.	112 7th, Box 3312	Charlotte, N. C.
Bethea, J. B.	Fr. Ag.	216 7th, Box 3348	Lillington, N. C.
Betts, B. S.	Fr. Gen. Engr.	1814 Park Drive	Raleigh, N. C.
Betts, J. K.	So. Chem. Engr.	207 6th, Box 3255	Woodbury, N. J.
Betty, L. I., Jr.	Fr. Tex.	316 8th, Box 3784	Raleigh, N. C.
Bickerstaff, R. B.	Jun. Cer. Engr.	1301 Hillsboro St.	Columbus, Ga.
Bivens, R. W.	Fr. E. E.	34 Shepherd St.	Wingate, N. C.
Bivins, T. E.	So. I. A. Ed.	111 6th, Box 3247	Hillsboro, N. C.
Blackman, B. B.	So. Ag.	2220 Hillsboro St.	Buie's Creek, N. C.
Blackwelder, A. L.	Jun. Tex. Mfg.	305 5th, Box 3229	Hickory, N. C.
Blackwelder, B. K.	Fr. M. E.	310 7th, Box 3376	Lenoir, N. C.
Blackwelder, H. B.	Fr. Chem. Engr.	211 9th, Box 4318	Wadesboro, N. C.
Blake, C. J., Jr.	Fr. M. E.	235 1911, Box 3775	Greensboro, N. C.
Blalock, J. E.	So. M. E.	306 5th, Box 3230	Stem, N. C.
Blalock, M. E., Jr.	Jun. Geol. Engr.	213 Woodburn Road	Sanford, N. C.
Bland, W. A.	Jun. For.	2008 Hillsboro St.	Boydton, Va.
Bland, W. M.	Sen. Ag. Ed.	315 Wat., Box 3051	Pittsboro, N. C.
Blanton, G. K.	Fr. M. E.	140 1911	Forest City, N. C.
Blanton, J. S.	Fr. Ag. Ed.	220½ Cox Ave.	Lattimore, N. C.
Bledsoe, S. B., Jr.	Jun. M. E.	212 South, Box 3544	New Bern, N. C.
Blevens, C. E.	Jun. Ag.	20 South, Box 5127	Hays, N. C.
Blevins, G. N.	Jun. Ag. Ed.	110 South, Box 3510	Bakersville, N. C.
Bloch, Irwin	Sen. Tex. Mfg.	201 4th, Box 5458	New York, N. Y.
Bloom, Teddy	Fr. E. E.	123 Woodburn Road	Bridgeport, Conn.
Blow, J. G.	Jun. M. E.	2407 Clark Ave.	Vanceboro, N. C.
Blue, J. F.	So. Tex. Mgt.	215 A, Box 4144	Carthage, N. C.
Blue, W. H.	Jun. E. E.	112 Wat., Box 3012	Carthage, N. C.
Blum, N. D.	Fr. Ag.	230 7th, Box 3362	Newark, N. J.
Bobbitt, R. M.	So. Ag.	612 Rosemont Ave.	Littleton, N. C.
Bodner, H. L.	Fr. M. E.	239 C, Box 4264	Philadelphia, Pa.
Boger, J. D.	Sen. Tex. Mfg.	103 Chamberlain St.	Concord, N. C.
Boley, J. B.	Fr. For.	11 Fieldhouse	Thurmond, W. Va.
Boling, H. H.	Grad. An. Prod.	332 South, Box 3596	Randleman, N. C.
Bollin, C. R.	Fr. Tex.	301 7th, Box 3367	Mayodan, N. C.
Boltrek, Peter, Jr.	So. M. E.	110 South, Box 3518	Averne, N. Y.
Bond, E. G.	Fr. An. Prod.	2 10th	Oriental, N. C.
Bonds, L. C.	Fr. M. E.	105 9th, Box 4305	Concord, N. C.
Boney, W. J.	Fr. Arch. Engr.	116 8th, Box 3716	Wilmington, N. C.
Boone, D. L.	Fr. M. E.	312 Wat., Box 3048	Rich Square, N. C.
Boone, J. B.	So. Ag. Ed.	120 C, Box 4217	Clinton, N. C.
Bordeaux, J. H., Jr.	Fr. Ag.	338 1911, Box 3818	Burgaw, N. C.
Bost, C. M.	Jun. Ag. Ed.	4 Maiden Lane	Rockwell, N. C.
Bostick, J. K.	Fr. M. E.	411 Dixie Trail	Raleigh, N. C.
Bousfield, C. J.	So. For.	131 C, Box 4227	Queens Village, N. Y.
Bowditch, E. A.	Fr. M. E.	116 7th, Box 3703	Toecane, N. C.
Bowen, M. W.	Sen. F.C.& P.	2603 Clark Ave.	Burgaw, N. C.
Bower, J. H.	Jun M. E.	2316 Hillsboro St.	Lexington, N. C.
Bowers, E. S., Jr.	Grad. Chem. Engr.	Withdrew Oct. 2	Jackson, N. C.
Bowers, F. J.	Jun. F.C.&P.B.	114 South, Box 3514	Jackson, N. C.
Bowles, W. F.	Sen. An. Prod	317 A, Box 4180	Hiddenite, N. C.
Bowman, H. L.	Jun. Chem. Engr.	138 A, Box 4130	Hickory, N. C.
Boyce, M. B.	Fr. Chem. Engr.	133 C, Box 4228	Albemarle, N. C.
Boyce, R. D.	So. Ag.	307 5, Box 3231	Woodland, N. C.
Boyd, F. E., Jr.	Fr. Tex.	101 8th, Box 3701	Stanley, N. C.
Boyd, R. B., Jr.	Fr. Gen. Engr.	304 9th, Box 4324	Durham, N. C.
Boyd, W. E.	Fr. M. E.	101 A, Box 4101	Newport, N. C.
Boyer, C. D., Jr.	Fr. Chem. Engr.	205 Forest Road	Arlington, Va.
Boyer, F. S.	Fr. M. E.	311 8th, Box 3779	Rocky Mount, N. C.
Boyette, C. R.	Fr. Tex.	301 Park Ave.	Goldsboro, N. C.
Boylan, W. M.	So. M. E.	B-201 Boylan Apts.	New Bern, N. C.
Bradshaw, D. H., Jr.	Jun. M. E.	238 A, Box 4164	Norfolk, Va.

Name	*Classification*	*School Address*	*Home Address*
Brady, D. W.	Jun. An. Prod.	119 South, Box 3519	Rocky Point, N. C.
Bragaw, William	Fr. For.	1626 Hillsboro St.	Winnabow, N. C.
Brake, R. R., Jr.	Fr. Ag.	217 8th, Box 3751	Battleboro, N. C.
Brame, C. B.	So. M. E.	134 Woodburn Road	Lucama, N. C.
Bramlett, J. E.	Sen. Chem. Engr.	324 South, Box 3588	Cove Creek, N. C.
Brandon, S. B.	Jun. Ag. Ed.	18 South, Box 3614	Yadkinville, N. C.
Brandt, George	Jun Tex. C.&D.	21 Enterprise St.	Greensboro, N. C.
Brannon, R. E.	Sen. Tex. C&D	224 South, Box 3556	Rockingham, N. C.
Branscome, J. R.	Jun. Chem. Engr.	311 A, Box 4174	Galax, Va.
Brantley, W. O.	Fr. Ag.	201 6th, Box 3249	Rocky Mount, N. C.
Brasington, C. F., Jr.	So. M. E.	305 A, Box 4171	Aberdeen, N. C.
Bratton, John, Jr.	Fr. M. E.	1530 Carr St.	Raleigh, N. C.
Brawley, T. A.	So. Ag.	4 Maiden Lane	Mooresville, N. C.
Brendle, Dwight	So. Ag. Ec.	8 Ferndell Lane	Boonville, N. C.
Brenner, M. K.	Fr. E. E.	301 8th, Box 3769	New York City
Breuer, E. P.	Fr. Ind. Engr.	105 10th, Box 4405	Greensboro, N. C.
Brewer, J. E.	Sen. Pomology	10 Enterprise St.	Clemmons, N. C.
Brewer, W. P.	Jun. Chem. Engr	219 South, Box 3551	Greensboro, N. C.
Brickhouse, R. E., Jr.	Fr. Cer. Engr.	302 8th, Box 3770	Warrenton, N. C.
Bridges, G. R.	So. Ag. Ed.	11 South, Box 3607	Ellenboro, N. C.
Briggs, E. L., Jr.	Fr. M. E.	204 9th, Box 4311	High Point, N. C.
Briggs, T. L., Jr.	So. M. E.	111 South, Box 3511	Raleigh, N. C.
Brinkley, J. W.	So. Tex. C&D	213 C, Box 4241	Valdese, N. C.
Brinson, L. T., Jr.	Fr. M. E.	312 C, Box 4274	Arapahoe, N. C.
Britt, B. E.	Fr. Ag.	Garner	Garner, N. C.
Brohm, W. J., III	So. Cer. Engr.	215 C, Box 4247	Fanwood, N. J.
Bronner, C. P.	Fr. C. E.	308 8th, Box 3776	New York, N. Y.
Brookbank, T. H.	Sen. Arch. Engr.	139 A, Box 4131	Winston-Salem, N. C.
Brooks, P. A.	Jun. Chem. Engr.	2306 Hillsboro St.	Albemarle, N. C.
Brooks, W. J.	Fr. Chem. Engr.	2330 Hillsboro St.	Red Springs, N. C.
Brotman, Arnold	Fr. Tex.	334 1911, Box 3814	Newark, N. J.
Brown, A. W.	Sen For.	124 South, Box 3524	Rockwell, N. C.
Brown, D. J.	Sen. Tex. W&D	331 C, Box 4293	Cramerton, N. C.
Brown, F. B., Jr.	Grad. E. E.	2100 Hillsboro St.	Columbia, S.C.
Brown, F. S.	Fr. Ag.	128 A, Box 4123	Statesville, N. C.
Brown, H. E.	So. Chem. Engr.	228 A, Box 4157	Asheboro, N. C.
Brown, H. G.	Grad. Ag. Ec.	2512 Vanderbilt Ave.	Raleigh, N. C.
Brown, J. J.	Fr. M. E.	210 8th, Box 3744	Mount Airy, N. C.
Brown, J. O., Jr.	Fr. Chem. Engr.	113 8th, Box 3713	Salisbury, N. C.
Brown, J. T.	Sen. Chem. Engr.	120½ Groveland Ave.	Roanoke Rapids, N. C.
Brown, K. B.	Sen. Chem. Engr.	312 South, Box 3576	Wilmington, N. C.
Brown, L. E.	Fr. M. E.	125 8th, Box 3725	Warsaw, N. C.
Brown, L. W.	Fr. Tex. Mfg.	10 Enterprise St.	Chadbourn, N. C.
Brown, O. N., Jr.	Fr. M. E.	201 8th, Box 3735	Grensboro, N. C.
Brown, P. J., Jr.	Sen. An. Prod.	Brooks Ave., Box 5441	Charlotte, N. C.
Brown, R. E.	Fr. C. E.	2717 Rosedale	Burgaw, N. C.
Brown, R. O.	Fr. Ag.	Brooks Ave., Box 5441	Charlotte, N. C.
Brown, T. R.	Sen. Tex. Mfg.	5 Enterprise St.	Cramerton, N. C.
Brown, W. Albert, Jr.	Jun. Ind. Engr.	301 South, Box 3565	Wilmington, N. C.
Brown, W. Ashby	So. E. E.	107 A, Box 4106	Elizabeth City, N. C.
Brown, W. T.	Fr. Tex.	19 8th, Box 3820	Charlotte, N. C.
Browne, E. B.	Grad. F.C.&P.B.	1715 Park Drive	Raleigh, N. C.
Browning, W. I., Jr.	So. Chem. Engr.	131 South, Box 3531	Graham, N. C.
Brownstein, Edward	Jun Entomology	2304 Clark Ave.	New Haven, Conn.
Bruton, F A.	So. C. E.	212 6th, Box 3260	Mt. Gilead, N. C.
Bryan, C. H., Jr.	Fr. Ag.		Apex, N. C.
Bryan, D. L.	Sen. Chem. Engr.	125 Woodburn Road	Wilson, N.C.
Bryan, J. M., Jr.	So. Chem. Engr.	325 South, Box 3589	Burlington, N. C.
Bryan, R. P.	Sen. An. Prod	221 Forest Road	Marshall, N. C.
Bryan, W. P.	Sen. Chem. Engr.	2805½ Bedford Ave.	Rt. 6, Marshall, N. C.
Bryant, E. L.	Jun. Chem. Engr.	325 7th, Box 3391	Wilmington, N. C.

Name	*Classification*	*School Address*	*Home Address*
Bryant, J. F.	Fr. M. E.	1911 Alexander Road	Raleigh, N. C.
Bryant, W. E.	Jun. Ind. Engr.	206 9th, Box 4313	Wilmington, N. C.
Bryson, H. B.	So. Chem. Engr.	115 A, Box 4112	Hendersonville, N. C.
Buffaloe, H. L.	Jun. M. E.	339 A, Box 4199	Garner, N. C.
Buice, J. L.	Fr. Tex.	226 8th, Box 3760	Charlotte, N. C.
Bulger, J. G.	So. Tex. Mgt.	103 Chamberlain St.	Winnetka, Ill.
Bullard, A. B.	Fr. Ag.	2220 Hillsboro St.	Stedman, N. C.
Bullard, A. G.	Grad. Ag. Ed.	305 4th, Box 3131	Roxboro, N. C.
Bullard, E. T.	So. Ag.	2008 Hillsboro St.	Central Valley, N. Y.
Bullock, E. B.	Fr. Ind. Engr.	103 Chamberlain St.	Winston-Salem, N. C.
Bullock, J. B.	Grad. E. E.	303 4th, Box 5303	Raleigh, N. C.
Bundy, S. A.	Sen. Tex. Mgt.	1301 Hillsboro St.	Jamestown, N. C.
Bunkley, Joseph	Grad. Pl. Br.	1806 Hillsboro St.	Montgomery, Ala.
Bunn, C. I.	Grad. W.C.&M	104 4th, Box 3114	Spring Hope, N. C.
Bunn, J. E.	Fr. M. E.	227 8th, Box 3761	Rockingham, N. C.
Bunn, J. W., Jr.	Sen. M. E.	1501 Iredell Drive.	Raleigh, N. C.
Burdette, M. R.	Grad. Occup. Inf.	2729 Cambridge Rd., Box 1766	Spencer, N. C.
Burgess, J. F.	Jun. Chem. Engr.	50 1911, Box 5252	Pleasant Garden, N. C.
Burke, T. D.	So. Occup. Inf.	118 N. Dawson St.	Raleigh, N. C
Burkett, T. E.	Fr. Chem. Engr.	309 9th, Box 4329	Jefferson, N. C.
Burnett, W. T.	Grad. Ag. Chem.	205 4th, Box 3123	Spartanburg, S.C.
Burnette, C. E.	Fr. M. E.	303 8th, Box 3771	Alexander, N. C.
Burnham, J. M., III	Sen. Arch. Engr.	103 Chamberlain St.	Charlotte, N. C.
Burns, H. D.	Fr. Ag.	107 7th, Box 3307	Fairmont, N. C.
Burrows, W. L.	Fr. Chem. Engr.	106 7th, Box 3306	Charlotte, N. C.
Burt, R. L.	Grad M. E.	218 N. McDowell St.	Raleigh, N. C.
Burts, T. E., Jr.	Fr. M. E.	319 7th, Box 3385	Charlotte, N. C.
Bush, F. J.	Fr. M. E.	8 9th, Box 4341	New York, N. Y.
Bushee, W. H., Jr.	Fr. Tex.	314 8th, Box 3782	Mt. Holly, N. C.
Butler, J. K., Jr.	Fr. Ag.	7 9th, Box 4340	Windsor, N. C.
Butler, T. V.	Fr. C. E.	1410 Everette Ave.	Elizabethtown, N. C.
Byerly, O. V.	Sen. Tex. Mgt.	301 Wat., Box 3037	Lexington, N. C.
Bynum, C. M.	So. M. E.	104 Wat., Box 3004	Bayboro, N. C.
Byrd, H. A.	Fr. Ag.	213 South, Box 4120	Burlington, N. C.
Byrd, M. F.	Fr. M. E.	109 7th, Box 3309	Parkton, N. C.
Byrd, R. H.	Fr. Hort.	209 8th, Box 3743	Bunnlevel, N. C.
Byrum, G. M., Jr.	Fr. Tex.	130 8th, Box 3730	Edenton, N. C.
Cabe, H. W., Jr.	Fr. M. E.	128 8th, Box 3728	Franklin, N. C.
Cabe, K. R.	So. Ind Engr.	327 A, 4190	Franklin, N. C.
Caddell, W. W.	So. Chem. Engr.	120 South, Box 3520	Charlotte, N. C.
Cagle, R. C., Jr.	Jun. M. E.	103 C, Box 4202	Rockingham, N. C.
Cain, E. P., Jr.	So. Chem. Engr.	320 New Bern Ave.	Raleigh, N. C.
Caldwell, L. E.	Jun. Chem. Engr.	213 Wat., Box 3031	Campobello, S. C.
Caldwell, O. T.	Jun. E. E.	115 Wat., Box 3015	Winston-Salem, N. C.
Caldwell, T. P.	Jun. Tex. C&D	305 6th, Box 3265	Charlotte, N. C.
Calfee, J. F.	Jun E. E.	222 South, Box 3554	Belhaven, N. C.
Calhoun, L. G., Jr.	So. Ag. Ed.	209 A, Box 4139	Rocky Mount, N. C.
Call, J. W.	Sen. Chem. Engr.	105 South, Box 3505	Wilson, N. C.
Callaway, R. F.	Fr. Chem. Engr.	3 Fieldhouse	Henderson, N. C.
Callis, H. M.	Fr. E. E.	220 Cox Ave.	Willow Springs, N. C.
Calman, C. M.	Fr. Ag.	2304 Clark Ave.	New York, N. Y.
Cameron, H. C.	Jun. Gen. Engr.	117 C, Box 4214	Oxford, N. C.
Cameron, H. L.	So. Ag. Ed.	101 5th, Box 3201	Vass, N. C.
Cameron, W. A.	Fr. I.A. Ed.	5 Fieldhouse	Asheboro, N. C.
Camp, B. G.	Jun. E. E.	Central Prison *c/o* H. H. Wilson, Box 5454	Ahoskie, N. C.
Campbell, D. D.	Fr. For.	234 7th, Box 3366	Fairhaven, N. C.
Campbell, J. F.	Jun. E. E.	2706 Vanderbilt Ave.	Wagram, N. C.
Campbell, M. R.	Sen. M. E.	207 A, Box 4138	Dunn, N. C.
Campbell, W. E.	Fr. Arch. Engr.	205 8th, Box 3739	Wethersfield, Conn.

Name	*Classification*	*School Address*	*Home Address*
Campbell, W. N.	Sen. C. E.	209 Ashe Ave	Raleigh, N. C.
Cannady, N. E., Jr.	Jun. E. E.	124 A, Box 4119	Oxford, N. C.
Canup, L. P.	So. Ag. Ed.	207 5th, Box 3219	Salisbury, N. C.
Capehart, A. A., Jr.	Fr. M. E.	229 C, Box 4257	Washington, N. C.
Capel, G. L.	Fr. Ag. Ed.	123 7th, Box 3323	Garysburg, N. C.
Capps, P. V.	Fr. E. E.	306 Georgetown Road.	Raleigh, N. C.
Carey, J. P.	Jun. Arch. Engr.	2405 Clark Ave.	Kinston, N. C.
Carey, R. E.	Sen. For.	316 South, Box 3580	Baltimore, Md.
Carmichael, T. W., Jr.	Fr. E. E.	129 8th, Box 3729	Rowland, N. C.
Carmichael, W. A.	Fr. Ag. Ed.	209 9th, Box 4316	Stanfield, N. C.
Carney, J. F.	Jun. C. E.	2406 Hillsboro St.	Emporia, Va.
Carpenter, K. C.	Sen. Ag. Ed.	120 Cox Ave.	Lincolnton, N. C.
Carpenter, M. N., Jr.	Sen. Tex. Mgt.	313 Wat., Box 3049	Margarettesville, N. C.
Carr. J. C.	Fr. Ag.	125 Woodburn Road.	Magnolia, N. C.
Carrell, E. W.	Fr. Tex.	328 8th, Box 3697	Wilmington, N. C.
Carrithers, P. N.	Fr. Ag.	101 9th, Box 4301	Hudson, N. C.
Carroll, S. E., Jr.	Jun. Chem. Engr.	Box 772	Raleigh, N. C.
Carson, T. V.	So. E. E.	409 Oakwood Ave.	Raleigh, N. C.
Carter, W. E.	Jun. Ind. Engr.	520 Cleveland	Raleigh, N. C.
Carty, E. L.	So. E. E.	126 A, Box 4121	Selma, N. C.
Carvalho, Raul	So. Chem. Engr.	328 South, Box 3592	Swannanoa, N. C.
Carver, I. L.	So. Pomology	112 Cox Ave.	Durham, N. C.
Case, C. E.	Jun. E. E.	217 South, Box 3549	Fountain, N. C.
Cathey, R. H.	Jun. W.&D.	207 Wat., Box 3025	Charlotte, N. C.
Caton, J. C.	So. Tex. Mfg.	301 6th, Box 3261	Concord, N. C.
Cauble, L. F.	Fr. Ag.	325 1911, Box 3805	Kannapolis, N. C.
Caviness, L. G.	Fr. Tex.	128 8th, Box 3728	Lakeview, N. C.
Chadwick, D. N., Jr.	Fr. Chem. Engr.	301 9th, Box 4321	Wilmington, N. C.
Chadwick, F. M., Jr.	Fr. Tex.	115 7th, Box 3315	Morehead City, N. C.
Chaffee, N. L., II	Sen. M. E.	111 Wat., Box 3011	Morganton, N. C.
Chambers, J. W.	So. E. E.	1408 Hillsboro St.	Asheville, N. C.
Chamblee, D. S.	So. Ag. Ed.	233 C, Box 4260	Zebulon, N. C.
Chamblee, G. V.	Sen. For.	2202 Hillsboro St.	Zebulon, N. C.
Champion, J. D.	Special	Fuquay Springs	Fuquay Springs, N. C.
Champion, P. L.	So. Tex. Mfg.	4 East Dixie Drive	Spindale, N. C.
Chandler, R. K.	Fr. Tex	22 8th, Box 3823	Blanche, N. C.
Chaney, H. C.	Sen. Ag. Ed.	104 6th, Box 3240	Monroe, N. C.
Changaris, T. C.	Fr. M. E.	301 8th, Box 3769	Durham, N. C.
Charnock, H. O., Jr.	Sen. Chem. Engr.	123 Chamberlain St.	Asheville, N. C.
Chestnutt, H. F.	Fr. Chem. Engr.	308 9th, Box 4328	Clinton, N. C.
Chestnutt, M. P.	Jun. F.C.&P.B.	2008 Hillsboro St.	Turkey, N. C.
Chestnutt, R. L.	So. E. E.	2702 Rosedale Ave.	Snow Hill, N. C.
Chisholm, E. M.	Fr. C. E.	5 College Court Apts.	Frederick Hall, Va.
Church, H. E., Jr.	Sen. E. E.	6 Ferndell Lane	Franklin, N. C.
Church, J. R.	So. An. Prod.	312 5th, Box 3236	N. Wilkesboro, N. C.
Church, P. E., Jr.	Fr. Ag.	10 8th, Box 3812	N. Wilkesboro, N. C.
Clapp, H. P.	Fr. C. E.	124 7th, Box 3324	Grensboro, N. C.
Clark, E. A.	So. Cer. Engr.	21 Enterprise St.	Danville, Va.
Clark, Foy	Fr. M. E.	207 C, Box 4237	Mr. Airy, N. C.
Clark, H. A.	Fr. Land. Arch.	Withdrew September 24	Hayesville, N. C.
Clark, J. D.	Fr. Ag.	307 9th, Box 4327	Shelby, N. C.
Clark, K. W.	Fr. M. E.	318 8th, Box 3786	Hiwassee Dam, N. C.
Clark, T. J.	Fr. Tex. Mfg.	2306 Hilsboro St.	Charlotte, N. C.
Clark, W. H., Jr.	Fr. M. E.	331 1911, Box 3811	Hope Mills, N. C.
Clark, W. M., Jr.	Sen. Tex. Mfg.	2306 Hilsboro St.	Charlotte, N. C.
Clark, W. V., Jr.	Fr. Ag. Ed.	7 8th, Box 3809	Fayetteville, N. C.
Clay, M. J.	Jun. Ag.	211 7th, Box 3343	Hester, N. C.
Clee, G. P.	So. M. E.	Power Plant, Box 5241	Asheville, N. C.
Clement, H. M.	Fr. M. E.	113 C, Box 4210	Goldsboro, N. C.
Clement, S. L.	Auditor	2601 Vanderbilt Ave.	Raleigh, N. C.
Clements, F. M., Jr.	Sen. Tex. C&D	103 South, Box 3503	Greensboro, N. C.
Cleve, W. R.	Fr. Chem. Engr.	205 Forest Road	Vanceboro, N. C.

Name	*Classification*	*School Address*	*Home Address*
Clifton, D. S.	So. M. E.	301 5th, Box 3225	Warsaw, N. C.
Cline, J. C.	Fr. Ag. Ed.	307 9th, Box 4327	Shelby, N. C.
Cline, W. E.	Sen. Chem. Engr.	2004 Hillsboro St. Box 5565	Charleston, W. Va.
Cobb, H. H.	So. Dairy Mfg.	207 4th, Box 3125	Wadesboro, N. C.
Coble, C. B., Jr.	Fr. Ag.	6 8th, Box 3808	Burlington, N. C.
Coble, E. F.	So Tex. Mfg.	322 C, Box 4284	Winston-Salem, N. C.
Coble, G. R.	Jun. Ag. Ed.	210 South, Box 3542	Greensboro, N. C.
Cochran, W. B.	Sen. C. E.	2530 White Oak Road	Raleigh, N. C.
Cockerham, C. C.	So. An. Prod.	314 A, Box 4177	Mountain Park, N. C.
Coggin, R. J.	Fr. Ag. Engr.	118 C. Box 4215	Albemarle, N. C.
Cohen, M. F.	Jun. Chem. Engr.	223 C, Box 4251	Waltham, Mass.
Coiner, J. M.	Fr. Arch. Engr.	240 C, Box 4265	Greensboro, N. C.
Cole, A. B.	Fr. For.	231 C, Box 4259	Denton, N. C.
Cole, M. W., Jr.	Sen. E. E.	308 Wat., Box 3044	Butters, N. C.
Cole, R. D.	So. Agr.	335 C, Box 4295	Forest City, N. C.
Coleman, R. F., Jr.	Grad. C. E.	205 4th, Box 5403	Wilmington, N. C.
Colenda, Frank	Jun. Chem. Engr.	117 C, Box 4214	Morehead City, N. C.
Coley, J. L.	Fr. M. E.	Route 5	Raleigh, N. C.
Coley, W. J.	Fr. M. E.	"A" 9th	Stantonsburg, N. C.
Collier, R. W.	Jun. Chem. Engr.	24 South, Box 3620	Fayetteville, N. C.
Collier, V. L.	Fr. Ag. Ed.	133 8th, Box 3733	Severn, N. C.
Collins, P. E.	So. M. E.	130 A, Box 4125	Newport News, Va.
Collins, W. M.	Fr. Ag. Engr.	306 7th, Box 3393	Glade Valley, N. C.
Colson, Gardner	Fr. Tex.	205 Forest Road	Montclair, N. J.
Colvin, David	Grad. Chem. Engr.	2304 Clark Ave.	Raleigh, N. C.
Conrad, A. B.	So. Tex. C&D	103 Chamberlain St.	Charlotte, N. C.
Conrad, G. W.	So. Ag. Ed.	304 5th, Box 3228	Lexington, N. C.
Constant, L. A.	Jun. M. E.	107 9th	Grafton, Mass.
Conyers, F. R., Jr.	Fr. E. E.	323 8th, Box 3791	Rocky Mount, N. C.
Cook, B. L.	Jun. For.	308 6th, Box 3268	Kinston, N. C.
Cook, Charles	Sen. Tex. Mfg.	103 Chamberlain St.	Philadelphia, Pa.
Cook, I. M., Jr.	Fr. M. E.	15 8th, Box 3817	Charlotte, N. C.
Cook, J. F.	Fr. Arch. Engr.	106 5th, Box 3206	Clemmons, N. C.
Cook, J. I., Jr.	Fr. Arch. Engr.	318 8th, Box 3786	Black Mountain, N. C.
Cook, T. M.	Fr. Arch. Engr.	134 1911, Box 3734	Charlotte, N. C.
Cooper, A. S., Jr.	So. M. E.	1209 Cowper Drive	Raleigh, N. C.
Cooper, F. L.	Fr. Cer. E.	1 Gym	Roanoke Rapids, N. C.
Cooper, K. F.	Fr. M. E.	221 A, Box 4150	Pleasant Grove, N. C.
Cooper, W. G.	Jun. E. E.	50 1911, Box 3821	Climax, N. C.
Coor, E. O., Jr.	Fr. Ag.	126 Forest Road	Selma, N. C.
Copeland, D. T.	Fr. Ag.	2211 Hope St.	Palmyra, N. C.
Coram, F. J.	Fr. Ag. Ed.	324 8th, Box 3792	Boonville, N. C.
Corbin, W. L.	So. C. E.	301 5th, Box 3225	Otto, N. C.
Cornelius, W. V.	Jun. Ag. Ed.	223 Forest Road	Conover, N. C.
Cornwell, T. S., Jr.	So. Ag.	227 A, Box 4156	Shelby, N. C.
Correll, W. C.	Sen. Arch. Engr.	136 C, Box 4254	Albemarle, N. C.
Council, J. M., Jr.	Fr. E. E.	222 C, Box 4250	Wananish, N. C.
Cousart, E. K.	Fr. M. E.	120 7th, Box 3320	Charlotte, N. C.
Covington, F. E., Jr.	Jun. Ind. Engr.	210 Wat., Box 3028	Wadesboro, N. C.
Covington, H. W., Jr.	Fr. For	205 10th, Box 4414	Charlotte, N. C.
Covington, M. C.	So. Ag. Ed.	2411 Everett Ave.	Jonesboro, N. C.
Coward, E. G.	Jun. Tex. Mfg.	1720 Hillsboro St.	Ayden, N. C.
Cox, A. D., Jr.	Fr. Soils	332 8th, Box 3800	Castle Hayne, N. C.
Cox, D. F.	Sen. Cer. Engr.	2208 Fairview Road	Raleigh, N. C.
Cox, E. D.	Fr. Cer. Engr.	228 8th, Box 3762	Charlotte, N. C.
Cox, G. C., Jr.	Jun. Chem. Engr.	4 Ferndell Lane	Greensboro, N. C.
Cox, M. A.	Fr. M. E.	Cary	Cary, N. C.
Cox, R. G.	Fr. M. E.	119 7th, Box 3319	Greensboro, N. C.
Cox, S. R.	Grad. Pl. P.		Kinta, Okla.
Craft, S. I.	Fr. M. E.	322 8th, Box 3790	Winston Salem, N. C.
Craig, F. R.	So. Ag. Ed.	326 South, Box 3590	Mt. Holly, N. C.

Name	*Classification*	*School Address*	*Home Address*
Craig, R. J.	Sr. Ind. Engr.	211 A. Box 4140	Wilmington, N. C.
Craig. T. W.	Fr. Ag. Engr.	21 Enterprise St.	Concord, N. C.
Craven, D. A.	So. M. E.	306 Chamberlain St.	Fayetteville, N. C.
Craven, F. N.	Fr. For.	218 8th, Box 3752	Pittsburg, Pa.
Craver, C. R, Jr.	Jun. Arch. Engr.	2804 Hillsboro St.	Winston-Salem, N. C.
Crawford, M. L.	Sen. Tex. Mfg.	21 Enterprise St.	Graham, N. C.
Crawford, W. W.	Fr. For.	208 9th, Box 4315	Spindale, N. C.
Crawley, W. P.	Grad Tex.	16 Enterprise St.	Littleton, N. C.
Creasman, E. H., Jr.	Fr. Cer. Engr.	213 A, Box 4141	Seabrook, S. C
Creech, G. W., Jr.	Jun. Tex. Mfg.	2202 Hilsboro St.	Concord, N. C.
Creech, W. S.	Fr. Ag.	211 7th, Box 3342	Smithfield, N. C.
Creech, W. T.	Fr. M. E.	208 8th, Box 3742	Benson, N. C.
Crenshaw, D. M.	Jun. M. E.	201 N. Wilmington St.	Raleigh, N. C.
Cress, D. F.	Fr. Ag.	1507 Ambleside Dr.	Salisbury, N. C.
Critcher, T. S.	Fr. W. C. & M.	109 8th, Box 3709	Williamston, N. C.
Critz, R. G.	Fr. Tex.	217 7th, Box 3349	Kannapolis, N. C.
Crocker, J. H.	Fr. Ag.	319 8th, Box 3787	Brooklyn, N. Y.
Cromartie, P. M.	Sen. For.	309 Wat., Box 3045	Fayetteville, N C.
Crombie, W. A.	Jun. For.	2720 Bedford Ave.	Delair, N. J.
Croom, W. M.	So. Ag. Ed.	309 6th, Box 3269	Middlesex, N. C.
Crowder, W. H., Jr.	Jun. Tex. Mfg.	104 Logan Court	Salisbury, N. C.
Culberson, P. E.	Sen. An. Prod.	515 Daughtridge St.	Liberty, N. C.
Culp, A. E., Jr.	So. Tex. C.&D.	309 C, Box 4272	Gastonia, N. C.
Culp, J. M.	Fr. Tex.	305 7th, Box 3390	Charlotte, N. C.
Culvern, J. B.	Jun. Ag. Chem.	232 South, Box 3564	Camden, S.C.
Cummings, J. C., Jr.	Fr. M. E.	Power Plant, Box 5241	High Point, N. C.
Cunningham, F. C.	Sen. Ind. Engr.	1615 Fairview Road	Raleigh, N. C.
Currie, D. S., Jr.	Jun. M. E.	105 Wat., Box 3005	Raeford, N. C.
Curtis, E. H.	Jun. M. E.	106 Horne St.	Greensboro, N. C.
Curtis, J. M.	Fr. Tex.	1908 Park Drive	Franklinville, N. C.
Curtis, R. S.	Fr. C. E.	Cary	Cary N. C.
Cutchin, D. E.	So. M. E.	131 South, Box 3531	Whitakers, N. C.
Cutler, M. L.	Fr. E. E.	107 C, Box 4205	Washington, N. C.
Cuttriss, D. B.	Fr. E. E.	102 9th, Box 4302	Newark, N. C.
Cyrus, J. H.	Fr. Ag. Ed.	108 8th, Box 3708	Louisburg, N. C.
Dailey, E. M.	Fr. M. E.	329 1911, Box 3809	White Oak, N. C.
Dailey, V. C.	So. M. E.	311 5th, Box 3235	Hatteras, N. C.
Dale, Bill	Fr. F.C.&P.B.	305 9th, Box 4325	Spruce Pine, N. C.
Dalrymple, R. W.	Fr. Ag.	222A, Box 4151	Jonesboro, N. C.
Dalton, A. F.	Jun. Ag. Ed.	105 A, Box 4105	Etawah, N. C.
Dalton, R. I., Jr.	So. Tex. Mfg.	124 C, Box 4221	Charlotte, N. C.
Dameron, H. W.	So. Ag.	Gym, Box 5338	Bessemer City, N. C.
Dammann, Richard	Fr. Cer. E.	232 8th, Box 3766	Amityville, N. Y.
Daniel, C. F.	So. Ag.	2306 Hillsboro St.	Stem, N. C.
Darden, L. C., Jr.	So. Cer. E.	312 6th, Box 3272	Stantonsburg, N. C.
Darholt, J. O.	Fr. M. E.	339 1911, Box 3779	Charlotte, N. C.
Daughtridge, J. C.	Fr. E. E.	5 Daisey	Rocky Mount, N. C.
Daughtridge, R L.	So. Ag.	2004 Hillsboro, Box 5565	R'ky Mount, N. C.
Daughtry, G. P.	Fr. M. E.	3105 Stanhope Ave.	Raleigh, N. C.
Davenport, J. H.	Sen. Poul. Sci.	106 6th, Box 3242	Creswell, N. C.
Davidson, E. P.	Sen. Ind. Engr.	2004 Hillsboro St.	Murphy, N. C.
Davidson, J. H.	So. For.	308 Wat., Box 3044	Swannanoa, N. C.
Davidson, M. E., Jr.	Sen. Ind Engr	409 Calvin Rd.	Raleigh, N. C.
Davis, C. C.	So. Ag. Ed.	310 5th, Box 3234	Fuquay Springs, N. C.
Davis, J. D.	Fr. W.C.&M.	220 A, Box 4149	W. Asheville, N. C.
Davis, J. P. G.	Fr. C E.	208 7th, Box 3340	Brooklyn, N. Y.
Davis, J. W.	So. M. E.	2513 Clark Ave.	Ashland, Ky.
Davis, L. B.	Jun. E. E.	206 5th, Box 3218	Shelby, N. C.
Davis, Mark, Jr.	Jun. Ag. Ed.	7 Fieldhouse	Verona, N. C.
Davis, P. A.	Fr. F. B. Adm.	106 Horn St.	Winston-Salem, N. C.
Davis, W. C., Jr.	Fr. E. E.	203 9th, Box 4310	Charlotte, N. C.

Name	*Classification*	*School Address*	*Home Address*
Dawson, C. S.	So. Tex. Mfg.	305 South, Box 3569	Cramerton, N. C.
Dawson, E. B.	Fr. E. E.	3 8th, Box 3807	Kinston, N. C.
Dawson, H. H.	Sen. Ag. Ed.	112 South, Box 3512	Dunn, N. C.
Dayvault, N. E.	Fr. For.	108 7th, Box 3308	Concord, N. C.
Deakyne, C. O., Jr.	Grad. Soils	106 4th, Box 3116	New Castle, Del.
Deal, R. J.	Fr. Ag.	224 E. Park Ave.	Asheville, N. C.
Dean, C. T., Jr.	So. Ag. Ed.	201 Dixie Trail	Louisburg, N. C.
Deane, W. W.	Fr. M. E.	317 7th, Box 3383	Washington, D. C.
Deck, A. G.	Fr. Ag.	304 7th, Box 3370	Bessemer City, N. C.
Degen, Ralph	Fr. Tex.	312 7th, Box 3378	Bronx, N. Y.
DeLaney, J. R.	So. An. Prod.	224 A, Box 4153	Charlotte, N. C.
Dellinger, E. S.	Fr. Arch.	315 South, Box 3579	Laurinburg, N. C.
DeLoatche, G. B.	So. Ag. Ed.	131 C, Box 4227	Conway, N. C.
Demko, A. G.	Fr. M. E.	309 7th, Box 3375	Princeton, N. J.
Densberger, R. S.	Sen. Tex. Mfg.	130 Hawthorn Rd.	Kenmore. N. Y.
Denton, E. C., Jr.	Jun. E. E.	109 8th, Box 3709	Morganton, N. C.
Derby, W. M., Jr.	So. E. E.	621 Brooks Ave.	Raleigh, N. C.
Derlin, H. W. A.	Jun. M. E.	2513 Clark Ave.	Henderson, N. C.
Dewey, Charles	Sen. Chem. Engr.	2405 Clark Ave.	Goldsboro, N. C.
Dewey, G. B.	Jun. Tex. Mgt.	310 6th, Box 3270	Pulaski, Va.
Deyton, O. W.	Grad. An. Prod.	108 4th: Mail:	% Animal Husbandry Dpt. Green Mountain, N. C.
Dick, J. M.	Fr. M. E.	302 8th, Box 3770	Guilford College, N. C.
Dickens, S. P.	So. Chem. Engr.	114 C, Box 4211	Enfield, N.C.
Dickens, W. J.	So. Ag.	307 6th, Box 3267	Varina. N. C.
Dickerson, A. D.	Fr. E. E.	304 6th, Box 3264	Salisbury, N. C.
Dickerson, D. F.	Fr. I. A. Ed.	122 South, Box 4118	Greensboro, N. C.
Dickerson, E. N.	Sen. F. C. & P. B.	2405 Clark Ave.	Kinston, N. C.
Dickey, Jack	Fr. M. E.	104 9th, Box 4304	Murphy, N. C.
Dickinson, C. L.	Sen. Chem. Engr.	2510 Stafford Ave.	Wilmington, N. C.
Dickinson, W A., Jr.	Sen. M. E.	2304 Hillsboro St.	Fayetteville, N. C.
Dickson, Miss A. June	Sen. W. & D.	3127 Stanhope Ave.	Raleigh, N. C.
Diehl, J. C., Jr.	Fr. M. E.	201 9th, Box 4308	Selma, N. C.
Dietz, J. H., Jr.	Fr. E. E.	325 8th, Box 3793	Sylva, N. C.
Dilday, L. M.	So. Ag.	307 5th, Box 3231	Ahoskie, N. C.
Dillon, R. A.	Fr. Tex. Mfg.	304 C, Box 4282	Greensboro, N. C.
Ding, Y. C.	Jr. Tex. C. & D.	8 Ferndell Lane	New York City
Dixon, D. L.	Sen. F. C. & P. B.	134 Woodburn Rd.	Kinston, N. C.
Dixon, G. B.	Jun. Ag. Ed.	11 South, Box 3607	Kings Mountain, N. C.
Dixon, G. T.	Sen. Ind. Engr.	2407 Clark Ave	Elm City, N. C.
Dixon, H. C.	Fr. Tex.	209 Woodburn Rd.	Raleigh, N. C.
Dixon, L. B.	So. Ag.	210 6th, Box 3258	Snow Hill, N. C.
Dixon, R. E.	Fr. I. A. Ed.	615 N. Boundary St.	Raleigh, N. C.
Doak, C. W.	Jun. Ag.	120 Wodburn Rd.	Raleigh, N. C.
Doak, R. R.	So. Tex. Mgt.	120 Woodburn Rd.	Raleigh, N. C.
Dobbins, G. W., Jr.	Fr. M. E.	135 1911, Box 3735	Pomona, N. C.
Dobson, S. P.	Fr. Ag.	310 8th, Box 3778	Statesville, N. C.
Dodd, W. I., Jr.	Fr. M. E.	1309 Rhamkatte Rd.	Raleigh, N. C.
Dodge, J. D.	Jun. C. E.	116 Groveland Ave.	Asheville, N. C.
Doggett, R. C., Jr.	So. An. Prod.	220½ Cox Ave.	Shelby. N. C.
Donnell, R. H.	Sen. M. E.	102 South, Box 3502	Greensboro, N. C.
Donovan, J. C.	Fr. Tex. C. & D.	114 C. Box 4211	Buffalo, N. Y.
Doughton, W. D.	Fr. Ag.	College Court Apt. 1	Sparta, N. C.
Douglass, R. S.	Jun. For.	211 5th, Box 3223	Hendersonville, N. C.
Dover, F. H.	So. Ag.	102 6th, Box 3238	Kings Mountain, N. C.
Driggs, R. P.	Fr. Gen. Engr.	Withdrew October 3	Rochester, N. Y.
Drum, J. N.	Sen. M. E.	102 A. Box 4102	Conover, N. C.
Drum, L. F.	Grad. Chem. Engr.	101 4th, Box 3111	Catawba, N. C.
Drummond, J. F.	So. Chem. Engr.	222 Park Ave.	Prospect Park, Pa.
Drye, L. C.	Sen. Tex. C. & D.	6 Ferndell Lane	Landis, N. C.
du Bruyne, R. M.	Sen. Chem. Engr.	2209½ Hope St.	High Point, N. C.
Duckworth, G. H.	Sen. Chem. Engr.	340 A, Box 4199	New Bedford, Mass.

Name	*Classification*	*School Address*	*Home Address*
du Four, R. B.	Special	1712 Scales St.	Pleasantville, N. Y.
Duke, N. G., Jr.	Fr. For.	233 1911, Box 3773	Lawrenceville, Va.
Dunbar, H. O.	Fr. Ag.	121 Cox Ave.	Wenona, N. C.
Duncan, C. S.	Sen. E. E.	14 South, Box 3610	N. Wilkesboro, N. C.
Duncan, J. A.	So. Ag. Ed.	24 South, Box 3620	Trinity, N. C.
Duncan, R. F.	Jun. C. E.	307 South, Box 3571	Dunn, N. C.
Dunford, J. S.	Fr. M. E.	111 8th, Box 3711	Winston-Salem, N. C.
Dunlap, B. W.	Sen. Chem. Engr.	23 South, Box 3619	Hillgirt, N. C.
Dunn, C. G.	Fr. E. E.	232 1911, Box 3772	Dunn, N. C.
Dunn, M. B.	Fr. M. E.	15 8th, Box 3817	Charlotte, N. C.
Durham, E. E.	Grad Ag. Ec.	201 6th, Box 3249	Kernersville, N. C.
Dysart, C. E.	So. M. E.	131 Hawthorn Rd.	Marion, N. C.
Eagle, H. K.	Fr. Tex.	204 7th, Box 3336	Salisbury, N. C.
Eagle, W. P.	Sen. Chem. Engr.	324 South, Box 3588	Salisbury, N. C.
Eaker, B. H.	So. Ag.	220 South, Box 3552	Crouse, N. C.
Early, T. A., Jr.	Fr. M. E.	115 Park Ave.	Raleigh, N. C.
East, R. E.	Jun. I. A. Ed.	211 A, Bx 4140 White	Sulphur Spgs, W. Va.
Eatman, F. W., Jr.	Fr. M. E.	3104 Ruffin St.	Raleigh, N. C.
Eaton, E. C.	Sen. Tex. Mfg.	109 Wat., Box 3009	Yadkinville, N. C.
Edge, J. N.	Grad. Pl. P.	306 4th, Box 3132	Fayetteville, N. C.
Edge, M. W.	Fr. Ag. Ed.	213 Woodburn Rd.	Fayetteville, N. C.
Edgerton, I. W.	Jun. F. Mkt.	123 South, Box 3523	Kenly, N. C.
Edgerton, J. S.	Fr. M. E.	333 7th, Box 3399	Goldsboro, N. C.
Edkins, R. N.	So. Ch. Engr.	201 Wat., Box 3019	Chapel Hill, N. C.
Edmiston, John	Fr. Tex. Mfg.	107 Wat., Box 5565	Mooresville, N. C.
Edmundson, E. S., Jr.	Fr. Ind. Engr.	303 Capital Apts.	Raleigh, N. C.
Edwards, D. W.	Sen. Tex. Mfg.	103 Chamberlain St.	Fort Mills, S. C.
Edwards, F. N.	So. E. E.	225 A, Box 4154	Spring Hope, N. C.
Edwards, H. V.	Sen. Tex. Mgt.	103 Chamberlain St.	Fort Mills, S. C.
Edwards, R. J.	Fr. Ag.	2508 Vanderbilt Ave.	Peachland, N. C.
Edwards, W. H.	Fr. E. E.	206 8th, Box 3740	Peachland, N. C.
Edwards, W. J.	Jun. Ch. Engr.	106 Hope St.	New Bern, N. C.
Egerton, C. E.	Fr. E. E.	310 South, Box 3574	Rockingham, N. C.
Ekshigil, M. A.	Jun. M. E.	8 Ferndell Lane	Istanbul, Turkey
Elam, J. E.	Sen. Ag. Ed.	102 5th, Box 3202	Kings Mountain, N. C.
Elbaum, Morris	Fr. Tex.	331 8th, Box 3385	New York N. Y.
Eller, W. R.	Fr. Ag Ed.	202 6th, Box 3250	Salisbury, N. C.
Elliott, E. D.	Sen. F. C. & P. B.	2408 Stafford Ave.	Hiddenite, N. C.
Elliott, L. M.	Fr. E. E.	449 S. Boylan Ave.	Raleigh, N. C.
Elliott, T. B., Jr.	So. Ag. Ed.	302 4th, Box 3128	Woodland, N. C.
Ellis, J. H.	Jun. M. E.	332 South, Box 3596	Wilmington, N. C.
Ellis, R. R.	Fr. Ch. Engr.	303 7th, Box 3369	Gasburg, Va.
Elmore, W. F.	Fr. Ag.	123 8th, 3723	Dunn, N. C.
English, B. L.	So. M. E.	340 C, Box 4298	Cramerton, N. C.
Ennett, A. D., Jr.	Jun. M. E.	2306 Hilsboro St.	Swansboro, N. C.
Eppes, G. P.	Fr. Ch. Engr.	119 7th, Box 3319	Henderson, N. C.
Eppes, Robertson, Jr.	So. Ch. Engr.	225 A, Box 4154	Laurinburg, N. C.
Epstein, H. L.	So. For.	121 C, Box 4218	Far Rockaway, N.Y.
Ericson, E. H.	Sen. For.	315 A, Box 4178	Manchester, Mass.
Ermalovich, J. O.	Fr. Tex.	10 Fieldhouse	Logan, W. Va.
Erol, Demirhan	Fr. C. E.	115 Woodburn Rd.	Washington, D. C.
Etheridge, H. E.	So. M. E.	209 5th, Box 3221	Woodleaf, N. C.
Etheridge, J. N.	So. For.	2220 Hillsboro St.	Williamsburg, Va.
Ethridge, J. W.	So. Ind. Engr.	109 6th, Box 3245	Goldsboro, N. C.
Everett, B. B., Jr.	Fr. Ag.	103 8th, Box 3708	Palmyra, N. C.
Everett, F. B.	Jun. An. Prod.	102 5th, Box 3202	Palmyra, N. C.
Everett, J. A., Jr.	Fr. Ag.	206 10th, Box 4415	Palmyra, N. C.
Everett, R. O.	Fr. Ch. Engr.	9 8th, Box 3811	Greenville, N. C.
Faircloth, A. T.	Fr. Ag.	2 Fieldhouse	Washington, D. C.
Faires, Edwin	So. M. E.	304 Horne St.	Charlotte, N. C.
Faison, W. A., Jr.	Fr. M. E.	304 Wat., Box 3040	Chester, Pa.

Name	*Classification*	*School Address*	*Home Address*
Fairs, T. B.	Jun. Arch. Engr.	Route 4, Western Blvd.	Raleigh, N. C.
Farlow, J. F.	Fr. Poul. Sci.	330 7th, Box 3396	Bahama, N. C.
Farrior, A. R.	Fr. Tex.	109 7th, Box 3309	Burgaw, N. C.
Farrior, J. W.	Grad. F. C.	204 4th, Box 3122	Burgaw, N. C.
Farthing, E. H. G.	So. Gen. Engr.	321 A, Box 4184	Valle Crucis, N. C.
Faulk, Marvin, Jr	Fr. Ag Ed.	126 7th, Box 3326	Fairmont, N. C.
Fehley, F. W.	Jun. I. A. Ed.	303 South, Box 5173	Easton, Pa.
Feldmann, D. O.	Jun. Tex. Mfg.	2304 Clark Ave.	Baltimore, Md.
Fendt, L. M., Jr.	Jun. M. E.	203 5th, Box 3215	Jacksonville, Fla.
Ferebee, H. C., Jr.	Jun. Ag. Chem.	303 5th, Box 3227	Camden, N. C.
Ferebee, S. S., Jr.	Jun. Ch. Engr.	10 Y.M.C.A., Box 5276	Shawboro, N.C.
Ferguson, J. D.	So. For.	322 A, Box 4185	West Englewood, N. J.
Ferguson, J. L., Jr.	Jun. Cer. E.	2513 Clark Ave.	Balboa Heights, C. Z.
Ferguson, J. T.	Sen. Ch. Engr.	E-302 Boylan Apts.	Raleigh, N. C.
Ferguson, W. S.	Sen. Ch. E.	314 Perry St.	Raleigh, N. C.
Ferree, H. G., Jr.	So. Tex. C. & D.	323 C, Box 4285	High Point, N. C.
Ferrell, J. R.	So. Ag.	Durham	Durham, N. C.
Fetner, C. J., Jr.	Fr. Ch. Engr.	203 8th, Box 3737	Hamlet, N. C.
Fick, T. L.	So. Cer. E.	10 Enterprise St.	Passaic, N. J.
Fields, A. P.	Fr. W. C. & M.	228 C, Box 4256	Southern Pines, N. C.
Finch, E. A.	So. Ag.	228 A, Box 4157	Bailey, N. C.
Finch, E. B.	So. Ch. Engr.	1618 Hillsboro St.	Zebulon, N. C.
Fincher, C. R.	Fr. An. Prod.	5 8th, Box 3807	Matthews, N. C.
Finley, J. L.	So. Tex. Mfg.	803 N. Blount St.	Raleigh, N. C.
Finn, D. B.	So. Tex. Mfg.	216 South, Box 3548	Concord, N. C.
Fishel, H. O., Jr.	Fr. Tex.	101 7th, Box 3301	Vaughan, N. C.
Fisher, C. B.	Jun. E. E.	213 Wat., Box 3031	Whittier, N. C.
Fisher, E. J.	Jun. M. E.	309 6th, Box 3269	Bolton, N. C.
Fisher, F. J.	Fr. Ch. Engr.	320 8th, Box 3788	Roanoke Rapids, N. C.
Fisher, G. E., Jr.	Sen. Ag. Ed.	1707 Park Dr.	Ahoskie, N. C.
Fisher, I. M., Jr.	Fr. Tex.	313 9th, Box 4333	Oriental, N. C.
Fisher, N. B.	Jun. M. E.	2513 Clark Ave.	Vanceburg, Ky.
Fisher, W. L.	Fr. M. E.	211 10th, Box 4420	Salisbury, N. C.
Fisher, W. N.	Fr. Ag. Ed.	1715 Park Dr.	Murfreesboro, N. C.
Fisler, J. F.	Fr. Ag.	212 9th, Box 4319	Ivanhoe, N. C.
Fitchett, C. E., Jr.	Fr. Ag.	115 8th, Box 3715	Dunn, N. C.
Fitzgerald, K. E.	Fr. Tex.	2 9th, Box 4335	Burlington, N. C.
Flanigan, W. L.	So. Tex. C. & D.	4 Ferndell Lane	Statesville, N. C.
Fleming, Miss Margaret	Auditor	2608 Clark Ave	Raleigh, N. C.
Fleming, Sylvester	So. Ag. Ed.	8 Ferndell Lane	Grimesland, N. C.
Fleming, W. E.	So. Ag.	101 6th, Box 3237	Fuquay Springs, N. C.
Fleming, W. L.	Jun. C. E.	101 6th, Box 3237	Fuquay Springs, N. C.
Flesch, K. L.	Fr. Gen. Engr.	212 10th, Box 4421	Irondequoit, N. Y.
Fletcher, W. S.	Fr. C. E.	2608 Van Dyke Rd.	Raleigh, N. C.
Flowers, J. B.	Fr. Arch. E.	122 C, Box 4219	Lumberton, N. C.
Flowers, J. L., Jr.	Fr. Ag.	1305 Filmore	Four Oaks, N. C.
Floyd, R. G.	So. Tex. Mfg.	305 South, Box 3569	Roanoke Rapids, N. C.
Flye, R. B.	So. Ag. Engr.	327 C, Box 4289	Battleboro, N. C.
Flythe, J. S.	Jun. E. E.	714 Nash Dr.	Raleigh, N. C.
Fogleman, C. E.	Fr. Tex.	201 A, Box 4133	Alamance, N. C.
Folley, J. W.	Jun. Tex. Mfg.	238 C, Box 4263	Aberdeen, N. C.
Fonvielle, J. N.	Fr. M. E.	125 8th, Box 3725	Warsaw, N. C.
Ford, B. F.	Fr. Tex.	"A" 9th	Burlington, N. C.
Ford, J. C., III	Jun. M. E.	2316 Hillsboro St.	Cadillac, Mich.
Forrest, H. O.	Fr. M. E.	103 10th, Box 4403	Mt. Airy, N. C.
Forziati, E. D.	Jun. Ind. Engr.		North Bergen, N. J.
Foster, A. W.	So. C. E.	31 Shepherd St.	Raleigh, N. C.
Foster, G. R.	Jun. Dairy Mfg.	101 C, Box 4200	Rockville Center, N. Y.
Foster, R. M.	So. M. E.	506 Cutler St.	Raleigh, N. C.
Foushee, J. G.	Sen. C. E.	Withdrew Sept. 17	Greensboro, N. C.
Foust, T. B., Jr.	So. Ch. Engr.	2004 Hillsboro, Box 5565	Clarksville, Tenn.
Fowler, Frank	Fr. Ag.	106 Harrison Ave.	Roseboro, N. C.

Name	*Classification*	*School Address*	*Home Address*
Fowler, H. D., Jr.	Fr. Ag.	2626 Lassiter Mill Rd.	Monroe, N. C.
Fowler, P. M.	Fr. Ag. Engr.	308 7th, Box 3374	Thomasville, N. C.
Fowler, T. J.	Sen. Tex. Mfg.	216 Wat., Box3035	Greensboro, N. C.
Fox, G. P.	Sen. Arch. Engr.	139 A, Box 4131	Rocky Mount, N. C.
Fox, H. W.	Sen. C. E.	211 Wat., Box 3029	St. Petersburg, Fla.
Frady, R. G.	So. Ch. Engr.	112 6th, Box 3248	Sylva, N. C.
Francis, J. G.	Fr. Ag.	212 8th, Box 3746	Waynesville, N. C.
Franck, J. R.	Fr. For.	233 1911, Box 3773	Scotland Neck, N. C.
Franck, L. S.	Fr. M. E.	339, 1911, Box 3819	Scotland Neck, N. C.
Franklin, C. D.	Sen. Ch. Engr.		Canton, N. C.
Frazelle, E. L.	So. M. E.	Withdrew Sept. 20	Raleigh, N. C.
Freed, J. B.	Fr. M. E.	4 8th, Box 3806	Winston Salem, N. C.
Freeman, C. M.	Fr. M. E.	601 Cutler St.	Salisbury, N. C.
Frei, H. W.	Jun. Tex. Mfg.	222 Park Ave.	New York, N. Y.
Frick, A. O.	Fr. Geol. E.	2220 Hillsboro, Box 5212	New Bern, N. C.
Friday, W. C.	Sen. Tex. Mfg.	309 Wat., Box 5414	Dallas, N. C.
Fried, A. L.	Fr. Tex.	102 7th, Box 3302	Great Neck, N. Y.
Friedman, Edward	Fr. M. E.	320 7th, Box 3386	Arverne, N. Y.
Frisbie, Miss K. E.	So. Occ. Inf.	301 Bickett Blvd.	Marion, N. C.
Frizzelle, J. B., Jr.	Fr. Ag.	103 South, Box 3503	Snow Hill, N. C.
Fry, C. W.	Fr. I. A. Ed.	306 South, Box 3570	Raleigh, N. C.
Fryar, H. V.	So. Ag.	133 A, Box 4127	McLeansville, N. C.
Frye, R. E.	Fr. Ag.	2 9th, Box 4335	Carthage, N. C.
Fulcher, O. M.	So. An. Prod.	Dairy Barns, Box 5127	Leaksville, N. C.
Fulk, S. P., Jr.	Fr. M. E.	225 8th, Box 3759	Winston Salem, N. C.
Fuller, A. H., Jr.	Jun. Ch. Engr.	2405 Clark Ave.	Gastonia, N. C.
Fuller, G. R., Jr.	Fr. Tex. Mfg.	Apt. P 1-A Cameron Ct. Apt	Raleigh, N. C.
Fuller, W. A.	Sen. Ag. Ed.	1806 Hillsboro St.	DeJarnette, Va.
Funderburk, G. W., Jr.	Jun. Tex. C. & D.	2405 Clark Ave.	LaGrange, Ga.
Furr, M. G.	Fr. Ag. Ec.	205 A, Box 4137	Oakboro, N. C.
Futrelle, W. L., Jr.	Fr. Ag.	210 10th, Box 4419	Wilmington, N. C.
Gabriel, W. R.	So. M. E.	203 6th, Box 3251	Newton, N. C.
Gaither, D. D.	Fr. E. E.	217 7th, Box 3349	Charlotte, N. C.
Gallos, J. C.	Fr. Arch.	330 1911	Winston-Salem, N. C.
Gambill, D. P.	Sen. Tex. Mfg.	318 Wat., Box 3054	Independence, Va.
Gardner, J. A.	Fr. M. E.	Withdrew Sept. 24	Reidsville, N. C.
Gardner, O. M., Jr.	Fr. Tex.	104 8th, Box 3704	Shelby, N. C.
Garfinkel, Stanley	So. Tex. Mfg.	2304 Clark Ave.	Flushing, N. Y.
Garodnick, I. O.	Auditor	6 Kirby St	Raleigh, N. C.
Garrison, E. P.	Fr. M. E.	914 Vance St.	Raleigh, N. C.
Garriss, Miss M. B.	Jun. Arch. Engr.	916 W. Cabarrus St.	Raleigh, N. C.
Gaskins, E. L.	Sen. Ind. Engr.	140 A, Box 4132	Grifton, N. C.
Gaskins, J. D.	Jun. Tex. Mgt.	340 1911	New Bern, N. C.
Gates, C. B.	So. C. E.	332 1911, Box 3812	Roxboro, N. C.
Gatlin, L. W.	So. E. E.	14 Glenwood Ave.	Charlotte, N. C.
Gayle, W. W.	Fr. Tex.	328 1911, Box 3808	Charlotte, N. C.
Gelb, Lawrence	Fr. Gen. Engr.	Withdrew September 11	Newark, N. J.
Geluso, N. G.	So. M. E.	318 C, Box 4280	Brooklyn, N. Y.
Gentile, V. I.	Sen. C. E.	202 A, Box 4134	Brooklyn, N. Y.
Gentry, Conley	Fr. C. E.	132 8th, Box 3732	Greensboro, N. C.
Getsinger, C. F., Jr.	Fr. Tex.	322 7th, Box 3388	Chevy Chase, Md.
Gewehr, A. R.	Sen. Tex. Mgt.	8 Ferndell Lane	South Orange, N. J.
Gibbs, A. H.	Fr. Tex.	224 8th, Box 3758	Enka, N. C.
Gibbs, E. G.	Jun. Ch. Engr.	115 Woodburn Rd.	Morehead City, N. C.
Gibbs, H. S., Jr.	Sen. Cer. Engr.	132 Woodburn Rd.	Morehead City, N. C.
Gibbs, J. C.	Sen. F. C. & P. B.	2405 Clark Ave.	Pelham, N. C.
Gibbs, J. D.	Fr. M. E.	114 8th, Box 3714	Engelhard, N. C.
Gibbs, M. L.	So. Tex. Mgt.	103 Chamberlain	Bath, N. C.
Gibbs, N. M., Jr.	So. Ch. Engr.	103 A, Box 4103	New Bern, N. C.
Gibbs, S. W.	Sen. Poul. Sci.	Route 4	Roanoke, Va.
Gibert, J. W.	Grad. F. C. & P. B.	103 4th, Box 3113	Rodman, S. C.

Name	*Classification*	*School Address*	*Home Address*
Gibson, A. E.	So. Ch. Engr.	207 C, 4237	Greenville, N. C.
Gibson, E. L.	Fr. M. E.	328 A, Box 4191	Georgetown, S. C.
Gibson, R. M.	Grad. F. C.	Agronomy Dept.	Gower, Missouri
Gibson, V. D., Jr.	Fr. Ag.	118 7th, Box 3318	Clarkton, N. C.
Gibson, W. J.	Fr. I. A. Ed.	137 A, Box 4129	Gastonia, N. C.
Gilbert, C. R.	Fr. Ind. E.	312 7th, Box 3378	Allston, Mass.
Gilbert, G. N., Jr.	So. Tex. Mfg.	8 Fieldhouse	Mount Airy, N. C.
Gilbert, W. B., Jr.	Fr. Ag.	1006 W. South St.	Raleigh, N. C.
Gilbert, W. L.	So. E. E.	1507 Ambleside Drive	Statesville, N. C.
Gilbert, W. P.	Fr. Ag. Ed.	127 8th, Box 3727	Grifton, N. C.
Gill, C. E.	Sen. For.	19 South, Box 3615	Richmond, Va.
Gill, J. A.	Fr. Ag.	233 7th, Box 3365	Hurley, N. Y.
Gillenwater, G. A.	Grad. E. E.	Bedford Ave., Box 5494	Norton, Va.
Gillette, D. W.	So. M. E.	1714 Park Drive	Wilmington, N. C.
Gilmore, Henry, Jr.	Fr. E. E.	301 7th, Box 3367	Fairhaven, Mass.
Gilmore, J. F.	Grad. E. E.	102 4th, Box 3112	Oxford, N. C.
Ginnings, P. R.	Fr. Ch. Engr.	209 10th, Box 4418	Greensboro, N. C.
Givan, D. D.	Fr. M. E.	16 8th, Box 3811	Charlotte, N. C.
Glass, G. H.	Sen. Tex. Mfg.	103 6th, Box 3239	Greensboro, N. C.
Glasse, J. T.	Grad. F. Mkt.	301 Park Avenue	South Africa
Glenn, E. F.	Sen. Tex. C. & D.	125 Woodburn Rd.	Greensboro, N. C.
Gluck, Ralph	Fr. M. E.	330 1911, Box 3810	Morristown, Tenn.
Godwin, J. W.	Fr. Arch. Engr.	316 C, Box 4278	Wilmington, N. C.
Goforth, G. M., Jr.	So. Ag.	308 5th, Box 3232	Lenoir, N. C.
Golding, L. E.	So. Tex. Mgt.	118 St. Mary's St.	New York, N. Y.
Golding, M. J.	Sen. Tex. Mfg.	118 St. Mary's, Box 5512	New York, N. Y.
Goldman, Stanley	Sen. C. E.	127 A, Box 4122	Brooklyn, N. Y.
Goldsmith, W. W.	So. C. E.	202 Groveland	Mt. Airy, N. C.
Goldstein, H. E.	Fr. Ag.	318 A, Box 4181	New York, N. Y.
Goodall, Wilson	So. Ind. Engr.	315 C, Box 4277	Scranton, Pa.
Goodman, A. S.	Fr. Gen. Engr.	2316 Hillsboro St.	Asheville, N. C.
Goodman, L. G., Jr.	Fr. Arch. Engr.	301 A, Box 4167	Salisbury, N. C.
Goodman, W. R.	Fr. M. E.	311 9th, Box 4331	Greensboro, N. C.
Goodnight, W. H.	Fr. M. E.	105 9th, Box 4305	Concord, N. C.
Goodrum, W. J.	Fr. Ch. Engr.	221 South, Box 3553	Greenville, N. C.
Goodson, A. B.	Fr. E. E.	108 10th, Box 4408	Mt. Olive, N. C.
Goodson, K. W.	Fr. M. E.	108 10th, Box 4408	Mt. Olive, N. C.
Goodson, L. A., Jr.	So. Ag.	112 5th, Box 3212	Danville, Va.
Goodwin, J. C.	Fr. Ag.	Millbrook	Millbrook, N. C.
Goral, Michael	Sen. For.	6 Ferndell Lane	New York, N. Y.
Gordon, Allen	So. Tex. Mfg.	301 C, Box 4266	Paterson, N. J.
Gordon, R. M.	Fr. Ag.	2 Fieldhouse	Washington, D. C.
Gordon, S. H.	So. Tex.	333 C, Box 4294	Spencer, N. C.
Gorrell, L. R.	Sen. M. E.	205 Wat., Box 3023	Greensboro, N. C.
Goslen, C. H.	Fr. Ag.	335 1911, Box 3815	Pfafftown, N. C.
Gowan, R. J.	Fr. Tex.	318 8th, Box 3786	Charlotte, N. C.
Gower, Hubert	Fr. M. E.	237 1911, Box 3777	Smithfield, N. C.
Grady, R. H.	Grad. C. E.	Colonial Rd.	Kinston, N. C.
Graham, H. L., Jr.	So. Ch. Engr.	112 A, Box 4109	Goldsboro, N. C.
Graham, J. A.	Jun. Ag. Ed.	10 Enterprise	Cleveland, N. C.
Graham, W. B.	Fr. M. E.	307 7th, Box 3373	Elkin, N. C.
Granger, R. J.	Jun. Tex. C. & D.	Gym., Box 5338	Charlotte, N. C.
Graver, Marshall	Fr. Ag.	6 9th, Box 4339	Brooklyn, N. Y.
Graves, G. W.	Fr. M. E.	132 Woodburn Rd.	Raleigh, N. C.
Graves, W. G.	So. M. E.	1620 Hillsboro St.	Mebane, N. C.
Gray, J. S.	So. E. E.	112 Wat., Box 3012	Elkin, N. C.
Gray, T. I.	Jun. Gen. Engr.	333 A, Box 5363	Washington, D. C.
Greaves, R. E.	Auditor	2512 Clark Ave.	Raleigh, N. C.
Green, A. L.	Fr. Ag.	Durham	Durham, N. C.
Green, D. B., Jr.	Fr. Ch. Engr.	234 8th, Box 3768	Hendersonville, N. C.
Green, J. J.	Fr. An. Prod.	213 A, Box 4142	Toecane, N. C.
Green, Mrs. J. K.	Jun. Ag. Chem.	503 Frank St.	Washington, N. C.

Name	*Classification*	*School Address*	*Home Address*
Green, Morris	So. For.	311 C, Box 4273	New York, N. Y.
Green, W. T., Jr.	Fr. M. E.	320 C, Box 4282	Cooleemee, N. C.
Green, W. V., Jr.	Fr. M. E.	Neuse	Neuse, N. C.
Greene, B. W.	Fr. M. E.	221 8th, Box 3455	Eliabethtown, N. C.
Greene, G. P.	Fr. C. E.	316 7th, Box 3382	Boone, N. C.
Greenlee, W. G.	Sen. Dairy Mfg.	202 C, Box 4233	Marion, N. C.
Gregory, C. F.	Sen Tex. C. & D.	3107 Hillsboro St.	Richmond, Va.
Gregson, J. W.	So. Ch. Engr.		Elizabeth City, N. C.
Gribble, R. N.	So. M. E.	310 Wat., Box 3046	Charlotte, N. C.
Grier, J. H.	Fr. C. E.	306 8th, Box 3774	Statesville, N. C.
Griffin, C. E., Jr.	So. M. E.	230 South, Box 3567	Washington, N. C.
Griffin, R. W.	Sen. Ag. Ed.	8 South, Box 3604	LaGrange, N. C.
Griffin, S. W.	Fr. Ch. Engr.	114 7th, Box 3314	LaGrange, N. C.
Griffin, W. B.	Sen. Arch. Engr.	106 Horne St.	Goldsboro, N. C.
Griffith, B. T.	Sen. For.	2306 Hillsboro St.	Richmond, Va.
Grose, J. A., Jr.	Fr. Ag.	335 C, Box 4295	Forest City, N. C.
Grosse, E. H.	So. Tex. Mfg.	2407 Clark Ave.	Gastonia, N. C.
Grouten, W. M.	Fr. Ag.	222 Park Ave.	Farmington, Conn.
Guba, F. A., Jr.	So. Ind. Engr.	2316 Hillsboro St.	Woodbury, N. J.
Gunn, K. M.	So. Ch. Engr.	132 Woodburn Rd.	Greensboro, N. C.
Gunn, L. J.	So. Ag.	108 South, Box 3508	Reidsville, N. C.
Gupton, O. B.	So. Ag. Ed.	132 South, Box 3832	Wood, N. C.
Gurganus, A. E.	Fr. Ag.	121 7th, Box 3321	Verona, N. C.
Gwyn, A. H.	So. Cer. E.	308 5th, Box 3232	Mt. Airy, N. C.
Gwyn, N. H., Jr.	Fr. E. E.	223 7th, Box 3355	Lenoir, N. C.
Haene, W. H.	Jun. M. E.	3 Gym, Box 5402	Concord, N. C.
Hairr, V. B.	Sen. Ag. Ed.	209 South, Box 3541	Faison, N. C.
Haislip, R. A.	Jun. Ag. Ed.	309 A, Box 4173	Oak, City, N. C.
Haislip, Thomas	Fr. E. E.	323 8th, Box 3791	Oak City, N. C.
Hall, C. T., Jr.	Fr. Ag.	304 8th, Box 3772	Woodsdale, N. C.
Hall, W. C.	Jun. Ind. Engr.	2604 Hillsboro St.	Asheville, N. C.
Halliday, H. C.	So. M. E.	223 A, Box 4152	Hampton, Va.
Halsted, B. C.	Sen. E. E.	1720 Hillsboro St.	Arlington, Va.
Hamby, E. P.	Jun. C. E.	304 6th, Box 3264	Salisbury, N. C.
Hamilton, C. E.	Sen. E. E.	317 Wat., Box 3053	Beaufort, N. C.
Hamilton, J. B., Jr.	Jun. Ag. Ed.	208 5th, Box 3220	Atkinson, N. C.
Hammack, L. J., Jr.	Fr. For.	217 8th, Box 3751	Lawrenceville, Va.
Hammond, R. K.	Fr. M. E.	"A" 10th, Box 3372	Farmer, N. C.
Hamner, E. J.	Fr. Tex.	16 Enterprise St.	Altavista, Va.
Hamnett, W. L.	Sen. W. C. & M.	1827 White Oak Rd.	Edneyville, N. C.
Hamrick, R. J.	Fr. E. E.	Power Plant	Raleigh, N. C.
Hanchey, L. J.	Fr. M. E.	307 8th, Box 3775	Rose Hill, N. C.
Handley, William, Jr.	Fr. Ag.	201 South, Box 3533	Goldsboro, N. C.
Handly, R. S.	Jun. Tex. C. & D.	134 Woodburn Rd.	Upper Darby, Pa.
Hanff, I. H.	Jun. Ag.	2316 Hillsboro St.	Scotland Neck, N. C.
Hannon, M. J.	So. Occ. Inf.	231 C, Box 4259	Manchester, Mass.
Hanse, D. J.	Jun. M. E.	302 South, Box 3566	Babylon, N. Y.
Hansen, J. T.	So. Entom.	115 A, Box 4112	Raleigh, N. C.
Harbison, J. J.	Fr. C. E.	1 9th, Box 4334	Morganton, N. C.
Harbour, C. C.	Fr. Ch. Engr.	313 9th, Box 4333	Roanoke Rapids, N. C.
Hardaway, T. A.	Fr. Ch. Engr.	223 7th, Box 3355	Arcadia, S. C.
Hardee, J. F.	Jun. For.	2202 Hillsboro St.	High Point, N. C.
Hardee, R. E.	Fr. I. A. Ed.	123 A, Box 4118	Clayton, N. C.
Hardin, E. L., Jr.	So. M .E.	21 Enterprise St.	Salisbury, N. C.
Hardin, J. D.	So. Tex. Mfg.	305 5th, Box 3229	Hickory, N. C.
Hardison, H. A.	Fr. Ag.	232 7th, Box 3364	Williamston, N. C.
Hardy, W. M.	Fr. Ind. Engr.	9 9th, Box 4342	Durham, N. C.
Hargett, R. S.	Fr. Tex.	204 9th, Box 4311	High Point, N. C.
Hargrove, B. D.	Grad. Soils	6 Enterprise St.	Troy, Tex.
Harmon, A. D.	So. M. E.	205 Chamberlain St.	Kannapolis, N. C.
Harmon, C. C.	Fr. Arch.	304 7th, Box 3370	Gastonia, N. C.

Name	*Classification*	*School Address*	*Home Address*
Harper, Bob	Fr. Ag.	Garner	Garner, N. C.
Harper, D. B.	Jun. Ag. Ed.	Garner	Garner, N. C.
Harper, H. H.	So. An. Prod.	227 W. Edenton St.	Garner, N. C.
Harper, W. W.	Fr. C. E.	201 4th, Box 3119	Tarboro, N. C.
Harrell, J. W.	Fr. M. E.	202 7th, Box 3334	Burgaw, N. C.
Harrelson, E. C.	Fr. C. E.	115 Chamberlain St.	Winnabow, N. C.
Harrington, J. S.	Fr. M. E.	106 10th, Box 4406	Broadway, N. C.
Harrington, J. W.	Grad Geol. Engr.	302 4th, Box 3128	Richmond, Va.
Harrington, W. L.	Fr. Ch. Engr.	126 A, Box 4121	Goldsboro, N. C.
Harris, D. W.	Jun. An. Prod.		Newell, N. C.
Harris, H. R.	Fr. Tex.	330 8th, Box 3798	Lynnhaven, Va.
Harris, J. E.	Fr. Arch.	303 7th, Box 3369	Farmville, N. C.
Harris, J. L.	Fr. Ag. Chem.	137 A, Box 4129	Henderson, N. C.
Harris, J. R.	Fr. Ch. Engr.	21 8th, Box 3822	Washngton, N. C.
Harris, K. F.	Fr. Ch. Engr.	207 8th, Box 3741	Dallas, N. C.
Harris, P. C.	So. C. E.	106 Horne St.	Essex, N. C.
Harris, T. G.	Sen. For.	6 Enterprise St.	Macon, N. C.
Harris, T. M.	Fr. Ag. Ec.	210 Woodburn Rd.	Henderson, N. C.
Harris, W. S.	So. Ag.	307 A, Box 4172	Fayetteville, N. C.
Harrison, H. S., Jr.	Fr. For.	101 A, Box 4101	Battleboro, N. C.
Hart, D. W.	Fr. M. E.	2220 Hillsboro St.	Mooresville, N. C.
Hartenstein, W. G.	Jun. Ch. Engr.	123 Woodburn Rd.	Akron, Ohio
Hartman, F. J.	Sen. For.	2306 Hilsboro St.	Merchantville, N. J.
Hartsock, C. M., Jr.	Fr. For.	2511 Kenmore Dr.	Raleigh, N. C.
Hartsoe, J. D.	Fr. Ch. Engr.	311 8th, Box 3779	Weldon, N. C.
Hartzog, L. S.	Fr. Ind. Engr.	134 8th, Box 3734	Lexington, N. C.
Hash, L. J.	So. M. E.	331 South, Box 3595	Piney Creek, N. C.
Hassell, James L., Jr.	Fr. M. E.	230 8th, Box 3764	Edenton, N. C.
Hassell, John L.	Sen. Ag. Ed.	112 South, Box 3512	Jamesville, N. C.
Hatch, R. R.	Jun. Gen. Engr.	Withdrew Sept. 23	Goldsboro, N. C.
Hathaway, J. B.	Sr. Ch. Engr.	110 Wat., Box 3010	Sunbury, N. C.
Hauser, F. M.	Fr. E. E.	105 A, Box 4105	New York, N. Y.
Hawfield, W. D.	Sen. Ch. Engr.	127 Woodburn Rd.	Raleigh, N. C.
Hawkins, E. D.	So. M. E.	Power Plant, Box 5241	Murphy, N. C.
Hawks, S. N.	Jun. F. C.	206 Chamberlain St.	Norlina, N. C.
Hawley, Addison	So. Cer. Engr.	230 C, Box 4258	Goldsboro, N. C.
Hay, T. T.	Sen. Ind. Engr.	105 Glenwood Ave.	Raleigh, N. C.
Hayden, C. C.	So. Tex.	339 C, Box 4298	Charlotte, N. C.
Hayes, J. W.	So. Ag.	2316 Hillsboro St.	Godwin, N. C.
Haynes, C. G.	So Arch. Engr.	135 C, Box 4230	Burlington, N. C.
Haynes, T. E.	Sen. M. E.	102 A, Box 4012	Burlington, N. C.
Haynie, J. D.	Grad. Ind. Ed.	Fayetteville	Fayetteville, N. C.
Haywood, W. S., Jr.	Fr. M. E.	316 7th, Box 3382	Hilton Village, Va.
Hayworth, M. S.	Grad. C. E.	101 4th, Box 3111	Asheboro, N. C.
Hearn, M. H.	Jun. An. Prod.	20 South, Box 5127	Laurinburg, N. C.
Heath, Floyd, Jr.	Fr. M. E.	Anderson Drive, % H. S. Wetmore	Pink Hill, N. C.
Heath, H. G.	Jun. C. E.	117 Chamberlain St.	Statesville, N. C.
Heath, R. C.	Fr. Tex.	406 N. Blount St.	Raleigh, N. C.
Hebert, T. T.	Grad. Botany	106 Horne	Lafayette, La.
Hecht, E. E.	Fr. Ag. Chem.	111 C, Box 4208	Norlina, N. C.
Hecht, O. R.	Fr. Ag.	121 7th, Box 3321	Norlina, N. C.
Hecht, W. J.	Fr. Ch. Engr.	111 C, Box 4208	Norlina, N. C.
Hedler, R. W.	Fr. M. E.	103 Chamberlain St.	Jenkintown, Pa.
Hedrick, C. L.	So. Tex. C. & D.	Cary	Cary, N. C.
Hedrick, R. W.	Fr. Arch. Engr.	112 8th, Box 3712	Siler City, N. C.
Hefferman, J. A.	Fr. C. E.	104 7th, Box 3304	Little Neck, N. Y.
Hege, E. L.	So. Ch. Engr.	6 Ferndell Lane, Box 5393	Winston-Salem, N. C.
Henderson, H. C., Jr.	Fr. M. E.	136 C, Box 4231	Charlotte, N. C.
Henderson, J. W.	Fr. Ch. Engr.	228 7th, Box 3360	Lumberton, N. C.
Henderson, P. B.	Fr. M. E.	139 1911, Box 3739	Fayetteville, N. C.

Name	*Classification*	*School Address*	*Home Address*
Hendricks, F. B., Jr.	Fr. C. E.	113 7th, Box 3313	Charlotte, N. C.
Hendricks ,H. L., Jr.	Sen. Ch. Engr.	202 4th. Box 3120	Laurinburg, N. C.
Hendrix, R. L.	Fr. Ag.	1507 Ambleside Drive	Salisbury, N. C.
Henning, R. T.	Sen. Tex. Mgt.	21 Enterprise St.	Albemarle, N. C.
Henry, J. E.	Fr. C. E.	205 9th, Box 4312	Kelly, N. C.
Henson, D. L.	Fr Cer. Engr.	Withdrew September 14	Walstonburg, N. C.
Henson, Marshal	Fr Tex. Mfg.	Gym	Walstonburg, N. C.
Hepler, E. C., Jr.	Jun. Cer. Engr.	204 Wat., Box 3022	Greensboro, N. C.
Herndon, M. E., Jr.	Jun. Tex. Mfg.	4 Ferndell Lane	Charlotte, N. C.
Heritage, T. P.	So. C. E.	2008 Hillsboro St.	Burlington, N. C.
Herrick, L. W., Jr.	Grad. Poul. Sci.	2804 Hilsboro St.	Northfield, N. J.
Herrin, C. A., Jr.	So. Gen. Engr.	210 Woodburn Rd.	Durham, N. C.
Hester, T. S.	Fr. M. E.	329 C, Box 4231	Henderson, N. C.
Hetherington, I. J., Jr.	Soph. M. E.	219 C, Box 4247	Baltimore, Md.
Heyward, W. B.	So. M. E.	4 Ferndell Lane	Charlotte, N. C.
Hicks, A. R., III	Jun. Ch. Engr.	327 South, Box 3591	Faison, N. C.
Hicks, A. T.	Sen. Ag. Ed.	102 4th, Box 3112	Oxford, N. C.
Hicks, V. M., Jr.	Fr. I. A. Ed.	1539 Iredell Dr.	Raleigh, N. C.
Higdon, F. M., Jr.	Fr. M. E.	Withdrew September 12	Franklin, N. C.
High, S. C., Jr.	So. I. A. Ed.	1033 W. South St.	Raleigh, N. C.
Highfill, W E.	Sen. E. E.	110 Wat., Box 3010	Coats, N. C.
Hight, T. R.	Fr. E. E.	104 10th, Box 4404	Warrenton, N. C.
Hilburn, W. B., Jr.	Jun. Tex. Mfg.	240 A, Box 4166	Bladenboro, N. C.
Hildebrand, B. A.	Sen. Ch. Engr.	113 Chamberlain St.	Statesville, N. C.
Hilditch, W. J.	Fr. Ch. Engr.	107 Ashe Ave.	Niagara Falls, N. Y.
Hilker, E. F., Jr.	Fr. M. E.	312 E. Park Dr.	Raleigh, N. C.
Hill, B. F.	So. M. E.	102 C, Box 4201	Murfreesboro, N. C.
Hill, C. R.	Jun. Ag. Ed.	Fuquay Springs	Pilot Mountain, N. C.
Hill. D. H.	Sen. Tex. Mgt.	2200 Hope St.	Charlotte, N. C.
Hill, V. W.	Jun. Ag. Ed.	309 5th, Box 3233	Youngsville, N. C.
Hilles, D. L.	So. M. E.	109 6th, Box 3245	Upper Darby, Pa.
Hilton, J. W.	Sen. For.	1610 Ambleside Dr.	Raleigh, N. C.
Hilton, P. F.	Fr. C. E.	106 10th, Box 4406	New York, N. Y.
Himmler, G. G.	Sen. M. E.	2605 Van Dyke Av. Box 5422	Raleigh, N. C.
Hines, E. E.	Fr. Tex. Mgt.	107 Wat., Box 3007	Warsaw, N. C.
Hines, E. H.	Fr. Tex.	314 8th, Box 3782	Mount Airy, N. C.
Hines, R. S.	Jun. Tex. Mgt.	4 Ferndell Lane	Greensboro, N. C.
Hines. W. D., Jr.	Fr. Ag.	105 8th. Box 3705	Columbus, N. C.
Hinkle, W. P.	Fr. M. E.	209 C, Box 4238	Thomasville, N. C.
Hinson, C. G.	Jun. Ag. Ed.	209 5th, Box 3221	Oakboro, N. C.
Hinson, H. G.	Sen. C. E.	2316 Hillsboro St.	Raleigh, N. C.
Hinson, P. D.	Fr. M. E.	104 Logan Court	Lincolnton, N. C
Hinson, R. B.	Sen. E. E.	110 5th, Box 3210	Monroe, N. C.
Hinson, W. C.	Fr. E. E.	304 Wat., Box 3040	Walstonburg, N. C.
Hinton, A. A.	Sen. Ch. Engr.	214 A. Box 4143	Greensboro, N. C.
Hinton, Hardin	Fr. Ag. Ed.	9 Fieldhouse	Zebulon, N. C.
Hinton, H. R., Jr.	Jun. F. Mkt.	215 South. Box 3547	Sharpsburg, N. C.
Hinton, J. L.	Fr. Ch. Engr.	308 6th, Box 3268	Clayton, N. C.
Hobbs, A. M.	Jun. M. E.	2407 Clark Ave.	Charlotte, N. C.
Hobbs, I. A.	Jun. Ch. Engr.	24 South. Box 3620	Wilmington, N. C.
Hobbs, J. E.	Jun. For.	215 South, Box 3547	Edenton, N. C.
Hobbs, W. C.	Fr. M. E.	309 9th. Box 4324	Greensboro, N. C.
Hobgood, C. T.	Fr. Ag.	127 7th, Box 3327	Oxford, N. C.
Hobson, C. J.	Fr. Ag.	324 8th, Box 3792	Boonville, N. C.
Hoch, P. F.	Sen. Ag. Engr.	120 Hillcrest Rd.	Poughkeepsie, N. Y.
Hodgen, W. R.	Grad. Soils	104 4th, Box 3114	Clearfield, Pa.
Hodges, B. D., Jr.	So. Cer. Engr.	2405 Clark Ave.	Greensboro, N. C.
Hodges, H. G., Jr.	Jun. Ch. Engr.	307 South, Box 3571	Wadesboro, N. C.
Hodges, J. M.	Fr. Ag.	212 A. Box 4141	Washington, N. C.
Hodges, L. E., Jr.	Fr. M. E.	308 7th, Box 3374	Washington, N. C.
Hodges, N. H., Jr.	Fr. E. E.	716 W. North St.	Raleigh, N. C.
Hoffman, H. B.	So. M. E.	307 Wat., Box 3043	Guilford College, N. C.

Name	*Classification*	*School Address*	*Home Address*
Hoffman, L. B.	Fr. M. E.	201 8th, Box 3735	Guilford College, N. C.
Hoffman, W. F., Jr.	Jun. Ch. Engr.	130 Woodb'rn Rd. B'x 5344	Lincolnton, N. C.
Hofmann, J. G.	Jun. For.	2800 Fairview Road	Raleigh, N. C.
Hogan, W. S., Jr.	Fr. M. E.	103 7th, Box 3303	Burlington, N. C.
Hogue, R. F.	So. M. E.	311 Wat., Box 3047	Atkinson,N. C.
Holadia, W. G.	Sen. W. & D.	2306 Hillsboro St.	Roanoke Rapids, N. C.
Holcombe, H. M.	Fr. C. E.	234 8th, Box 3768	Fayetteville, N. C.
Holcombe, R. A.	Fr. For.	212 9th, Box 4319	Teaneck, N. J.
Holden, J. H., Jr.	Sen. Arch. Engr.	207 A, Box 4138	Supply, N. C.
Holder, W. C.	Fr. Land. Arch.	326 7th, Box 3392	Asheboro, N. C.
Holding, L. F.	So. Gen. Engr.	211 W. Park Dr.	Raleigh, N. C.
Holland, A. C.	Fr. C. E.	2220 Hillsboro St.	Trenton, N. C.
Holland, H. H.	So. Ag.	College Infirmary	Charles,N. C.
Holland, M. B.	Fr. Tex. Mfg.	235 C, Box 4261	Conover, N. C.
Holler, D. F.	Grad. F. C. & P. B.	511 E. Jones St.	Raleigh, N. C.
Holler, L. W.	Fr. Ag. Ed.	104 10th, Box 4404	Statesville, N. C.
Holliday, F. R., Jr.	So. M. E.	128 C, Box 4225	Greensboro, N. C.
Holliday, L. F.	Fr. Ag. Ed.	137 1911, Box 3737	Jamesville, N. C.
Hollis, K. A.	Fr. M. E.	132 Woodburn Rd.	Hebron, Me.
Holloman, R. P.	Fr. M. E.	102 Wat., Box 3002	Washington, N. C.
Holloway, C. H., Jr.	So. Arch. Engr.	2126 Country Club Dr.	Raleigh, N. C.
Hollowell, E. G.	Sen. Ch. Engr.	6 South, Box 3602	Elizabeth City, N. C.
Holmes, Gabe, Jr.	Fr. Cer. Engr.	102 9th, Box 4302	Goldsboro, N. C.
Holshouser, J. R., Jr.	Jun. E. E.	325 A, Box 4188	Greensboro, N. C.
Holt, A. J.	Fr. Ag.	232 7th, Box 3364	Graham, N. C.
Holt, R. D.	Jun. M. E.	116 South, Box 3516	Goldsboro, N. C.
Honbarrier, A. N.	Jun. Ag. Ed.	306 5th, Box 3230	Salisbury, N. C.
Hondros, H. A.	Fr. Rur. Soc.	309 A, Box 4173	Winston-Salem, N. C.
Honeycutt, E. M.	Sen. Ch. Engr.	120 Forest Rd.	Burnsville, N. C.
Honeycutt, Jerome, Jr.	Ag. Ed	231 1911, Box 3771	Clinton, N. C.
Honeycutt, J. N.	Jun. Ag.	307 6th, Box 3267	Varina, N. C.
Honeycutt, S. G.	Fr. Ag.	230 1911, Box 3770	Clinton, N. C.
Honeyman, E. R., Jr.	So. Ch. Engr.	129 A, Box 4124	Glen Ridge, N. J.
Hood, J. R., Jr.	Sen. Ch. Engr.	117 Forest Road	Lillington, N. C.
Hook, W. W.	Fr. For.	305 7th, Box 3371	Charlotte, N. C.
Hoole, G. E.	Fr. M. E.	20 8th, Box 3795	Charlotte, N. C.
Hoover, R. C., Jr.	So. M. E.	4 Ferndell Lane	Concord, N. C.
Hopper, J. W., Jr.	Fr. Arch.	212 10th, Box 4421	Leaksville, N. C.
Horne, Miss C. L.	Auditor	2201 Fairview Rd.	Raleigh, N. C.
Horne, C. O., Jr.	So. E. E.	126 South, Box 3524	Greenville, N. C.
Horne, N. C.	Fr. M. E.	214 7th, Box 3346	Magnolia, N. C.
Horner, Collins	Jun. Ch. Engr.	14 Dixie Trail	Merchantville, N. J.
Horowitz, Bernard	Fr. Tex. Mfg.	111 A, Box 5431	Mount Vernon, N. Y.
Horowitz, Wilbur	So. Tex. Mfg.	110 C, Box 4207	New York, N. Y.
Horton, A. D.	Fr. Occ. Inf.	116 S. McDowell St.	Raleigh, N. C.
Horton, Harold	Fr. M. E.	206 South, Box 3538	Asheville, N. C.
Horton, J. S.	So. Tex. Mgt.	1708 Park Dr.	Raleigh, N. C.
Hosea, J. R.	So. Ch. Engr.	305 Wat., Box 3041	Pikeville, N. C.
Houck, J. H.	So. Ag.	224 A, Box 4153	Winston-Salem, N. C.
Hough, E. S.	Fr. Gen. Engr.	118 N. Boylan	Raleigh,N. C.
Houghton, J. E.	Sen. Ch. Engr.	340 A, Box 4199	New Bedford, Mass.
House, D. T.	Fr. For.	218 8th, Box 3756	Beaufort, N. C.
House, L. E.	Fr. Ch. Engr.	Knightdale	Knightdale, N. C.
House, R. D., Jr.	Jun. Ag.	1301 Hillsboro St.	Scotland Neck, N. C.
Howard, G. K.	Fr. Tex.	102 10th, Box 4022	Davidson, N. C.
Howard, P. N., Jr.	Fr. C. E.	110 8th, Box 3710	Charlotte, N. C.
Howard, R. O.	So. M. E.	222 A, Box 4151	Galveston, Texas
Howe, A. L.	Fr. E. E.	306 7th, Box 3372	Sanborn, N. Y.
Howe, G. M.	So. For.	119 C, Box 4216	Elizabeth, N. J.
Howell, E. L.	So. Ag. Ed.	121 Cox Ave.	Cana, N. C.
Howell, G. V., Jr.	Fr. For.	1015 Brooks Av. B'x 5012	Waynesv'le, N. C.
Hoyle, W. H.	So. Ag.	209 6th, Box 3257	Henderson, N. C.

Name	*Classification*	*School Address*	*Home Address*
Huckabee, J. D.	Jun. Tex. Mfg.	323 C, Box 4285	Charlotte, N. C.
Hudgins, R. H.	So. An. Prod.	919 W. Johnston St.	Arden, N. C.
Hudson, R. A.	So. Ag.	110 E. Peace St.	Waxhaw, N. C.
Hudspeth, J. B.	Fr. Ag.	331 7th, Box 3397	Yadkinville, N. C.
Huff, A. W.	Jun. An. Prod.	2202 Hillsboro St.	Mars Hill, N. C.
Huff, R. E.	Sen. For.	2202 Hillsboro St.	Mars Hill, N. C.
Huffstetler, S. H.	Fr. M. E.	221 A, Box 4150	Haw River, N. C.
Huggins, R. H.	So. Ag.	2220 Hillsboro St.	Clarkton, N. C.
Hultz, B. E.	Fr. M. E.	317 8th, Box 3785	Winston-Salem, N. C.
Humphrey, A. L., Jr.	Fr. E. E.	1 8th, Box 3803	Warsaw, N. C.
Humphrey, R. P.	Fr. Ag. Ed.	125 Woodburn Rd.	Beaufort, N. C.
Humphreys, H. W.	Fr. C. E.	337 A, Box 4197	Roanoke Rapids, N. C.
Hundley, R. M.	Fr. M. E.	207 10th, Box 4416	Draper, N. C.
Hunnicutt, R. L.	Sen. M. E.	105 5th, Box 3205	Monroe, N. C.
Hunnings, L. D., Jr.	Jun. Ag. Engr.	2316 Hillsboro St.	New Bern, N. C.
Hunt, R. L., Jr.	Fr. An. Prod.	220½ Cox Ave.	Lattimore, N. C.
Hunt, W. T., Jr.	Grad. E. E.	2212 Hope St.	Apex, N. C.
Hunter, F. C.	Jun. E. E.	525 N. East St.	Raleigh, N. C.
Hunter, J. B., Jr.	So. Geol. Engr.	323 A, Box 4185	Charlotte, N. C.
Hunter, J. E., Jr.	Sen. C. E.	211 Wat., Box 3029	Charlotte, N. C.
Hunter, R. I.	Fr. Tex.	325 1911	Valhalla, N.Y.
Huntley, J. R.	Sen. M. E.	2514 Clark Ave.	Monroe, N. C.
Hurdle, J. H.	Fr. M. E.	302 6th, Box 3262	Mebane, N. C.
Hurst, H. C., Jr.	Jun Ag.	312 5th, Box 3236	Franklin,N. C.
Hurt, A. B., Jr.	Sen. Ch. Engr.	110 South, Box 3510	Nathans Creek, N. C.
Hurwitz, J. B.	Fr. Tex.	321 A, Box 4172	Brooklyn, N. Y.
Hyatt, H. B.	So. C. E.	16 South, Box 3612	Waynesville, N. C.
Icard, T. F.	Fr. For.	137 1911, Box 3737	Handsom, Va.
Idol, V. H., Jr.	Jun. E. E.	115 South, Box 3515	Madison, N. C.
Iglesias, C. E.	Fr. C. E.	314 7th, Box 3380	San Juan, P. R.
Illo, F. L.	So. M. E.	318 C, Box 4280	Atlantic Highlands, N. J.
Ingle, R. S.	Jun. Geol. Engr.	132 Woodburn Rd.	Statesville, N. C.
Ingram, L. J.	Jun. Ch. Engr.	4 Ferndell Lane	High Point, N. C.
Ingram, T. J.	Fr. Ag. Engr.	103 10th, Box 4403	Lilesville, N. C.
Ingrisano, P. P.	Jun. C. E.	202 A, Box 4143	Brooklyn, N. C.
Ireland, C. F.	Sen. Ag. Chem.	217 C, Box 4245	Franklinton, N. C.
Irvin, F. J.	Fr. Ag.	333 1911, Box 3813	Ellenboro, N. C.
Isenhour, Eubert	Fr. Tex.	319 7th, Box 3385	Hickory, N. C.
Isenhour, G. M.	So. Cer. Engr.	3205 Hillsboro St.	New London, N. C.
Ives, W. C.	Jun. Ag. Engr.	106 Wat., Box 3006	Elizabeth City, N. C.
Ivey, B. S.	Fr. Ch. Engr.	705 Gleenwood Ave.	Seven Springs, N. C.
Ivey, W. R., Jr.	So. Tex. C. & D.	4 Ferndell Lane	Charlotte, N. C.
Ivie, B. E.	So. Gen. Engr.	112 C, Box 4209	Leaksville, N. C.
Jackson, B. B.	Sen. E. E.	10 Enterprise St.	Highland Park, Mich.
Jackson, C. C.	So. Ag.	22 South, Box 3618	Dunn, N. C.
Jackson, C. M.	Sen. An. Prod.	22 South, Box 3618	Dunn, N. C.
Jackson, R. B.	Jun. Tex. Mfg.	16 Enterprise St.	Fayetteville, N. C.
Jackson, R. S.	So. Tex. Mfg.	135 A, Box 4128	Cornwall, Ont.
Jackson, T. F., Jr.	Sen. E. E.	2514 Clark Ave.	Washington, N. C.
James ,A. L.	So. Tex. Mgt.	224 C, Box 4252	Washington, D. C.
James, G. B.	Fr. Ag. Ed.	340 C, Box 4298	Oakboro, N. C.
James, W. G.	Fr. E. E.	330 8th, Box 3798	Parmele, N. C.
Jard, L. M., Jr.	So. I. A. Ed.	2208 Fairview Rd.	Raleigh, N. C.
Jarrell, R. K.	Fr. M. E.	13 8th, Box 3815	Charlotte, N. C.
Jarvis, H. H.	Fr. M. E.	205 7th, Box 3337	Asheville, N. C.
Jarvis, R. N.	Jun. Ag. Chem.	217 C, Box 4245	Mars Hill, N. C.
Jayne, W. O.	So. M. E.	104 Logan Court	Elmira, N. Y.
Jenkins, F. A.	Sen. E. E.	328 South, Box 3592	Charlotte, N. C.
Jenkins, S. D.	Fr. Ag.	118 8th, Box 3718	Robersonville, N. C.
Jennings, H. E.	Sen. C. E.	401 S. McDowell St.	Raleigh, N. C.

Name	*Classification*	*School Address*	*Home Address*
Jenrette, Addison	So. Ag.	126 South, Box 3526	Ash, N. C.
Jernigan, D. R.	Fr. Ag. Ed.	8 9th, Box 4341	Windsor, N. C.
Jobe, A. P.	So. Ag. Ed.	2306 Hillsboro St.	Rutherfordton, N. C.
Jobe, H. R.	So. Ch. E.	319 C, Box 4281	Burlington, N. C.
Johns, B. R., Jr.	So. Arch. Engr.	618 Hillsboro St., Box 5491	Norfolk, Va.
Johnson, A. E.	Jun. For.	21 South, Box 3617	Cementon, N. Y.
Johnson, Bobby L.	Fr. E. E.	134 8th, Box 3734	Lexington, N. C.
Johnson, Byron L.	Sen. Ag. Ed.	104 6th, Box 3240	Scotland Neck, N. C.
Johnson, C. B.	Jun. E. E.	104 A, Box 4104	Rocky Mount, N. C.
Johnson, E. R.	Sen. M. E.	208 Wat., Box 5392	Paw Creek, N. C.
Johnson, G. P.	Fr. M. E.	203 8th, Box 3737	Goldsboro, N. C.
Johnson, H. M.	So. I. A. Ed.	College Infirmary	Statesville, N. C.
Johnson, J. E.	So. Ag. Ed.	338 C, Box 4297	Catawba, N. C.
Johnson, J. Garfield	Fr. M. E.	208 Wat., Box 5392	Paw Creek, N. C.
Johnson, J. Gaston	Fr. M. E.	5 Fieldhouse	Rocky Mount, N. C.
Johnson, J. H.	So. Tex.	17 Enterprise St.	Marion, N. C.
Johnson, James W.	Sen. Ag. Ed.	17 South, Box 3613	Erwin, N. C.
Johnson, Jordan W.	Fr. Ag.	330 7th, Box 3296	Scotland Neck, N. C.
Johnson, L. K.	Sen C. E.	103 Wat., Box 3303	Winston-Salem, N. C.
Johnson, M. B.	So. M. E.	228 South, Box 3560	Mt. Holly, N. C.
Johnson, O. H., Jr.	So. B. D.	215 Woodburn Road	Morehead City, N. C.
Johnson, P. R.	Fr. Ag.	117 7th, Box 3317	Raeford, N. C.
Johnson, T. A., Jr.	Sen. Tex. Mfg.	2405 Clark Ave.	Liberty, N. C.
Johnson, T. C.	Sen. M. E.	103 Wat., Box 5392	Paw Creek, N. C.
Johnson, V. H.	Jun. F. C. & P. B.	230 South, Box 3562	Kernersville, N. C.
Johnson, W. E.	Fr. Tex.	210 7th, Box 3342	Demarest, N. J.
Johnson, W. H., Jr.	So. Ch. Engr.	2604 Hillsboro St.	Asheville, N. C.
Johnson, W. S., Jr.	Jun. M. E.	214 South, Box 3546	Charlotte, N. C.
Joiner, J. N.	So. Ag.	226 A, Box 4155	Winter Garden, Fla.
Jolly, A. L.	Sen. For.	2004 Hillsboro St.	Holland, Va.
Jones, E. L., Jr.	Fr. Ch. Engr.	4 Ferndell Lane	Charlotte, N. C.
Jones, G. E.	Fr. M. E.	101 7th, Box 3301	New Bern, N. C.
Jones, G. L.	Fr. Ag.	231 8th, Box 3765	Kinston, N. C.
Jones, G. N., Jr.	So. M. E.	207 Glascock St.	Raleigh, N. C.
Jones, G. W.	So. I. A. Ed.	303 South, Box 3567	Roxboro, N. C.
Jones, J. A., Jr.	Fr. Ch. Engr.	16 8th, Box 3820	Charlotte, N. C.
Jones, J. D.	Sen. An. Prod.	205 5th, Box 3217	Brevard, N. C.
Jones, J. F.	So. Ch. Engr.	2 Gym	Durham, N. C.
Jones, J. H., Jr.	Fr. Ch. Engr.	4 9th, Box 4337	Lake Hiwatha, N. J.
Jones, J. S.	Sen. E. E.	115 South, Box 3515	New Bern, N. C.
Jones, J. W.	So. M. E.	Box 92, Cary	Yanceyville, N. C.
Jones, M. D., Jr.	Fr. Ch. Engr.	328 1911, Box 3808	Charlotte, N. C.
Jones, M. L.	So. Ag. Ed.	118 C, Box 4215	Zirconia, N. C.
Jones, O. R.	Fr. M. E.	210 10th, Box 4419	Wilmington, N. C.
Jones, R. M.	Fr. Ch. Engr.	127 7th, Box 3327	Salisbury, N. C.
Jones, S. S.	Fr. Gen. Engr.	112 C, Box 4209	Washington, N. C.
Jones, W. B.	Fr. M. E.	2227 Creston Road	Windsor, N. C.
Jones, W. E., Jr.	Fr. Arch. Engr.	327 7th, Box 3393	N. Wilkesboro, N. C.
Jones, W. J.	Fr. Gen. Engr.	110 7th, Box 3310	Elkin, N. C.
Jordan, A. C.	So. Ch. Engr.	6 Ferndell Lane	Rochester, N. Y.
Jordan, H. H.	Fr. M. E.	102 Logan Court, Box 5471	Siler City, N. C.
Jordan, H. K.	Fr. M. E.	104 9th, Box 4303	Charlotte, N. C.
Jordan, H. L.	Fr. Ag.	5 Maiden Lane	Clarkton, N. C.
Jordan, J. A.	Jun. Ag. Ed.	1806 Hillsboro St.	Hamlet, N. C.
Jordan, W. E., Jr.	Jun. M. E.	318 South, Box 3582	Charlotte, N. C.
Jordan, W. M.	So. For.	205 Chamberlain St.	Winton, N. C.
Josenhans, S. J.	Fr. C. E.	332 8th, Box 3800	Wilmington, N. C.
Joslin, J. D.	Sen. Arch. Engr.	207 W. Park Drive	Raleigh, N. C.
Joyce, J. H.	Fr. For.	313 7th, Box 3379	Long Branch, N. J.
Joyner, A. L.	Fr. E. E.	205 Forest Rd.	Nashville, N. C.
Joyner, J. A.	So. E. E.	104 A, Box 4104	Sharpsburg, N. C.
Joyner, J. B.	So. Ch. Engr.	125 A, Box 4120	Louisburg, N. C.
Julian, H. G., Jr.	Fr. M. E.	301 9th, Box 4321	Greensboro, N. C.

Name	*Classification*	*School Address*	*Home Address*
Kaczynski, H.	Fr. For.	323 7th, Box 3389	Trenton, N. J.
Kahn, Max	Fr. E. E.	231 7th, Box 3363	Wilmington, N. C.
Kaley, P. D.	Sen. Tex. Mfg.	2407 Clark Ave.	Scranton, Pa.
Karesh, R. L.	Jun. Ch. Engr.	201 C, Box 5458	Asheboro, N. C.
Kattermann, A. W., Jr.	Jun. Tex. Mfg.	237 A, Box 4163	Paterson, N. J.
Katz, H. S.	So. For.	2304 Clark Ave.	Middletown, N. Y.
Katz, M. B.	So. Ch. Engr.	2304 Clark Ave.	Morganton, N. C.
Kaufman, Samuel	Grad. Entom.	111 7th, % Zool. Dept.	New York, N. Y.
Kearns, C. E., Jr.	So. An. Prod.	209 6th, Box 3257	Asheboro, N. C.
Kearns, E. F.	So. E. F.	205 Forest Rd.	Winston-Salem, N. C.
Kearns, W. C.	Jun. Ag. Ed.	117 South, Box 3517	Pleasant Garden, N. C.
Keeler, M. G., Jr.	Fr. E. E.	208 9th, Box 4315	Fort Bragg, N. C.
Keen, E. R.	Fr. Ag. Ed.	2 8th, Box 3804	Newton Grove, N. C.
Keener, W. H.	Jun. Ch. Engr.	103 Chamberlain St.	Winston-Salem, N. C.
Keiger, J. L., Jr.	Fr. Gen. Engr.	304 9th, Box 4324	Winston-Salem, N. C.
Kelly, A. Y., Jr.	So. Gen. Engr.	311 Hillcrest Rd.	Raleigh, N. C.
Kelly, J. F.	So. C. E.	313 C, Box 4275	Alma, N. C.
Kelly, R. S.	So. E. E.	331 C, Box 4293	Laurel Hill, N. C.
Kelner, Albert	Grad. Botany	304 4th, Box 3130	Philadelphia, Pa.
Kemper, E. H.	Jun. M. E.	203 6th, Box 3251	Shelby, N. C.
Kendall, C. A.	Jun. Arch. Engr.	319 A, Box 4182	Greensboro, N. C.
Kendall, R. H.	Jun. Ag. Ed.	Brooks Ave., Box 5441	Norwood, N. C.
Kenyon, B. W., Jr.	Sen. F. Mkt.	Raleigh Apt. J 2	Raleigh, N. C.
Kenyon, J. T.	Fr. M. E.	402 Dixie Trail	Raleigh, N. C.
Ketchie, G. M.	So. C. E.	105 Wat., Box 3005	Charlotte, N. C.
Ketchum, H. B., Jr.	Jun. Ch. Engr.	106 South, Box 3506	Mt. Holly, N. C.
Kiger, H. C.	Sen. Ag. Ec.	111 5th, Box 3211	Pfafftown, N. C.
Kilgo, G. D.	Sen. Ch. Engr.	104 C, Box 4203	Asheville, N. C.
Killeri, M. R.	Jun. For.	301 Park Ave.	Pittston, Pa.
Kilpatrick, R. H.	Fr. M. E.	315 7th, Box 3381	Greensboro, N. C.
Kimball, C. N., Jr.	Jun. Cer. Engr.	309 South, Box 3573	Enfield, N. C.
King, C. S.	So. Ch. Engr.	338 A, Box 4198	Charlotte, N. C.
King, J. C.	Sen. An. Prod.	Brooks Ave., Box 5441	Laurinburg, N. C.
King, J. H.	Fr. Tex.	334 7th, Box 3400	Booneville, N. C.
King, T. H.	So. E. E.	124 C, Box 4221	Benton, Ky.
King, V. A.	Fr. E. E.	118 E. Park Drive	Topton, N. C.
Kingsolver, J. K.	Jun. Ch. Engr.	219 South, Box 3551	Hickory, N. C.
Kinlaw, J. C.	Fr. Ag. Ed.	231 8th, Box 3765	Lumberton, N. C.
Kinney, Russell	Fr. E. E.	306 Wat., Box 3042	Charlotte, N. C.
Kirby, A. M., Jr.	Fr. Ch. Engr.	220 8th, Box 3754	Durham, N. C.
Kirkman, C. H., Jr.	Sen. An. Prod.	11 YMCA, Box 3517	Pleasant Garden, N. C.
Kiser, R. A.	Fr. Ag. Ed.	238 A, Box 4164	Kings Mountain, N. C.
Kiser, R. W.	Fr. E. E.	227 7th, Box 3359	Charlotte, N. C.
Kizer, G. H.	Sen. Ind. Engr.	140 A, Box 4132	Granite Falls, N. C.
Klein, Seymour	Fr. Ag.	221 7th, Box 3353	Brooklyn, N. Y.
Kluttz, H. A.	Jun. M. E.	Leesville Rd.	Raleigh, N. C.
Kluttz, M. L.	So. Ag. Ed.	204 4th, Box 3122	Salisbury, N. C.
Knight, R. G., Jr.	Fr. Ch. Engr.	116 7th, Box 3316	Roanoke Rapids, N. C.
Knight, W. A.	Jun. Occ. Inf.	203 A, Box 4135	Goldsboro, N. C.
Knight, W. R., Jr.	Jun. M. E.	102 South, Box 3502	Brooklyn, N. Y.
Knoth, A. C.	Fr. M. E.	332 7th, Box 3398	Asheville, N. C.
Knowles, P. C.	Fr. Cer. Engr.	3 9th, Box 4336	Woodard, N. C.
Knowlton, N. W.	Sen. M. E.	4 Ferndell Lane	Charlotte, N. C.
Knox, E. L.	Jun. Ag. Ed.	101 5th, Box 3201	Kelford, N. C.
Knox, J. A.	Fr. An. Prod.	234 1911	Cleveland, N. C.
Koonce, F. J., Jr.	Sen. Ag. Ed.	107 South, Box 3507	Trenton, N. C.
Koonce, J. B.	Fr. M. E.	226 A, Box 4155	Aurora, N. C.
Koonce, T. R.	Fr. E. E.	322 8th, Box 3790	Fair Bluff, N. C.
Kornegay, S. D.	So. Ag. Ed.	325 C, Box 4287	Mt. Olive, N. C.
Kostukowich, William	Fr. C. E.	308 8th, Box 3776	New York, N. Y.
Koury, E. W.	Fr. Tex.	337 1911, Box 3817	Burlington, N. C.
Kramer, F. K., Jr.	Sen. M. E.	108 5th, Box 3208	Elizabeth City, N. C.

Name	*Classification*	*School Address*	*Home Address*
Kramer, Irving	Fr. For.	210 7th, Box 4432	New Haven, Conn.
Krider, J. B., Jr.	Fr. Ch. Engr.	103 C, Box 4202	Salisbury, N. C.
Krochmal, Arnold	Sen. Pom.	1809 Park Drive	Raleigh, N. C.
Kuhn, C. R.	Fr. Tex.	500 Devereaux St.	Raleigh, N. C.
Kuiper, J. J.	Fr. M. E.	224 7th, Box 3356	Hawthorne, N. J.
Kumpe, R. J.	Fr. Tex.	1 Fieldhouse	Charlotte, N. C.
Kwiatkoski, J. D.	Fr. M. E.	3 Fieldhouse	Jeannette, Pa.
Lacey, S. B., Jr.	Sen. Ag. Ed.	3 South, Box 3599	Newland, N. C.
Lackey, D. W.	Fr. Ag.	9 9th, Box 4342	Lenoir, N. C.
Lackey, R. O.	Grad. An. Prod.	108 4th, Box 5127	Lenoir, N. C.
Lamb, H. R.	So. Arch. Engr.	2008 Hillsboro St.	Asheboro, N. C.
Lamb, R. V.	Grad. E. E.	6 Ferndell Lane, Box 5393	Elizabeth City, N. C.
Lambe, T. W.	Jun. C. E.	413 Calvin Rd.	Raleigh, N. C.
Lambert, J. T.	Fr. Ch. Engr.	710 Nash Drive	Raleigh, N. C.
Lambertson, W. A.	Sen. Cer. Engr.	204 Wat., Box 3022	Rich Square, N. C.
Lambeth, J. B.	Fr. C. E.	16 Enterprise St.	High Point, N. C.
Lamm, J. E.	Jun. Ag. Ed.	309 5th, Box 3233	Louisburg, N. C.
LaMorte, W. J.	Jun. C. E.	2513 Clark Ave.	Bronxville, N. Y.
Lamport, M. H.	Jun. Tex. Mgt.	237 A, Box 4163	New York, N. Y.
Lancaster, G. C., Jr.	Fr. Ag. Ec.	205 Forest Rd.	Vanceboro, N. C.
Lancaster, W. R.	Fr. E. E.	101 C, Box 4200	Castalia, N. C.
Landon, R. H.	Sen. For.	108 6th, Box 3244	Drexel Hill, Pa.
Lane, R. H.	Sen. F. C. & P. B.	1301 Hillsboro St.	Henderson, N. C.
Lane, W. A.	So. Tex. C. & D.	207 South, Box 3539	Greensboro, N. C.
Laney, L. C.	So. Ag.	37 C, Box 4296	Maiden, N. C.
Lankford, M. P.	Sen. E. E.	104 Woodburn Rd.	Thomasville, N. C.
Larkin, R. C.	Grad. Ag. Ed.	Cameron Park Apts.	Wheeling, Ill.
Lassiter, A. T., Jr.	So. An. Prod.	233 A, Box 4161	Clayton, N. C.
Latham, C. F.	Fr. Ag. Ec.	1720 Hillsboro St.	Belhaven, N. C.
Latham, H. V., Jr.	Jun. M. E.	125 South, Box 3525	Belhaven, N. C.
Latham, T. J.	Fr. M. E.	21 8th, Box 3822	Washington, N. C.
Lathers, F. T.	Fr. F. Bus. Adm.	201 10th, Box 4410	Hoseheads, N. Y.
Lavin, J. N.	Jun. Ch. Engr.	328 A, Box 4191	Bradley Beach, N. J.
Lawing, W. J.	Fr. M. E.	221 8th, Box 3721	Charlotte, N. C.
Lawrence, B. J., Jr.	Fr. Ag.	1021 Cowper Drive	Raleigh, N. C.
Lawrence, G. E.	Fr. M. E.	"A" 9th	Washington, N. C.
Lawrence, L. R.	So. Arch. Engr.	209 Wat., Box 3027	Portsmouth, Va.
Lawrence, R. E., Jr.	Fr. Ch. Engr.	105 7th, Box 3305	Mount Airy, N. C.
Laws, J. S.	Sen. M. E.	113 South, Box 3513	Henderson, N. C.
Laws, Lester	Sen. Ag. Ed.	210 South, Box 3542	Kinston, N. C.
Layden, R. L.	Fr. Ag. Ed.	105 8th, Box 3705	Hertford, N. C.
Leagans, J. E.	Jun. Ag. Ed.	10 Dixie Trail	Cana, N. C.
Leagans, J. P.	Grad. Ag. Ec.	10 Dixie Trail	Cana, N. C.
Leak, R. C.	Jun. Tex. Mfg.	307 A, Box 4172	Terre Haute, Ind.
Leak, R. P.	So. E. E.	2209½ Hope St.	Rockingham, N. C.
Lebokitz, M. H.	Jun. For.	329 A, Box 4192	Brooklyn, N. Y.
Ledbetter, T. B.	Jun. M. E.	306 6th, Box 3266	Rockingham, N. C.
Lee, B. W.	Fr. Ag. Ed.	Withdrew September 17	Shelby, N. C.
Lee, F. C.	Fr. W. C. & M.	2626 Lassiter Mill Rd.	Charlotte, N. C.
Lee, H. C.	Fr. M. E.	225 1911, Box 3765	Winston-Salem, N. C.
Lee, J. L.	Jun. Tex. C. & D.	135 C, Box 4230	Greensboro, N. C.
Lee, N. K., Jr.	Jun. M. E.	116 South, Box 3516	Hampton, Va.
Lee, R. A.	Fr. M. E.	325 1911, 3805	Washington, N. C.
Leeper, J. S.	Fr. C. E.	202 8th, Box 3736	Gastonia, N. C.
Leer, K. A.	Sen. W. & D.	2004 Hillsboro St.	Cliffside Park, N. J.
Lefler, H. B.	Sen. Arch. Engr.	218 Wat., Box 3036	Albemarle, N. C.
Le Grand, H. E.	Fr. Tex.	206 8th, Box 3740	Shelby, N. C.
Le Grand, W. F.	Jun. Tex. Mfg.	304 4th, Box 3130	Shelby, N. C.
LeGwin, J. H.	Sen. An. Prod.	227 South, Box 3559	Wilmington, N. C.
Lehman, P. H., Jr.	Sen. Ch. Engr.	307 4th, Box 3133	Winston Salem, N. C.

Name	*Classification*	*School Address*	*Home Address*
Leitch, J. D.	Fr. Ch. Engr.	228 7th, Box 3360	Mount Airy, N. C.
Leloudis, W. E.	Jun. E. E.	1301 Hillsboro St.	Rocky Mount, N. C.
Lemlich, B. R.	Fr. Ag. Chem.	219 C, Box 4247	Brooklyn, N. Y.
Lentz, W. W.	Jun. Pom.	2008 Hillsboro St.	High Point, N. C.
Leonard, B. T.	Fr. M. E.	102 E. North St.	Raleigh, N. C.
Leonard, Clyde, Jr.	Fr. Gen. Engr.	103 9th, Box 4303	Wilmington, N. C.
Leonard, W. H.	Jun. Tex. Mfg.	204 A, Box 4136	Lexington, N. C.
Leonard, W. L., Jr.	Jun. M. E.	102 E. North St.	Raleigh, N. C.
LeVasseur, J. P.	So. C. E.	227 C, Box 4255	Hartford, Conn.
Leveen, I. A.	So. Tex. Mgt.	319 C, Box 4277	New York, N. Y.
Levin, E. J.	Jun. E. E.	8 8th	Mt. Iron, Minn.
Levin, R. E.	So. W. & D.	304 South, Box 3568	Brooklyn, N. Y.
Levine, Jesse	Sen. For.	329 South, Box 3593	New York, N. Y.
Lewallen, L. C.	Fr. Ch. Engr.	114 7th, Box 3314	Asheboro, N. C.
Lewis, B. E.	Sen. M. E.	411 Kinsey St.	Raleigh, N. C.
Lewis, B. F., Jr.	So. E. E.	338 A, Box 4198	Fountain, N. C.
Lewis, G. D.	Sen. M. E.	2513 Clark Ave.	Rocky Mount, N. C.
Lewis, L. D.	Fr. E. E.	109 C, Box 4223	Macclesfield, N. C.
Lewis, M. G.	Jun. Ag. Ed.	201 Wat., Box 3019	Fairmont, N. C.
Lewis, Miss Mildred M.	Special	411 Kinsey St.	Raleigh, N. C.
Lewis, R. A.	Jun. Ch. Engr.	1801 Glenwood Ave.	Raleigh, N. C.
Lewis, T. C.	Fr. Arch. Engr.	Withdrew Sept. 21	Dallas, N. C.
Lewis, W. D.	Jun. Ag. Ed.	103 6th, Box 3263	Fairmont, N. C.
Lewis, W. M.	So. W. C. & M.	239 C, Box 4264	Faison, N. C.
Leysath, E. F.	Jun. For.	2008 Hillsboro St.	Springfield, Vt.
Lieb, N. D.	Fr. Ag.	2402 Everett Ave.	Newark, N. J.
Light, C. I.	So. M. E.	2304 Clark Ave.	Brooklyn, N. Y.
Light, E. T.	Jun. M. E.	310 5th, Box 3234	Haddenfield, N. J.
Liles, A. E.	Jun. Ag. Ed.	Apt. 3, 200 E. Edenton St.	Littleton, N. C.
Lindsey, E. L.	Sen. Ind. E.	202 South, Box 3435	Draper, N. C.
Lineback, W. E.	So. Ch. Engr.	127 South, Box 3527	Winston-Salem, N. C.
Lingle, A. W.	Fr. Ag.	207 5th, Box 3219	Salisbury, N. C.
Linn, G. M.	So. Tex. Mfg.	6 Ferndell Lane	Landis, N. C.
Linten, I. L.	So. M. E.	2304 Clark Ave.	Brooklyn, N. Y.
Lippard, G. H.	Jun. Cer. Engr.	203 South, Box 3535	Charlotte, N. C.
Little, B. L.	Jun. Tex. Mfg.	109 Wat., Box 3009	Mooresville, N. C.
Little, F. L., Jr.	Sen. Land. Arch.	116 Groveland Ave.	Ayden, N. C.
Little, W. E.	So. Ag. Ed.	202 5th, Box 3214	Grimesland, N. C.
Littlejohn, C. E.	Grad. Ch. Engr.	301 4th, Box 3127	Raleigh, N. C.
Littlejohn, S. M.	Grad. Tex.	Chapel Hill	Clemson, S. C.
Livermon, R. H.	Jun. C. E.	313 South, Box 3577	Charlotte, N. C.
Livingston, R. A.	Fr. E. E.	26 8th	McFarlan, N. C.
Lockhart, C. H.	Sen. Ag. Engr.	203 Wat., Box 3021	Durham, N. C.
Lockhart, R. V., Jr.	Sen. F. Mkt.	2407 Clark Ave.	Monroe, N. C.
Loewensberg, Walter	So. M. E.	312 Chamberlain St.	Baltimore, Md.
Loftin, W. D.	So. Ag.	115 Woodburn Rd.	Kinston, N. C.
Long, B. N.	Jun. Ch. Engr.	134 Woodburn Rd.	Greensboro, N. C.
Long, C. R.	So. C. E.	134 Woodburn Rd.	Roxboro, N. C.
Long, L. W.	So. E. E.	123 Woodburn Rd.	Forest City, N. C.
Long, M. H.	So. M. E.	304 C, Box 4269	Engelhard, N. C.
Long, M. L.	So. For.	111 6th, Box 3247	Sweetwater, Tenn.
Long, M. R., Jr.	So. Ind. Engr.	23 Logan Court	Statesville, N. C.
Lopez, N. W.	Jun. Ind. Engr.	2513 Cark Ave.	Ft. Bragg, N. C.
Love, J. D.	Jun. Ag. Ed.	120 C, Box 4217	Stanfield, N. C.
Low, D. N.	Fr. M. E.	1 9th, Box 3443	Burnsville, N. C.
Lowder, J. P., Jr.	So. Ag.	233 C, Box 4260	Norwood, N. C.
Lowery, J. B.	Fr. Gen. Engr.	204 8th, Box 3738	New Bern, N. C.
Lubin, Ben	Jun. Entom.	324 A, Box 4187	Newark, N. J.
Luis, R. L. T.	Fr. C. E.	106 Horne St.	Pina, Cuba
Luke, E. B.	Jun. Gen. Engr.	330 South, Box 3594	Goldsboro, N. C.
Lumsden, J. C.	Fr. Ch. Engr.	726 S. Boylan	Raleigh, N. C.

Name	*Classification*	*School Address*	*Home Address*
Lunday, S. E.	Fr. Aero.	101 9th, Box 3809	Ft. Bragg, N. C.
Lundberg, G. F., Jr.	Fr. Tex.	8 Ferndell Lane	Chicago, Ill.
Lutz, R. B.	So. For.	223 A, Box 4152	Norwalk, Conn.
Lyerly, R. L.	Fr. M. E.	216 7th, Box 3348	Thomasville, N. C.
Lyle, J. A.	Grad. P. Path.	Wilmont Apts.	Lexington, Ky.
Lynch, J. A.	So. Tex. Mfg.	21 Enterprise St.	Erwin, N. C.
McAdams, C. K.	Jun. Ag. Ed.	10 YMCA,	Mebane, N. C.
McAlister, J. F.	Fr. Tex.	309 7th, Box 3375	Biscoe, N. C.
McArthur, C. S., Jr.	So. E. E.	205 6th, Box 3253	Lumberton, N. C.
McAulay, J. J.	So. E. E.	115 W. Park Drive	Mt. Gilead, N. C.
McCabe, A. M., Jr.	Fr. M. E.	Route 1	Raleigh, N. C.
McCabe, R. P.	Grad. Cer. Engr.	Dept. of Ceramic Engr.	Raleigh, N. C.
McCallum, C. S.	Grad. Ag. Ec.	2207 Hope St.	Lugoff, S. C.
McCarty, R. D.	Fr. Tex.	138 1911, Box 3738	Chestnut Hill, Pa.
McCaskill, L. F., Jr.	So. Tex. Mfg.	224 South, Box 3556	E. Rockingham, N. C.
McClain, E. F.	Grad. Entom.	123 Brooks Ave.	Mathiston, Miss.
McClendon, J. D.	Grad. Ag. Chem.	220 Cox Ave.	Cape Girardeau, Mo.
McClurd, J. R., Jr.	Sen. Arch. Engr.	1301 Hillsboro St.	Shelby, N. C.
McCormick, C. C., Jr.	So. For.	Gym	Chevy Chase, Md.
McCormick, W. A., Jr.	So. M. E.	2008 Hillsboro St.	McDonald, N. C.
McCotter, C. J.	Fr. C. E.	104 Wat., Box 3004	Vandemere, N. C.
McCracken, R. H.	Fr. E. E.	211 10th, Box 4420	Greensboro, N. C.
McCrary, E. M.	Fr. M. E.	2221 Circle	Raleigh, N. C.
McCrary, O. F., Jr.	So. M. E.	1029 W. South St.	Raleigh, N. C.
McDermott, J. M.	Fr. M. E.	2 8th, Box 3804	Cameron, N. C.
McDevett, F. T., Jr.	Fr. Gen. Engr.	302 5th, Box 3226	Washington, N. C.
McDonald, S. R.	So. Ag.	524½ N. Wilmington St.	Raleigh, N. C.
MacDougall, J. E., Jr.	Jun. Tex. Mfg.	4 Ferndell Lane	Charlotte, N. C.
McDowell, Miss Dorothea	Grad. Occu. Inf.	301 Bickett Blvd.	Washington, D. C.
McDowell, F. H.	Fr. Ag.	229 8th, Box 3763	Clyde, N. C.
McDowell, M. P.	Sen. Arch. Engr.	307 Wat., Box 3043	Goldsboro, N. C.
McDowell, R. E., Jr.	Jun. An. Prod.	15 South, Box 3611	Charlotte, N. C.
McDuffie, J. W.	So. Ag. Engr.	2306 Hillsboro St.	Sanford, N. C.
McEachern, J. H.	Fr. M. E.	328 8th, Box 3796	Wilmington, N. C.
McGarity, G. W.	Jun. Tex. Mfg.	4 Ferndell Lane	Charlotte, N. C.
McGarvey, H. M., Jr.	Fr. Ch. Engr.	313 7th, Box 3379	Clearfield, Pa.
McInnis, N. M., Jr.	Fr. Tex.	118 8th, Box 3718	Fayetteville, N. C.
McIntosh, L. P.	Jun. Ind. Engr.	317 C, Box 4285	Winston-Salem, N. C.
MacIntyre, A. B.	So. E. E.	Avents Ferry Rd.	Raleigh, N. C.
McIver, J. E., Jr.	Sen. For.	2720 Bedford	Clearwater, Fla.
McKay, G. P.	So. M. E.	302 A, Box 4168	Dunn, N. C.
McKethan, K. A.	So. Ag. Ed.	219 8th, Box 4148	Fayetteville, N. C.
McKinne, Collin	So. E. E.	214 C, Box 4242	Louisburg, N. C.
McKinney, H. A.	Fr. Tex.	233 8th, Box 3667	Durham, N. C.
McKinney, J. R.	Fr. M. E.	313 8th, Box 3787	Mt. Airy, N. C.
McKinney, W. M.	Fr. Ch. Engr.	231 7th, Box 3363	Port Jervis, N. Y.
McKinnon, W. H.	Fr. E. E.	318 7th, Box 3384	Wadesboro, N. C.
McLaughlin, R. L.	Jun. W. & D.	207 6th, Box 3255	Pittsburgh, Pa.
McLawhorn, R. H., Jr.	Fr. Ag.	333 C, Box 4294	Winterville, N. C.
McLendon, H. A.	Fr. M. E.	130 8th, Box 3730	Burlington, N. C.
McLendon, H. F.	So. Tex. Mgt.	109 A, Box 4107	Burlington, N. C.
McLeod, E. W.	Sen. Tex. Mfg.	108 Wat., Box 3008	Carthage, N. C.
McLeod, W. A., Jr.	So. Ag. Ed.	125 A, Box 4120	Sanford, N. C.
McMahan, L. V.	Fr. Ag.	Rosedale Ave., Box 5001	Forest City, N. C.
McMillan, E. C.	Jun. C. E.	4 Ferndell Lane	Marion, N. C.
McMillan, Lloyd	Fr. Tex.	115 8th, Box 3715	Fleming, Ky.
McNair, C. R., Jr.	Fr. E. E.	227 8th, Box 3761	Rockingham, N. C.
McNairy, A. W.	So. M. E.	116 A, Box 4113	Greensboro, N. C.
McNeely, C. P., Jr.	So. I. A. Ed.	115 Woodburn Rd.	Mooresville, N. C.
McNeely, J. E., Jr.	Fr. Tex.	123 7th, Box 3323	Cooleemee, N. C.
McNeely, R. R.	Jun. F. C. & P. B.	4 Maiden Lane	Cleveland, N. C.

Name	*Classification*	*School Address*	*Home Address*
McNeill, J. M.	Fr. M. E.	117 Chamberlain St.	Laurel Hill, N. C.
McPherson, W. T.	Fr. Ag.	203 7th, Box 3335	Mebane, N. C.
McRackan, B. P.	Fr. Flori.	334 7th, Box 3400	Wilmington, N. C.
McRorie, B. F.	Sen. E. E.	12 South, Box 3608	Hickory, N. C.
McSwain, J. T.	Fr. M. E.	Withdrew September 19	Hemp, N. C.
McSwain, R. R.	Fr. C. E.	210 8th, Box 3744	Shelby, N. C.
Mackie, H. E.	Fr. E. E.	304 A, Box 4170	Yadkinville, N. C.
Mackie, J. D.	Fr. Ag.	124 8th, Box 3724	Yadkinville, N. C.
Macon, J. A.	Jun. Ch. E.	Wake Forest	Wake Forest, N. C.
Macon, T. G.	Fr. M. E.	205 8th, Box 3739	Mt. Airy, N. C.
Maddry, H. B.	So. C. E.	Nazareth	Nazareth, N. C.
Magee, J. M.	Fr. Ch. Engr.	Fieldhouse	Chester, N. Y.
Maguire, W. H.	Fr. I. A. Ed.	230 E. Morgan St.	Elkin, N. C.
Mahone, R. D.	Fr. For.	"A" 9th	Williamsburg, Va.
Main, E. W.	So. E. E.	329 C, Box 4291	Delanco, N. J.
Maiwurm, F. W.	Sen. Ch. Engr.	747 Hillsboro St.	Raleigh, N. C.
Majure, W. J.	Grad. W. C. & M.	2306 Hillsboro St.	Decatur, Miss.
Male, M. S.	Fr. M. E.	302 9th, Box 4322	Pelham Manor, N. Y.
Mann, G. P.	Sen. Ch. Engr.	214 A, Box 4143	Paint Bank, Va.
Mann, T. J., Jr.	Sen. Ag. Ed.	8 South, Box 3604	Lake Landing, N. C.
Mappus, W. A.	Grad. Ag. Chem.	301 4th, Box 3127	Charleston, S. C.
Margolis, A. W.	Fr. Tex.	203 A, Box 4135	Hendersonville, N. C.
Markey, F. B., Jr.	Fr. Tex. Mfg.	102 10th, Box 4402	Charlotte, N. C.
Markham, J. T.	Fr. M. E.	221 7th, Box 3353	Elizabeth City, N. C.
Marks, R. B., Jr.	Fr. Flori.	10 8th, Box 3812	Durham, N. C.
Marks, R. H.	So. Ch. Engr.	318 A, Box 4181	Bronxville, N. Y.
Marley, W. E., Jr.	Fr. Ag.	Cary	Cary, N. C.
Marriott, D. F.	Fr. Ind. Engr.	4 Fieldhouse	Herkimer, N. Y.
Marshburn, F. J.	Sen. Ag. Ed.	2008 Hillsboro St.	Wallace, N. C.
Martin, A. F.	Jun. F. C.	114 South, Box 3514	Jackson, N. C.
Martin, B. P.	So. Hort.	Withdrew September 26	Monroe, N. C.
Martin, C. E.	So. E. E.	131 Hawthorn Rd.	Washington, N. C.
Martin, C. F., Jr.	So. Tex. C. & D.	240 A, Box 4166	Cramerton, N. C.
Martin, F. H.	Fr. Dairy Mfg.	212 8th, Box 3746	Asheville, N. C.
Martin, G. D.	So. Cer. E.	316 A, Box 4179	Charlotte, N. C.
Martin, J. D.	So. For.	214 C, Box 4242	Roanoke, Va.
Martin, J. F.	Jun. Soils	2306 Hillsboro St.	Wadesboro, N. C.
Martin, L. W.	Fr. M. E.	222 8th, Box 3756	Elon, N. C.
Martin, M. D.	Jun. Ch. Engr.	303 5th, Box 3227	Liberty, N. C.
Martin, O. F., Jr.	So. For.	2514 Clark Ave.	Atlanta, Ga.
Martin, T. J.	So. M. E.	113 Wat., Box 3018	Walkertown, N. C.
Martin, W. D., Jr.	Jun. Arch. Engr.	1709 Hillsboro St.	Raleigh, N. C.
Masich, A. M., Jr.	Fr. Ch. Engr.	107 10th, Box 4407	Winston Salem, N. C.
Massengill, H. K.	Fr. Tex.	525 N. Bloodworth St.	Raleigh, N. C.
Massengill, L. E.	Sen. C. E.	240 C, Box 4265	Four Oaks, N. C.
Massey, J. T.	Grad. E. E.	605 N. East St.	Raleigh, N. C.
Massey, L. E.	Fr. Ag.	138 1911, Box 3738	Durham, N. C.
Massey, P. H., Jr.	Fr. Ag.	214 8th, Box 3748	Franklinton, N. C.
Masters, J. F.	Fr. M. E.	211 8th, Box 3745	Winston-Salem, N. C.
Mathewson, P. L.	Fr. Tex.	219 7th, Box 3351	Bristol, R. I.
Matthews, Billy	Fr. Ch. Engr.	103 9th, Box 4303	East Bend, N. C.
Matthews, C. H.	So. M. E.	206 6th, Box 3254	Stokesdale, N. C.
Matthews, Hannibal	Fr. Ind. Engr.	211 5th, Box 3223	Apex, N. C.
Matthews, J. E.	Fr. M. E.	24 8th, Box 3825	Greensboro, N. C.
Mattocks, A. N.	Sen. C. E.	2702 Hillsboro St.	Greensboro, N. C.
Mattox, D. B.	Sen. Ch. Engr.	10 South, Box 3606	Pinetops, N. C.
Mattox, R. H.	So. I. A. Ed.	311 South, Box 3575	Durham, N. C.
Mattson, A. T.	Sen. M. E.	2513 Clark Ave.	East Hampton, N. Y.
Mauney, C. E.	Jun. Ag. Ed.	2 South, Box 3598	Lincolnton, N. C.
Mauney, G. H.	Jun. Tex. Mfg.	204 A, Box 4136	Kings Mountain, N. C.
May, G. H.	Sen. An. Prod.		North Bergen, N. J.

Name	*Classification*	*School Address*	*Home Address*
May, J. M.	Fr. M. E.	126 C, Box 4206	Winston-Salem, N. C.
May, M. C.	So. Tex. Mfg.	2202 Hillsboro St.	New Bern, N. C.
May, W. L., Jr.	So. E. E.	306 Chamberlain St.	Rockingham, N. C.
May, W. N.	Jun. M. E.	214 Wat., Box 3032	Lenoir, N. C.
Mayer, H. S., Jr.	Fr. Tex.	201 10th, Box 4410	Melrose Park, Pa.
Mayfield, T. M., Jr.	Fr. M. E.	210 9th, Box 4317	Monroe, N. C.
Maynard, G. J.	Jun. Flori.	Apex	Apex, N. C.
Maynard, J. T.	So. For.	230 A, Box 4159	Williamsburg, Va.
Mayo, C. H.	Sen. F. C. & P. B.	221 Forest Rd.	Greenville, N. C.
Mayo, H. W.	Fr. Ag.	133 7th, Box 3401	Alliance, N. C.
Mayo, R. O., Jr.	Fr. M. E.	132 7th, Box 3332	Rocky Mount, N. C.
Medlin, E. M.	Fr. C. E.	Trailer, 15A Gulf Station	Monroe, N. C.
Menius, E. F., Jr.	Fr. E. E.	223 8th, Box 3757	New Bern, N. C.
Meredith, W. B., II	So. Gen. Engr.	806 Cowper Drive	Raleigh, N. C.
Merrell, G. D., Jr.	So. E. E.	221 C, Box 4249	Beaufort, N. C.
Merrill, Vincent	So. E. E.	17 Enterprise St.	Miami Beach, Fla.
Merritt, R. W.	Fr. M. E.	321 7th, Box 3387	Goldsboro, N. C.
Merritt, W. G.	Fr. M. E.	119 8th, Box 3719	Rosehill, N. C.
Messer, H. R.	Jun. E. E.	7 South, Box 3603	Bryson City, N. C.
Messersmith, H. S., Jr.	Sen. Tex. Mfg.	1301 Hillsboro St.	Montclair, N. J.
Messick, W. R.	Fr. Tex. Mfg.	326 C, Box 4288	Charlotte, N. C.
Metcalf, C. H. S., II	So. Ch. Engr.	335 A, Box 4196	Asheville, N. C.
Mewborn, J. E., Jr.	Fr. Ag.	220 South, Box 4148	Snow Hill, N. C.
Michael, R. L.	Sen. Ag. Chem.	216 Wat., Box 3043	Salisbury, N. C.
Michaels, Abraham	Jun. M. E.	211 6th, Box 3259	Brooklyn, N. Y.
Michal, D. H.	Fr. M. E.	202 9th, Box 4809	Canton, N. C.
Middleton, D. L.	Jun. Gen. Engr.	2830 Barmettler St.	Raleigh, N. C.
Middleton, G. W.	Fr. Gen. Engr.	11 8th, Box 3813	Warsaw, N. C.
Midgette, H. B.	So. Gen. Engr.	324 C, Box 4286	Buxton, N. C.
Midyette, A. L.	Jun. Ch. Engr.	316 South, Box 3580	Swan Quarter, N. C.
Millar, M. W.	Grad. Ind. Ed.	2506 Clark Ave.	Minimonie, Wis.
Millar, R. S.	So. M. E.	205 A, Box 4137	Waynesville, N. C.
Miller, A. E.	Sen. Ch. Engr.	107 South, Box 3507	Orbisonia, Pa.
Miller, E. L.	Fr. Ch. Engr.	106 8th, Box 3706	Mount Airy, N. C.
Miller, F. B.	So. C. E.	2407 Clark Ave.	Cynwyd, Pa.
Miller, F. E., Jr.	Jun. Ag. F. C.	1628 Park Drive	Raleigh, N. C.
Miller, H. C., Jr.	Fr. Cer. Engr.	107 8th, Box 3707	Mooresville, N. C.
Miller, H. L.	Jun. Cer. Engr.	330 South, Box 3594	Mooresville, N. C.
Miller, H. Y.	So. M. E.	103 5th, Box 3203	Brevard, N. C.
Miller, M. T.	Fr. Arch. Engr.	327 7th, Box 3393	N. Wilkesboro, N. C.
Miller, R. Osborne	Fr. M. E.	209 9th, Box 4316	Concord, N. C.
Miller, R. Oscar, Jr.	Fr. Ch. Engr.	306 Aycock St.	Raleigh, N. C.
Miller, S. A.	Fr. Ag.	317 A, Box 4180	Laurel Springs, N. C.
Miller, W. A.	So. E. E.	127 Woodburn Rd.	Concord, N. C.
Millhouse, S. R.	Sen. C. E.	103 Chamberlain St.	Wilson, N. C.
Milliken, J. S.	Jun. E. E.	1301 Hillsboro St.	Southern Pines, N. C.
Mills, C. H.	Fr. C. E.	327 8th, Box 3795	Wilmington, N. C.
Mills, J. A.	So. M. E.	114 E. Park Drive	Raleigh, N. C.
Millsaps, L. M.	So. M. E.	221 South, Box 3553	Asheboro, N. C.
Mimms, J. C.	Fr. Ch. Engr.	233 8th, Box 3767	Durham, N. C.
Mims, C. H., Jr.	Fr. Ch. Engr.	Wake Forest Road	Raleigh, N. C.
Minevich, John	Fr. W. C.	Withdrew Sept. 19	New London, Conn.
Minton, T. W.	Fr. Poul Sci.	310 7th, Box 3710	Champion, N. C.
Misenheimer, L. J.	Sen. E. E.	108 5th, Box 3208	Salisbury, N. C.
Mitchell, Jerry, Jr.	Fr. M. E.	2004 Hillsboro St., Box 5565	Charleston, W. Va.
Mitchell, M. H., Jr.	Fr. M. E.	128 7th, Box 3328	Weldon, N. C.
Mitchell, R. H.	Sen. Arch. Engr.	2725 Fairview Ext., Box 5242	Raleigh, N. C.
Mitchem, W. E.	Fr. C. E.	227 C, Box 4255	Lawndale, N. C.
Mock, B. A.	Fr. Tex. Mfg.	Gym	Boonville, N. C.
Moen, Mrs. Grace Z.	Grad. Occu. Inf.	3202 Clark Ave.	Raleigh, N. C.
Moffatt, D. J.	Fr. Ch. Engr.	319 8th, Box 3787	Waterbury, Conn.

Name	*Classification*	*School Address*	*Home Address*
Monroe, D. A.	So. M. E.	218 Halifax St.	Raleigh, N. C.
Monroe, T. G.	So. M. E.	206 Chamberlain St.	Hamlet, N. C.
Montague, I. B.	Jun. M. E.	2405 Clark Ave.	Goldsboro, N. C.
Moore, A. A., Jr.	Fr. F. B. Adm.	212 7th, Box 3344	Washington, N. C.
Moore, D. B.	Fr. E. E.	112 8th, Box 3712	Marshville, N. C.
Moore, D. W.	Fr. Arch. Engr.	312 9th, Box 4332	Charlotte, N. C.
Moore, E. P.	Sen. Tex. Mfg.	315 Wat., Box 3051	Bynum, N. C.
Moore, J. B., Jr.	Fr. For.	314 7th, Box 3340	Forest City, N. C.
Moore, J. F.	Fr. M. E.	106 7th, Box 3306	High Shoals, N. C.
Moore, R. J.	Sen. Ch. Engr.	215 Wat., Box 3033	Mocksville, N. C.
Moore, R. L.	Fr. M. E.	310 9th, Box 4330	Roanoke Rapids, N. C.
Moore, W. B.	Sen. E. E.	14 South, Box 3610	Milton, N. C.
Moore, W. P.	Fr. Ch. Engr.	113 8th, Box 3713	Salisbury, N. C.
Mordecai, G. W.	So. M. E.	Route 1	Raleigh, N. C.
Moreland, D. E.	Fr. For.	222 7th, Box 3354	Springfield, Mass.
Morgan, J. J.	Grad. Ag. Ec.	907 W. Peace St.	Raleigh, N. C.
Morgan, J. L., Jr.	Sen. Tex. Mfg.	2513 Clark Ave.	Gibsonville, N. C.
Morgan, J. W.	So. Ch. Engr.	225 South, Box 3576	Albemarle, N. C.
Morgan, P. H.	Jun. Tex. Mfg.	4 Ferndell Lane	Shawboro, N. C.
Morgan, R. T.	Jun. Tex. Mgt.	2225 White Oak Rd.	Raleigh, N. C.
Morgan, T. M.	Fr. Ch. Engr.	310 8th, Box 3778	Charlotte, N. C.
Morris, G. W., Jr.	So. Ag.	104 C, Box 4203	Asheville, N. C.
Morris, M. B.	So. Ag.	201 5th, Box 3213	Apex, N. C.
Morris, S. J., Jr.	So. C. E.	Withdrew September 18	Raleigh, N. C.
Morris, W. F., Jr.	Sen. M. E.	2509 Vanderbilt Ave.	Raleigh, N. C.
Morrison, C. T.	Sen. Ch. Engr.	130 South, Box 3530	Hickory, N. C.
Morrison, F. D.	So. Ag.	121 Montgomery St.	Sewickley, Pa.
Morrison, N. A., Jr.	Fr. Ag.	340 1911, Box 3820	Roseboro, N. C.
Morrison, W. B.	Sen. W. D.	2407 Clark Ave.	Concord, N. C.
Morrow, V. A.	Fr. Cer. Engr.	216 8th, Box 3754	Parris Island, S. C.
Morse, C. D.	So. Land. Arch.	222 Park Ave.	Biltmore, N. C.
Morton, J. R.	Fr. M. E.	Withdrew September 17	Hubert, N. C.
Moseley, D. F., Jr.	Fr. M. E.	129 8th, Box 3729	Charlotte, N. C.
Moseley, Z. V., Jr.	Fr. E. E.	204 8th, Box 3738	Kinston, N. C.
Moser, H. T.	Fr. Tex.	7 Fieldhouse	Burlington, N. C.
Moss, Dan	Grad. Tex.	20 Enterprise	Chattanooga, Tenn.
Moss, R. S.	Jun. Soils	119 C, Box 4216	New York, N. Y.
Motzno, J. D.	Fr. E. E.	210 9th, Box 4317	Woodland, N. C.
Moxley, H. P.	Fr. Ag. Ed.	5 8th, Box 3805	Sparta, N. C.
Mulhall, J. H., Jr.	So. For.	315 A, Box 4178	Brooklyn, N. Y.
Muller, H. S., Jr.	Jun. For.	21 South, Box 3617	Aberdeen, Md.
Mullineaux, J. B., Jr.	So. Tex. Mgt.	210 Woodburn Rd.	New Bern, N. C.
Murdock, J. E., Jr.	Fr. Tex.	Route 6	Raleigh, N. C.
Murdoch, W. S.	Jun. Tex. Mfg.	21 Enterprise St.	Salisbury, N. C.
Murphy, R. F.	Sen. C. E.	311 Wat., Box 3047	Atkinson, N. C.
Myers, F. L., Jr.	Jun. Ch. Engr.	123 Chamberlain St.	Asheville, N. C.
Myers, J. D.	Jun. Ag. Engr.	127 South, Box 3527	Chapel Hill, N. C.
Myers, R. F.	Jun. Ag. Ed.	318 Wat., Box 3054	Laurel Springs, N. C.
Mynes, J. F.	Grad. E. E.	409 Chamberlain St.	Huntington, W. Va.
Naiman, R. D.	Sen. E. E.	339 A, Box 4199	Asheville, N. C.
Nalle, J. R.	Fr. I. A. Ed.	8 8th	Quincy, W. Va.
Nance, C. B.	Fr. Ag. Ed.	"A" 10th	Denton, N. C.
Nance, J. F., Jr.	Fr. C. E.	317 8th, Box 3785	Greensboro, N. C.
Nance, J. W.	Jun. Cer. Engr.	114 Horn St.	Raleigh, N. C.
Nash, G. H., Jr.	Fr. Tex.	320 8th, Box 3788,	Weldon, N. C.
Nash, J. F., Jr.	Jun. Ag.	202 Wat., Box 3020	St. Pauls, N. C.
Nave, B. C., Jr.	Sen. Ag. Ed.	3 South, Box 3599	Newland, N. C.
Neale, W. M., Jr.	So. M. E.	314 South, Box 3578	Greensboro, N. C.
Neelley, J. V.	Sen. W. & D.	2407 Clark Ave.	Greensboro, N. C.
Negron, Henry	So. C. E.	227 A, Box 4156	San Juan, P. R.
Nelley, J. W.	Sen. Cer. Engr.	308 South, Box 3572	Passaic, N. J.

Name	*Classification*	*School Address*	*Home Address*
Nelms, J. K.	Jun. M. E.	211 6th, Box 3259	Oxford, N. C.
Nelson, H. L.	Fr. I. A. Ed.	Withdrew October 3	Maryville, Tenn.
Nelson, Miss Mary W.	Grad. Occu. Inf.	16 Enterprise St.	Raleigh, N. C.
Newman, J. F.	Fr. Ag. Ed.	106 9th, Box 4313	Clinton, N. C.
Newsom, R. W.	So. Ind. Engr.	125 Woodburn Rd.	Winston-Salem, N. C.
Newsome, J. C.	So. E. E.	2316 Hillsboro St.	Wake Forest, N. C.
Newsome, T. W.	Fr. Ag.	202 5th, Box 3214	Ahoskie, N. C.
Newton, F. W.	Jun. F. C. & P. B.	Brooks Ave., Box 5441	Henderson, N. C.
Nichols, C. F.	Jun. Ch. Engr.	215 Wat., Box 3033	Waynesville, N. C.
Nichols, J. H.	Grad. E. E.	11 Dixie Oil Ave., Box 5572	Raleigh, N. C.
Nichols, L. D.	Fr. For.	227 1911, Box 3767	Fayetteville, N. C.
Nicholson, J. F.	Jun. Ind. Engr.	2307 Lake Drive Mail: 518 Professional Bldg.	Raleigh, N. C.
Nicks, R. E.	So. M. E.	302 C. Box 4267	Elkin, N. C.
Nifong, G. F.	Fr. M. E.	321 7th, Box 3387	Lexington, N. C.
Nixon, H. C.	Jun. Tex. Mfg.	231 A, Box 4160	Hertford, N. C.
Nobles, D. M.	So. Ag. Ed.	125 Woodburn Rd.	Stokes, N. C.
Noel, Miss Annette M.	Grad. Ag. Ec.	116 Woodburn Rd.	Abbeville, La.
Norman, R. B.	Fr. M. E.	125 C, Box 4222	Bath, N. C.
Norment, C. M.	Fr. Cer. Engr.	120 8th, Box 3720	Rowland, N. C.
Norwood, E. W., Jr.	Jun. Tex. Mfg.	211 South, Box 3543	Winston-Salem, N. C.
Norwood, J. F.	Fr. Ch. Engr.	306 8th, Box 3774	Mount Airy, N. C.
Norwood, W. A.	Fr. Ch. Engr.	207 7th, Box 3339	Paterson, N. J.
Nowell, H. H.	Fr. M. E.	325 South, Box 3589	Cary, N. C.
Noyes, W. B.	So. Ind. Engr.	1301 Hillsboro St.	Marion, N. C.
Nunn, M. D.	Fr. M. E.	133 7th, Box 3401	Kinston, N. C.
O'Brian, J. M.	Grad. Soils	Oxford	Oxford, N. C.
Odegaard, J. E.	Sen. Tex. Mfg.	2405 Clark Ave.	Montclair, N. J.
Odom, M. L., Jr.	Fr. Ag. Ed.	222 Park Ave.	Fayetteville, N. C.
Oetgen, W. F., Jr.	So. Ch. Engr.	128 South, Box 3528	Savannah, Ga.
Oldham, A. M.	So. Ag. Chem.	2316 Hillsboro St.	Durham, N. C.
Olive, M. W.	Fr. Ag. Ed.	1408 Mordecai Drive	Apex, N. C.
Oliver, P. S.	Fr. Cer. Engr.	312 6th, Box 3272	Fairmont, N. C.
Oransky, Philip	Jun. Pl. Path.	222 Park Ave.	New York, N. Y.
Orland, J. E., Jr.	So. Tex. Mfg.	220 C, Box 4248	Kannapolis, N. C.
Ormond, J. J.	Jun. Tex. Mfg.	6 Ferndell Lane, Box 5393	Kings Mountain, N. C.
Orr, L. P.	Sen. C. E.	17 Enterprise St.	Washington, D. C.
Osborne, J. L., Jr.	Fr. M. E.	209 7th, Box 3341	Lawndale, N. C.
Osborne, W. F.	So. M. E.	331 South, Box 3595	Sparta, N. C.
Ott, L. B., Jr.	Fr. Ch. Engr.	230 7th, Box 3362	Lewisburg, W. Va.
Outlaw, L. B., Jr.	Fr. E. E.	220 7th, Box 3352	Seven Springs, N. C.
Overcash, M. C.	Fr. C. E.	2220 Hillsboro St.	Mooresville, N. C.
Overcash, R. J.	So. Tex. Mfg.	Y.M.C.A.	Mooresville, N. C.
Overman, B. V.	Fr. Ag. Ed.	110 7th, Box 3310	Cleveland, N. C.
Overman, D. T.	Fr. C. E.	225 7th, Box 3357	Stantonsburg, N. C.
Owen, C. W., Jr.	Fr. M. E.	2212 Hope St.	Washington, D. C.
Owen, L. H.	Fr. M. E.	227 1911, Box 3767	Durham, N. C.
Owens, E. B.	So. M. E.	214 South, Box 3546	Black Creek, N. C.
Owens, F. A., Jr.	So. Tex. C. & D.	239 A, Box 4165	Charlotte, N. C.
Owens, J. H.	Fr. M. E.	235 C, Box 4261	Winston-Salem, N. C.
Ownley, R. E.	Sen. E. E.	10 Enterprise St.	Eliabeth City, N. C.
Packard, H. D.	So. For.	221 C, Box 4249	Paoli, Pa.
Padgett, C. B.	Jun. Ag. Ed.	2209½ Hope St.	Ellenboro, N. C.
Padgett, E. G., Jr.	Fr. Arch.	2611 Lockmore Drive	Raleigh, N. C.
Padgett, Lacy	Fr. E. E.	131 7th, Box 3331	Rocky Mount, N. C.
Page, L. M.	Fr. M. E.	134 1911, Box 3734	Stedman, N. C.
Page, N. R.	Grad. Ag. Chem.	103 4th, Box 3116	Lake View, S. C.
Page, P. D.	Fr. E. E.	107 7th, Box 3307	Fairmont, N. C.
Painter, C. C.	So. C. E.	123 Woodburn Rd.	Prospect Hill, N. C.

Name	*Classification*	*School Address*	*Home Address*
Palmer, G. C., Jr.	Jun. Ag.	128 C, Box 4225	Clyde, N. C.
Palmer, J. H.	Jun. An. Prod.	128 C, Box 4225	Clyde, N. C.
Palmer, R. F.	Fr. Tex.	231 1911, Box 3771	Spencer, N. C.
Panetti, J. M., III	So. Ch. Engr.	212 C, Box 4240	Charlotte, N. C.
Parcel, M. W.	Sen. Cer. Engr.	304 South, Box 3568	Greensboro, N. C.
Parentini, R. J.	Fr. Tex.	122 7th, Box 3322	Cliffside Park, N. J.
Parham, W. R.	Fr. Tex.	2712 Bedford Ave.	Franklinville, N. C.
Park, J. E.	Fr. M. E.	103 Chamberlain	Charlotte, N. C.
Parker, A. O.	Fr. Ch. Engr.	209 C, Box 4238	Jackson, N. C.
Parker, C. W.	Fr. E. E.	102 8th, Box 3702	Salisbury, N. C.
Parker, G. R.	Fr. E. E.	223 8th, Box 3757	Tyner, N. C.
Parker, J. H.	So. Ag. Ed.	132 South, Box 3532	Clinton, N. C.
Parker, J. V., Jr.	Sen. Ch. Engr.	204 5th, Box 3216	Asheville, N. C.
Parker, L. D.	So. C. E.	325 A, Box 4188	Hampton, Va.
Parker, Miss Olive M.	Fr. Flori.	107 Chamberlain St.	Leaksville, N. C.
Parker, P. G., Jr.	Fr. M. E.	209 10th, Box 4418	Erwin, N. C.
Parker, R. V.	Fr. Ag.	1326 Mordecai Drive	Raleigh, N. C.
Parker, W. F.	Grad. Poul. Sci.	117 Chamberlain St.	Gibson, N. C.
Parks, W. R.	Fr. M. E.	328 7th, Box 3394	Lenoir, N. C.
Parnell, E. F.	So. Ind. Engr.	231 South, Box 3563	Charlotte, N. C.
Parrish, E. B.	Sen. Ind. Engr.	555 Newbern Ave.	Raleigh, N. C.
Parrish, E. W.	So. Ind. Engr.	303 C, Box 4268	Biltmore, N. C.
Parrish, M. R.	Fr. C. E.	140 1911, Box 3740	Nashville, N. C.
Parrish, Warren C.	Fr. M. E.	213 9th, Box 4320	Greenville, N. C.
Parrish, Wilbert C.	Fr. Ag. Ed.	222 Cox Ave.	Angier, N. C.
Parsons, L. R.	Sen. Ch. Engr.	6 Ferndell Lane	Raleigh, N. C.
Partin, C. A.	Fr. An. Prod.	14 Glenwood Ave.	Louisburg, N. C.
Partlow, J. E.	So. Cer. Engr.	109 A, Box 4235	Oak Hill, Ohio
Paschal, B. E., Jr.	Jun. Cer. Engr.	217 Wat., Box 3035	Charlotte, N. C.
Paschal, F. A.	Sen. Cer. Engr.	132 Woodburn Rd.	Siler City, N. C.
Paschal, F. J.	Jun. Ch. Engr.	304 Horn St.	Goldston, N. C.
Pate, J. R.	So. Ag.	2008 Hillsboro St.	Rowland, N. C.
Pate, Miss Nancy Lee	Auditor	303 Hawthorn Rd.	Raleigh, N. C.
Pate, Rudolph	So. Ag.	207 4th, Box 4148	Lumberton, N. C.
Patterson, G. A.	So. Ch. Engr.	115 Woodburn Rd.	Saratoga, N. C.
Patterson, J. W., Jr.	Fr. Tex.	101 8th, Box 3701	Rockingham, N. C.
Patterson, Q. W.	Jun. Ag.	205 South, Box 3537	Hiddenite, N. C.
Patton, G. E.	So. Land Arch.	104 South, Box 3529	Franklin, N. C.
Patton, M. S.	So. Ag.	104 South, Box 3504	Franklin, N. C.
Paul, G. M., II	Fr. M. E.	115 Woodburn Rd.	Beaufort, N. C.
Paul, J. W.	Fr. For.	106 8th, Box 3706	Alliance, N. C.
Paulus, C. J., III	So. M. E.	316 A, Box 4179	Parlin, N. J.
Payne, J. M.	Fr. Arch.	134 C, Box 4229	Clayton, N. C.
Payne, R. E.	So. E. E.	313 A, Box 4176	Archdale, N. C.
Paysour, L. E., Jr.	So. E. E.	106 Wat., Box 3006	Red Springs, N. C.
Peacock, F. W.	Fr. M. E.	208 7th, Box 3340	Asheville, N. C.
Peacock, L. C.	Sen. Ag. Ed.	101 South, Box 3501	Roper, N. C.
Peacock, M. M.	Sen. Ag. Ed.		Roper, N. C.
Pearce, T. H.	Fr. For.	328 C, Box 4290	Franklinton, N. C.
Pearce, W. H.	Fr. Ch. Engr.	124 8th, Box 3724	Hendersonville, N. C.
Pearsall, J. S.	Jun. Ch. Engr.	201 C, Box 4232	Rocky Point, N. C.
Pearson, Joe	Fr. M. E.	230 C, Box 4258	Goldsboro, N. C.
Pearson, W. S.	Jun. Tex. C. & D.	305 6th, Box 3586	Charlotte, N. C.
Pease, J. N., Jr.	Fr. Arch. E.	4 Ferndell Lane	Charlotte, N. C.
Pedone, W. A.	Fr. M. E.	213 7th, Box 3345	Mount Vernon, N. Y.
Peede, N. W.	Fr. For.	1107 Glendale St.	Greenville, N. C.
Peek, D. L.	Fr. For.	22 8th, Box 3823	Shelby, N. C.
Peele, A. R.	Fr. Ag.	2 10th	Williamston, N. C.
Peele, E. B.	Fr. Tex.	215 8th, Box 3749	Bailey, N. C.
Peele, J. H.	Jr. Ch. E.	18 Horne St.	Belhaven, N. C.
Peele, W. B.	Fr. M. E.	131 "A", Box 4126	Charlotte, N. C.
Pelletier, L. W., Jr.	So. E. E.	113 Wat., Box 3013	Stella, N. C.

Name	Classification	School Address	Home Address
Pendleton, A. L., Jr.	Fr. M. E.	225 Hawthorne Rd.	Elizabeth City, N. C.
Penland, D. T.	Sen. M. E.	129 South, Box 3529	Franklin, N. C.
Penny, Dallas L., Jr.	Fr. F. C. & P. B.	202 10th, Box 4411	Smithfield, N. C.
Penny, R. G.	So. An. Prod.	Dairy Cottage, Box 5127	Angier, N. C.
Peoples, Lewis J.	Fr. For.	1301 Hillsboro St.	Oxford, N. C.
Perkins, D. R.	So. Ag. Ed.	234 S. Boylan Ave.	Marshville, N. C.
Perkins, W. J., Jr.	So. Ag. Ed.	2316 Hillsboro St.	Goldsboro, N. C.
Perkinson, J. L.	Fr. Ag. Ed.	327 8th, Box 3795	Norlina, N. C.
Perman, Bernard	So. Ch. E.	122 "A", Box 4117	Warrenton, N. C.
Perry, J. L.	Fr. Ag.	226 7th, Box 3358	Cofield, N. C.
Perry, M. C.	So. Ch. E.	2405 Clark Ave.	Hamlet, N. C.
Perry, R. W.	Sen. Ag. Chem.	6 Ferndell Lane	Rectory, Va.
Perry, T. E.	Jun. I. A. Ed.	508 E. Whitaker Mill Rd.	Raleigh, N. C.
Person, M. M., Jr.	Fr. Ag.	132 8th, Box 3732	Louisburg, N. C.
Peterson, Roland E.	Fr. Gen. E.	315 8th, Box 3783	Leechburg, Pa.
Petteway, A. M.	Fr E. E.	327 1911, Box 3807	Kinston, N. C.
Pfaff, H. A.	Fr. Ag. Ec.	210 6th, Box 3258	Winston-Salem, N. C.
Pfluge, W. T.	Fr. Ch. E.	Withdrew Sept. 14	Tallahassee, Fla.
Pharr, J. M.	Fr. Ch. E.	333 8th, Box 3801	Concord, N. C.
Phifer, Horace	Fr. C. E.	2008 Hillsboro St.	Hamlet, N. C.
Phillips, C. A.	So. Geol. E.	306 South, Box 3570	Cary, N. C.
Phillips, C. W.	Fr. M. E.	303 9th, Box 4323	Spruce Pine, N. C.
Phillips, F. C.	Fr. M. E.	337 1911, Box 3817	Burlington, N. C.
Phillips, J. W.	Jun. An. Prod.	Dairy Barn House, Box 4571	Mebane, N. C.
Phillips, K. L.	So. Dairy Mfg.	23 8th, Box 3824	Maysville, N. C.
Phillips, P. B.	Fr. Arch. E.	326 8th, Box 3794	Durham, N. C.
Phrydas, P. A.	Jun. E. E.	8 Ferndell Lane	Greensboro, N. C.
Picket, P. E.	So. Geol. E.	407½ Dixie Trail	Raleigh, N. C.
Picket, W. C.	Sen. For.	407½ Dixie Trail	Raleigh, N. C.
Pierce, A. H.	Jun. Tex. Mfg.	2209½ Hope St.	Montreal, Canada
Pierce, J. C., Jr.	Grad. An. Prod.	107 4th. Mail: An. Husbandry Dept.	Grassey Creek, N. C.
Pigford, D. E.	Fr. Arch.	12 8th, Box 3814	Willard, N. C.
Pinner, Jack	Fr. E. E.	122 7th, Box 3322	North Bergen, N. J.
Pique, W. E.	Sen. Tex. Mfg.	213 South, Box 3545	Fayetteville, N. C.
Piscitello, A. R.	Fr. Tex.	207 7th, Box 3339	Jersey City, N. J.
Pitt, E. L., III	Fr. Ag.	121 South, Box 3521	Pinetops, N. C.
Platt, Nathan	Sen. Tex. Mfg.	115 Woodburn Rd.	Strasburg, Va.
Pleasants, J. M.	Sen. M. E.	205 Wat., Box 3023	Greensboro, N. C.
Pleasants, R. J.	Jun. Ag.	Cary	Cary, N. C.
Plummer, J. S., Jr.	Fr. E. E.	317 7th, Box 3383	Greensboro, N. C.
Pollock, J. H.	So. Ag.	317 South, Box 3581	Trenton, N. C.
Pomeranz, R. E.	So. M. E.	215 "C", Box 4243	Far Rockaway, N. Y.
Ponder, Z. H.	Grad. Soils	2008 Hillsboro St.	Marshall, N. C.
Ponos, Nick J.	So. Ch. E.	307 C, Box 4271	Wilmington, N. C.
Ponton, D. R., Jr.	Fr. Gen. E.	214 Forest Rd.	Raleigh, N. C.
Poole, A. E.	Fr. Cer. E.	1408 Hillsboro St.	Troy, N. C.
Pop, P. E.	So. Ag. Ec.	2513 Clark Ave.	Brooklyn, N. Y.
Porter, J. A.	Grad. Tex.	2402 Clark Ave. Apt. 7	Rockingham, N. C.
Porter, R. E.	Jun. C. E.	1710 Park Drive	Charlotte, N. C.
Pou, J. E.	Fr. Ch. E.	226 1911, Box 3766	Ponce, Puerto Rico
Pound, R. M., Jr.	So. E. E.	103 Chamberlain St.	Charlotte, N. C.
Powell, A. W.	Jun. Tex. C. & D.	305 6th, Box 3265	Richmond, Va.
Powell, C. G.	Fr. Ag.	1425 Park Drive	Raleigh, N. C.
Powell, C. V.	Fr. Ag.	220 7th, Box 3352	Corapeake, N. C.
Powell, E. T.	So. E. E.	122 A, Box 4117	Smithfield, N. C.
Powell, H. W., Jr.	So. M. E.	103 Chamberlain St.	Winston-Salem, N. C.
Powell, J. C., Jr.	Fr. M. E.	224 7th, Box 3356	Winston-Salem, N. C.
Powers, B. K.	Fr. M. E.	206 7th, Box 3338	Northwest, Va.
Powers, J. W.	Fr. For.	306 Wat., Box 3042	St. Pauls, N. C.
Pratt, A. M.	So. Flori.	2306 Hillsboro St.	Draper, N. C.
Pratt, G. H.	So. Ind. E.	714 Nash Drive	Arlington, Mass.

Name	*Classification*	*School Address*	*Home Address*
Pratt, J. J., Jr.	Grad. Entom.	2705 Vandyke Ave.	Cohasset, Mass.
Pratt, T. B., Jr.	Fr. Ch. E.	329 7th, Box 3395	Winston-Salem, N. C.
Preslar, G. H., Jr.	Fr. M. E.	24 8th, Box 3825	Sanford, N. C.
Price, C. L., Jr.	Sen. C. E.	302 6th, Box 3262	Whiteville, N. C.
Price, E. M.	So. Ag. Ed.	116 Wat., Box 3016	Forest City, N. C.
Price, E. W., Jr.	Sen. C. E.	309 Calvin Rd.	Raleigh, N. C.
Price, T. B.	Sen. Tex. Mfg.	301 South, Box 3565	West Jefferson, N. C.
Pridgen, H. C.	Fr. Tex.	Methodist Orphanage	Raleigh, N. C.
Prim, Gorrell C.	So. Ag. Ec.	110 6th, Box 3246	Yadkinville, N. C.
Primm, Gerald C.	Fr. M. E.	27 8th	Rocky Mount, N. C.
Pritchard, Thomas B., Jr.	Fr. Ch. E.	216 8th, Box 3750	Chapel Hill, N. C.
Proctor, B. G.	Fr. M. E.	103 Chamberlain St.	Durham, N. C.
Propst, D. E.	So. Ag. Ed.	112 Cox Ave.	Belwood, N. C.
Proud, E. R.	Sen. Ch. E.	111 Wat., Box 3011	Goldsboro, N. C.
Pruden, B. V.	So. M. E.	313 Wat., Box 3049	Margarettsville, N. C.
Pruitt, A. A.	Jun. For.	21 South, Box 3617	Carteret, N. J.
Pulliam, G. W., Jr.	Fr. Tex.	23 Shepherd St.	Roxboro, N. C.
Purcell, T. H., Jr.	So. M. E.	320 A, Box 4183	Ettricks, Va.
Quay, T. L.	Grad. An. Ecol.	2805 Bedford Ave.	Raleigh, N. C.
Quick, K. M.	Fr. E. E.	7 8th, Box 3809	Lumberton, N. C.
Quickel, W. A.	Jun. Arch. E.	321 South, Box 3585	Lincolnton, N. C.
Quinn, F. D., Jr.	So. Tex. Mfg.	211 C, Box 4932	Shelby, N. C.
Quinn, H. R.	Fr. E. E.	237 1911	Shelby, N. C.
Rainey, R. W.	So. M. E.	21 Enterprise St.	Fayetteville, N. C.
Rains, P. W.	Fr. Arch. E.	120 7th, Box 3320	Thomasville, N. C.
Ramalho, A. F.	Sen. Tex. C. & D.	201 A, Box 4133	New Bedford, Mass.
Ramseur, W. F.	Fr. Ag. Ed.	139 7th, Box 3402	Morganton, N. C.
Ramseur, W. S.	Fr. Ag.	134 7th, Box 3402	Morganton, N. C.
Ramsey, A. L.	So. Ag.	204 South, Box 3536	Franklin, N. C.
Ramsey, C. L.	So. E. E.	302 South, Box 3566	Crumpler, W. Va.
Ramsey, R. W. H.	So. Ag. Ed.	228 South	Marshall, N. C.
Randall, F. W., Jr.	Sen. M. E.	219 C, Box 4101	Bristol, Pa.
Randolph, J. L.	Jun. M. E.	212 Groveland Ave.	Morganton, N. C.
Raney, M. T.	So. E. E.	113 A, Box 4110	LaCrosse, N. C.
Rankin, B. F.	So. Ch. E.	222 Park Ave.	Charlotte, N. C.
Ratchford, C. B.	Jun. Ag. Ec.	107 5th, Box 3207	Gastonia, N. C.
Ratcliff, Z. O.	So. Flori.	608 Rosemont Ave.	Pantego, N. C.
Rawls, H. D.	So. Occ. Inf.	2209 Circle Drive	Raleigh, N. C.
Ray, W. A.	Sen. Ch. E.	1720 Hillsboro St.	Fayetteville, N. C.
Rayburn, D. E.	Fr. An. Prod.	Fieldhouse, Box 5474	Portsmouth, Ohio
Rea, J. L.	Fr. Ag.	323 7th, Box 3389	Wenona, N. C.
Ream, L. W.	Fr. M. E.	301 Park Ave.	Windber, Pa.
Reams, G. E.	Jun. Ag. Ed.	1 South, Box 3597	Apex, N. C.
Reams, W. J.	Sen. Ag. Ed.	109 10th	Apex, N. C.
Reaves, D. P.	Fr. M. E.	206 9th, Box 4313	Edenton, N. C.
Redmond, G. T.	Fr. Ag. Ed.	322 7th, Box 3388	Greensboro, N. C.
Redmond, T. P.	Fr. Ch. E.	312 8th, Box 3780	Cleveland, N. C.
Reece, E .C., Jr.	Fr. M. E.		Winston-Salem, N. C.
Reed, R. L.	Jun. C. E.	3 Gym	Hertford, N. C.
Reeves, O. T.	Fr. Cer. E.	228 East Park Drive	Raleigh, N. C.
Reeves, R. B., Jr.	Sen. Arch. E.	228 E. Park Drive	Raleigh, N. C.
Regan, B. G.	Fr. Ag.	7 9th	Lexington, N. C.
Regan, P. R.	Jun. Ag. Ed.	201 5th, Box 3213	Lexington, N. C.
Rehder, G. S.	So. Ch. E.	136 C, Box 4231	Wilmington, N. C.
Reichert, P. F.	Jun. For.	108 6th, Box 3244	E. Lansdowne, Pa.
Reid, H. A.	So. Ag. Ed.	212 A, Box 4141	Elizabeth City, N. C.
Rembert, A. G.	Fr. Ch. E.	131 8th, Box 3731	Sarasota, Fla.
Reynolds, F. H. K., Jr.	So. E. E.	4 Ferndell Lane	San Antonio, Texas
Reynolds, R. H.	Fr. Ch. E.	1420 Park Drive	Raleigh, N. C.
Reynolds, T. M.	Fr. Ag. Ed.	128 7th	Columbia, N. C.

Name	*Classification*	*School Address*	*Home Address*
Reynolds, V. H.	So. An. Prod.	331 A, Box 4194	Kinston, N. C.
Rhodarmer, R. K.	Fr. M. E.	133 1911	Caton, N. C.
Rhyne, A. M.	Jun. M. E.	4 South, Box 3600	Stanley, N. C.
Rhyne, C. T.	So. Arch. E.	107 A, Box 4106	Newport, Tenn.
Rhyne, J. L.	Fr. Tex.	213 8th	Lincolnton, N. C.
Rhyne, O. M.	Fr. Cer. E.	228 8th, Box 3762	Charlotte, N. C.
Rice, R. L.	Sen. Arch. E.	218 Wat., Box 3036	Raleigh, N. C.
Richardson, R. H., Jr.	Fr. Cer. E.	Wendell, Route 1	Wendell, N. C.
Richardson, W. C.	Jun. An. Prod.	10 Enterprise St.	Sparta, N. C.
Richey, H. L.	So. Ag.	232 South, Box 3564	Camden, S. C.
Riddick, R. G.	Jun. Ag. Ed.	217 A, Box 4146	Corapeake, N. C.
Riddle, C. H., Jr.	Fr. Gen. E.	8 Fieldhouse	Sanford, N. C.
Riegert, R. P.	Fr. Tex.	316 8th, Box 3784	Buena Vista, Va.
Rightmyer, R. J., Jr.	Fr. M. E.	310 9th	Roanoke Rapids, N. C.
Riley, B. A.	So. M. E.	317 C, Box 4279	Fayetteville, N. C.
Riley, Rupert	Jun. Tex. Mfg.	14 Enterprise St.	Raleigh, N. C.
Risley, R. S.	Jun. E. E.	2221 Creston Rd.	Raleigh, N. C.
Ritchie, James, Jr.	Fr. E. E.	203 10th, Box 4412	Pores Knob, N. C.
Rivers, W. H.	Sen. E. E.	3143 Stanhope Ave.	Raleigh, N. C.
Robbins, T. J.	Fr. Ag.	333 7th, Box 3399	Burgaw, N. C.
Robbins, W. D.	Jun. Ag.	223 South, Box 3555	Burgaw, N. C.
Roberson, C. T.	Fr. Ch. E.	312 8th, Box 3780	Williamston, N. C.
Roberts, C. M.	Fr. Tex.	212 7th, Box 3344	Salisbury, N. C.
Roberts, C. W.	Sen. An. Prod.	Dairy Cottage, Box 5127	Weaverville, N. C.
Roberts, S. D.	So. M. E.	116 A, Box 4113	Winston-Salem, N. C.
Roberts, W. J.	Jun. Ch. E.	211 South, Box 3543	Monroe, N. C.
Robertson, A. K., Jr.	So. Gen. E.	112 A, Box 4109	Goldsboro, N. C.
Robertson, H. N.	So. F. C. & P. B.	7 South, Box 3603	Knightdale, N. C.
Robinson, B. L.	Fr. Ag.	3208 Clark Ave.	Bandana, N. C.
Robinson, C. M.	Fr. Tex.	124 A	Lowell, N. C.
Robinson, R. B.	So. Ag.	2316 Hillsboro St.	Littleton, N. C.
Robinson, W. D.	So. Ag. Ed.	337 C, Box 4296	Maiden, N. C.
Rodriguez, C. V.	Sen. M. E.	317 Wat., Box 3053	Aguirre, Puerto Rico
Roebuck, R. B.	So. Ag.	302 5th, Box 3226	Wilmington, N. C.
Rogers, W. D.	Fr. M. E.	127 A, Box 4122	Asheville, N. C.
Rollins, J. E.	Sen. Poul. Sci.	123 C, Box 4220	Durham, N. C.
Rolston, J. A.	Sen. Ch. E.	712 Brooks Ave.	Raleigh, N. C.
Root, B. H.	So. Ag. Chem.	323 A, Box 4186	East Orange, N. J.
Rose, B. L.	Fr. Ch. E.	321 8th	Wadesboro, N. C.
Rose, G. A., III	So. Ch. E.	1301 Hillsboro St.	Henderson, N. C.
Rose, H. M.	Sen. Ch. E.	321 South	Greenville, S. C.
Rose, J. T., Jr.	Jun. Ch. E.	310 6th, Box 3270	Rocky Mount, N. C.
Ross, R. G., Jr.	Fr. Gen. E.	109 10th, Box 4409	Charlotte, N. C.
Rosenfeld, H. M.	So. M. E.	230 1911	New York, N. Y.
Rountree, Moses, Jr.	So. Ch. E.	134 C, Box 4229	Goldsboro, N. C.
Routh, B. Z., Jr.	Jun. Tex. C. & D.	123 C, Box 4220	Greensboro, N. C.
Rowe, E. E.	Fr. Ag.	322 Bickette Blvd.	Raleigh, N. C.
Rowe, H. B.	Sen. Ch. E.	105 South, Box 3505	Rocky Mount, N. C.
Rowell, J. O.	Auditor	Raleigh, Box 5143	Marion, S. C.
Rowland, W. T.	Sen. Arch. E.	303 Wat., Box 3039	Charlotte, N. C.
Ruark, C. S.	So. Ch. E.	318 South, Box 3582	Wilmington, N. C.
Rudisill, J. A., Jr.	So. E. E.	128 South, Box 3528	Charlotte, N. C.
Rudy, Daniel	Auditor	13 S. East St.	Raleigh, N. C.
Rue, C. V.	So. Cer. E.	1307 Mordecai Drive	Raleigh, N. C.
Ruffin, W. A., III	Fr. Ch. E.	1622 Park Drive	Raleigh, N. C.
Russ, J. R.	Fr. Ch. E.	21 8th, Box 3824	Washington, N. C.
Sadler, R. E.	Jun. Ag. Ed.	114 A, Box 4111	Burlington, N. C.
Saint-Amand, Robert	Fr. Arch. E.	213 9th, Box 4321	Wilmington, N. C.
St. Clair, G. W., Jr.	Fr. M. E.	7 Maiden Lane	Charlotte, N. C.
Sales, P. N.	Sen. Ch. E.	310 Wat., Box 3046	Asheville, N. C.
Salisbury, R. M.	Fr. M. E.	211 9th, Box 3770	Scotland Neck, N. C.

Name	*Classification*	*School Address*	*Home Address*
Sampson, J. E.	So. Tex. Mfg.	223 C, Box 4251	Guilford College, N. C.
Samuel, S. C.	Fr. M. E.	204 10th	New York, N. Y.
Sanders, H. K., Jr.	Sen. Ag. E.	13 South, Box 3609	Roxboro, N. C.
Sanderson, J. E.	Fr. Ag.	214 8th, Box 3748	Four Oaks, N. C.
Sanderson, J. W.	Fr. Tex.	214 7th, Box 3346	Magnolia, N. C.
Sandlin, J. M.	Fr. Ag.	129 7th, Box 3329	Verona, N. C.
Sandridge, G. R.	So. Tex. C. & D.	103 Chamberlain St.	Charlotte, N. C.
Santopolo, F. A.	Jun. For.	326 A, Box 4189	Mt. Vernon, N. Y.
Santore, C. A.	Sen. W. & D.	2004 Hillsboro	Hasbrouck Heights, N. J.
Santore, G. L.	So. Cer. E.	2004 Hillsboro	Hasbrouck Heights, N. J.
Santos, E. V.	Grad. Tex.	308 4th, Box 3134	Rizal, Philippines
Sapp, D. F.	Fr. Tex.	10 9th	Concord, N. C.
Sapp, O. C. (Mrs.)	Sen. Occ. Inf.	1906 Fairview Rd.	Tipton, Okla.
Sarandria, T. J.	Jun. Tex. Mfg.	326 A, Box 4189	W. New York, N. J.
Sarandria, William	Sen. Tex. Mfg.	2004 Hillsboro St.	W. New York, N. J.
Sasser, C. W.	Jun. M. E.	217 South, Box 3549	Wilson, N. C.
Satterwhite, C. J.	Fr. Tex. Mfg.	Apex, N. C.	Rutherford College, N. C.
Sauls, H. A., Jr.	Fr. Tex. Mfg.	2407 Clark Ave.	Winston-Salem, N. C.
Saunders, C. W.	Sen. Ag. Ch.	23 South, Box 3619	Ruffin, N. C.
Saunders, R. R., Jr.	Jun. Ch. E.	118 A, Box 4115	Reidsville, N. C.
Sawyer, V. L.	Fr. M. E.	203 9th	Swan Quarter, N. C.
Sawyer, W. E.	So. Tex.	301 A, Box 4167	Columbus, N. C.
Sawyer, W. R.	Fr. I. A. Ed.	122 South, Box 3522	Greensboro, N. C.
Sayah, Max	So. Ch. E.	329 South, Box 3593	Allentown, Pa.
Sayre, E. H.	Jun. For.	2004 Hillsboro St.	Tryon, N. C.
Schell, S. C.	Grad. Entom.	2716 Everett St.	York, Pa.
Schenck, Emily F.	Spec.	1621 Park Drive	Raleigh, N. C.
Schenck, J. F., III	Fr. Tex. Mfg.	118 Wat.	Shelby, N. C.
Schmidt, F. H.	Jun. Flori.	516 Daughtridge St.	Raleigh, N. C.
Schreyer, C. E., Jr.	Fr. For.	130 7th, Box 3330	Mamaroneck, N. Y.
Schubart, C. S.	So. Ag. Ec.	2004 Hillsboro St.	Maplewood, N. J.
Schworm, Sprague	Sen. Geol. E.	114 Wat., Box 3014	Charlotte, N. C.
Scoggins, H. D.	So. Tex. Mfg.	321 C, Box 4283	Wilmington, N. C.
Scoggins, J. R.	Jun. Tex. Mfg.	125 Chamberlain St.	Cramerton, N. C.
Scott, C. C., Jr.	Jun. Ag. Ec.	339 A, Box 4199	Mars Hill, N. C.
Scott, H. C.	Jun. Ag. Ec.	123 South, Box 3523	Kenly, N. C.
Scott, J. A.	Sen. M. E.	113 South, Box 3513	Charlotte, N. C.
Scott, J. W., Jr.	So. M. E.	125 C, Box 4222	Warrenton, N. C.
Scott, L. H.	Fr. Ag.	335 1911	Lucama, N. C.
Searcy, H. M.	Fr. For.	225 C, Box 4253	Fayetteville, N. C.
Sears, J. L., Jr.	Jun. Ag.	229 A, Box 4158	Morrisville, N. C.
Seawell, W. D.	Fr. Tex. Mfg.	103 Chamberlain St.	Greensboro, N. C.
Secrest, S. R.	So. M. E.	208 South, Box 3540	E. Spencer, N. C.
Sedberry, G. R., Jr.	Jun. Tex. Mfg.	216 South, Box 3548	Concord, N. C.
Seegars, N. W.	Jun. Ag.	109 South, Box 3509	Fairfield, N. C.
Seely, J. F.	Grad. Ch. E.	College Court Apts. No. 4, Box 5172	Chester, Pa.
Seifart, Arno	So. Ind. E.	314 A, Box 4177	Charlotte, N. C.
Seitz, W. E.	So. Ag. Ed.	311 5th, Box 3235	Newton, N. C.
Sellers, W. H.	So. Ag. Ed.	204 South	Kings Mountain, N. C.
Sellers, W. T.	Fr. M. E.	3 Maiden Lane	Shallotte, N. C.
Semanik, John, Jr.	So. Tex. Mfg.	237 C, Box 4262	Averill Park, N. Y.
Senter, R. L.	Fr. Ind. E.	26 Dixie Trail	Raleigh, N. C.
Setser, M. S.	Sen. An. Prod.	129 South, Box 3529	Franklin, N. C.
Setzer, C. M., Jr.	So. M. E.	106 South, Box 3506	Charlotte, N. C.
Setzer, J. D.	Sen. E. E.	206 Wat., Box 3024	Maiden, N. C.
Setzer, J. W.	Fr. Ch. E.	3 8th	Maiden, N. C.
Sevier, J. R.	Sen. Cer. E.	9 8th, Box 3811	Asheville, N. C.
Sewell, H. B., Jr.	Fr. Ag.	202 10th	Greensboro, N. C.
Seyter, W. G.	Jun. E. E.	2209½ Hope St.	Union City, N. J.
Shafer, C. B.	Fr. Ind. E.	202 10th	Chevy Chase, Md.

Name	*Classification*	*School Address*	*Home Address*
Sharpe, H. T.	Fr. Ch. E.	103 A, Box 4103	Newton, N. C.
Sharpe, J. H.	Fr. Ag.	129 C	Burlington, N. C.
Sharpe, M. W.	Fr. Tex.	305 8th, Box 3773	Reidsville, N. C.
Shaw, B. L. S.	So. Ag. Ed.	314 Wat., Box 3050	Durham, N. C.
Shaw, Warren C.	So. Ag.	2600 Rosedale St.	Roanoke Rapids, N. C.
Shaw, William C.	Jun. Ag. Ed.	211 Groveland Ave.	Richlands, N. C.
Shearin, D. C.	Sen. Ch. E.	6 South, Box 3602	Roanoke Rapids, N. C.
Shearin, G. L.	Fr. Ag. Ed.	107 6th, Box 3243	Littleton, N. C.
Shearon, E. C.	Sen. M. E.	Route 3	Raleigh, N. C.
Sheets, C. H.	So. Ch. E.	229 C, Box 4257	Salisbury, N. C.
Sheetz, G. M.	Jun. M. E.	1806 Hillsboro St.	Allentown, Pa.
Shelburne, V. B., Jr.	So. Ch. E.	112 6th, Box 3248	Washington, N. C.
Shelden, H. W.	Jun. Ag.	325 Polk St.	Raleigh, N. C.
Shelden, R. E. H.	So. C. E.	325 Polk St.	Raleigh, N. C.
Shelor, M. B. (Mrs.)	Auditor	121 N. Person St.	Raleigh, N. C.
Shepherd, D. S., Jr.	So. M. E.	719 S. Boylan Ave.	Raleigh, N. C.
Sherrill, P. E., Jr.	Fr. E. E.	321 8th	Mooresville, N. C.
Schevchenko, R. P.	So. M. E.	2806 Van Dyke St.	Port Norris, N. J.
Shields, E. R.	Fr. M. E.	305 8th, Box 3773	Scotland Neck, N. C.
Shields, F. P.	Sen. Soils	4 Ferndell Lane	Scotland Neck, N. C.
Shields, J. G., Jr.	Fr. Ag.	120½ Groveland Ave.	Scotland Neck, N. C.
Shinn, C. S.	Fr. M. E.	229 1911	Spray, N. C.
Shinn, K. A., Jr.	Jun. Tex. Mfg.	138 A, Box 4130	China Grove, N. C.
Shoaf, E. H.	So. E. E.	116 C, Box 4213	Charlotte, N. C.
Shoe, G. D.	Fr. E. E.	120 A, Box 4116	Salisbury, N. C.
Shoe, G. W.	Jun. Arch. E.	226 C, Box 4254	Greenville, N. C.
Shoffner, J. E.	So. Cer. E.	106½ E. North St.	Raleigh, N. C.
Short, R. E.	So. C. E.	129 A, Box 4124	Prospect Park, Pa.
Short, S. S., Jr.	Fr. C. E.	113 7th, Box 3313	Mocksville, N. C.
Shotwell, J. T.	Sen. Tex. Mfg.	108 Wat., Box 3008	Henderson, N. C.
Shoub, J. L.	So. For.	205 C, Box 4236	East Orange, N. J.
Showalter, M. R.	So. E. E.	Route 6	Raleigh, N. C.
Shumaker, R. K.	So. M. E.	2702 Rosedale Ave.	Philadelphia, Pa.
Sibert, J. B.	Jun. M. E.	205 5th	Winston-Salem, N. C.
Sickerott, C. D.	Jun. Tex. C. & D.	2407 Clark Ave.	Siler City, N. C.
Sides, B. E.	So. Tex. Mfg.	225 C, Box 4253	Winston-Salem, N. C.
Silver, H. S.	Fr. Tex.	Midway Plantation	Raleigh, N. C.
Silverman, Sidney	Fr. M. E.	6 9th	New York City, N. Y.
Simerson, H. Y.	Fr. Tex.	204 7th, Box 3336	Spencer, N. C.
Simmons, B. M.	So. Ag.	204 C, Box 4235	Polkton, N. C.
Simmons, J. D.	Sen. F. C. & P. B.	301 Wat., Box 3037	Seven Springs, N. C.
Simmons, J. M.	So. M. E.	304 C	Greensboro, N. C.
Simmons, R. T.	Fr. Ch. E.	222 Park Ave.	Roseboro, N. C.
Simpson, D. L., Jr.	Fr. M. E.	304 8th, Box 3772	Asheville, N. C.
Simpson, J. A.	Fr. M. E.	1434 Scales St.	Raleigh, N. C.
Simpson, S. S.	Fr. M. E.	322 South	Winnetka, Ill.
Sims, J. G.	Jun. Ch. E.	108 South, Box 3508	Roxboro, N. C.
Sinback, C. N.	Sen. Ch. E.	206 South, Box 3538	Tarboro, N. C.
Singer, J. L.	So. M. E.	118 South, Box 3518	New York, N. Y.
Sink, A. M.	So. Ag. Ed.	304 5th, Box 3228	Lexington, N. C.
Sink, L. G., Jr.	Fr. Ag.	115 Woodburn Rd.	Lexington, N. C.
Sink, R. G.	Fr. Tex.	5 9th	Lexington, N. C.
Sisgoreo, Eugene	So. M. E.	3 Gym., Box 5402	Far Rockaway, N. Y.
Skipper, W. H.	Fr. C. E.	133 C	Wilmington, N. C.
Slack, G. M.	Fr. Ag.	208 10th	Pinetown, N. C.
Slagle, C. S., Jr.	Sen. An. Prod.	9 South, Box 5127	Franklin, N. C.
Slagle, C. W.	Jun. Ag.	9 South, Box 3605	Franklin, N. C.
Sloan, H. W.	Fr. M. E.	131 8th, Box 3731	Charlotte, N. C.
Sloop, A. M.	So. M. E.	220 C, Box 4248	Kannapolis, N. C.
Small, A. R.	So. M. E.	127 C, Box 4224	Albemarle, N. C.
Smaw, Annie E. (Miss)	Grad. Oc. Inf.	619 W. Jones St.	Raleigh, N. C.

Name	*Classification*	*School Address*	*Home Address*
Smith, A. O.	Fr. Ag. Ed.	103 7th	Grifton, N. C.
Smith, C. J.	Fr. M. E.	103 8th, Box 3316	Dunn, N. C.
Smith, E. C.	Fr. Ind. E.	334 1911	Salem, N. C.
Smith, E. T.	Sen. Ag. Ed.	Route 5	Raleigh, N. C.
Smith, F. O.	Sen. M. E.	214 Wat., Box 3032	McLeansville, N. C.
Smith, G. A.	Fr. Ag.	2408 Stafford Ave.	Stony Point, N. C.
Smith, G. L.	Fr. Ch. E.	Withdrew September 20	Lexington, N. C.
Smith, G. R.	Jun. Tex. C. & D.	Wake Forest, Route 2	Goldsboro, N. C.
Smith, G. B.	Fr. Ch. E.	329 7th, Box 3395	Winston Salem, N. C.
Smith, G. T., Jr.	Sen. C. E.	212 Wat., Box 3030	Charlotte, N. C.
Smith, H. B.	Fr. Ch. E.	6 Dixie Trail	Raleigh, N. C.
Smith, John A.	So. Ag.	301 Park Ave.	Vass, N. C.
Smith, J. F.	Jun. Ch. E.	222 Cox Ave.	Avondale, N. C.
Smith, James M.	Jun. C. E.	2707 Kilgore Ave. Mail Box 269	Raleigh, N. C.
Smith, James R., Jr.	Sen. E. E.	303 4th, Box 5303	Charlotte, N. C.
Smith, John R.	Fr. For.	Withdrew September 21	Raleigh, N. C.
Smith, J. S., Jr.	Fr. Ag.	207 9th	Nashville, N. C.
Smith, M. B.	Sen. Ag. Ed.	17 South, Box 3613	Denton, N. C.
Smith, M. S.	Sen. Arch. E.	708 Florence St.	Raleigh, N. C.
Smith, R. J., Jr.	So. Cer. E.	305 C, Box 4270	Goldsboro, N. C.
Smith, Richard S.	Jun. Arch. E.	320 South, Box 3584	Asheville, N. C.
Smith, Ray S.	Sen. Dairy Mfg.	209 8th, Box 3743	Nutley, N. J.
Smith, R. W.	Fr. Ag.	213 8th, Box 3747	Pilot Mountain, N. C.
Smith, T. A., Jr.	Jun. Ag. Ed.	208 5th, Box 3220	Atkinston, N. C.
Smitherman, S. J.	Fr. Arch. E.	204 C,	Troy, N. C.
Smithwick, R. W., Jr.	Fr. Gen. E.	325 7th, Box 3391	Louisburg, N. C.
Smoak, W. S.	Fr. M. E.	230 8th, Box 3764	Wilkesboro, N. C.
Snakenberg, R. L.	Sen. Ch. E.	217 Glascock St.	Raleigh, N. C.
Snapp, William R., Jr.	Fr. M. E.	206 Chamberlain St.	Charlotte, N. C.
Sneed, E. M.	Fr. M. E.	2633 Fairview Rd.	Raleigh, N. C.
Snow, G. P.	Fr. M. E.	Route 2	Raleigh, N. C.
Sokoloff, M. H.	Fr. Tex.	12 8th, Box 3814	Newark, N. J.
Soroka, Jack	Sen. Tex. C. & D.	329 A, Box 4192	Lachine, Canada
Sorrell, Russell	Sen. Arch. E.	1405 Wake Forest Rd.	Raleigh, N. C.
Southerland, O. P.	Grad. F. C. & P. B.		Durham, N. C.
Spainhour, C. D.	So. M. E.	105 C, Box 4204	Greensboro, N. C.
Spargo, L. H., Jr.	Jun. E. E.	238 C, Box 4263	Charlotte, N. C.
Sparrow, T. B.	Fr. M. E.	19 8th, Box 3820	Greensboro, N. C.
Speas, H. M.	Jun. Ag.	208 South, Box 3540	Winston-Salem, N. C.
Speight, P. T.	Fr. F. C. & P. B.	203 10th	Winterville, N. C.
Spencer, B. F.	Jun. Ag.	3208 Clark Ave., Box 5263	Scranton, Pa.
Spencer, B. F.	Jun. E. E.	313 A	Ayden, N. C.
Spiker, T. F.	Sen. For.	2008 Hillsboro St.	Drexel Hill, Pa.
Springer, H. L.	Fr. M. E.	326 7th, Box 3392	Rockaway Beach, N. Y.
Spruiell, S. G.	So. For.	205 Forest Rd.	Leeds, Alabama
Spruill, A. C., Jr.	Fr. M. E.	229 7th, Box 3361	Goldsboro, N. C.
Squires, E. W.	Sen. Ch. E.	202 South, Box 3534	Draper, N. C.
Stafford, J. K.	Fr. Ag.	6 Dixie Trail	Summerfield, N. C.
Staley, C. W.	Fr. Cer. E.	328 C, Box 4290	Greensboro, N. C.
Stallings, J. W.	Fr. Ag.	305 9th	Selma, N. C.
Stamey, G. M.	So. C. E.	210 5th, Box 3222	Meansville, Ga.
Stamey, H. M.	Jun. F. C. & P. B.	2723 Bedford Ave., Box 5451	Canton, N. C.
Stanford, W. T.	Fr. M. E.	329 1911	Charlotte, N. C.
Stanton, D. W.	Fr An. Prod.	210 Taylor St.	Raleigh, N. C.
Stapleton, E. M.	Fr. M. E.	Apt. T3C, Cameron Court	Raleigh, N. C.
Starling, D. G.	Fr. Ch. E.	239 1911	Autreyville, N. C.
Starnes, B. F., Jr.	So. Ch. E.	319 South, Box 3583	Monroe, N. C.
Starnes, W. F., Jr.	Fr. M. E.	2514 Clark Ave.	Morganton, N. C.
Steadman, J. P.	Fr. Ag.	103 6th, Box 3238	Pinetops, N. C.
Steele, C. H.	Fr. M. E.	126 7th, Box 3326	Charlotte, N. C.

Name	Classification	School Address	Home Address
Steele, C. N.	Fr. Cer. E.	104 8th, Box 3704	Statesville, N. C.
Steele, F. M.	Fr. Cer. E.	117 8th, Box 3717	Winston-Salem, N. C.
Steele, G. R., Jr.	Fr. E. E.	307 8th, Box 3775	Charlotte, N. C.
Steelman, C. H., Jr.	Grad. Pom.	1816 Park Drive	Kingston, N. J.
Stein, H. M.	Fr. Ag. Ed.	215 7th, Box 3347	Newark, N. J.
Steiner, B. S., Jr.	Fr. Ag.	111 8th, Box 3711	Washington, D. C.
Steiner, W. C.	So. Ch. E.	130 Woodburn Rd.	Camden, N. J.
Stephenoff, M. S.	So. C. E.	237 C, Box 4262	Freeport, N. Y.
Stephenson, J. C., Jr.	So. Ag. Ed.	227 South, Box 3559	Jackson, N. C.
Stephenson, T. N.	Fr. M. E.	211 W. Jones St.	Raleigh, N. C.
Sternberg, Elia	Sen. C. E.	323 A, Box 4186	Tel Aviv, Palestine
Stevens, R. B.	Jun. M. E.	218 South, Box 3550	Camden, N. C.
Stewart, A. T.	So. Ch. E.	313 C, Box 4275	Washington, N. C.
Stewart, C. P.	Fr. Ag. Ed.	102 7th, Box 3302	Broadway, N. C.
Stewart, E. L., Jr.	So. I. A. Ed.	306 South, Box 3570	Roxboro, N. C.
Stewart, J. E.	Fr. M. E.	Withdrew Sept. 13	Nantucket, Mass.
Stiles, D. J.	Fr. Tex.	219 7th, Box 3351	Stafford, Conn.
Stilwell, M. L.	So. Tex. C. & D.	235 A, Box 4162	Thomasville, N. C.
Stinson, Katherine (Miss)	Sen. M. E.	11 Enterprise St.	Varina, N. C.
Stockard, Henry J., Jr.	Soph. Gen. E.	705 Hillsboro St.	Raleigh, N. C.
Stoddard, D. L.	Grad. Pl. Path.	2008 Hillsboro St.	Hyattsville, Md.
Stokes, E. S.	Sen. Ag. Ed.	107 5th, Box 3207	Linwood, N. C.
Stone, J. R., Jr.	Fr. E. E.	122 8th, Box 3722	Durham, N. C.
Stout, Paul Eli	Jun. C. E.	206 6th, Box 3254	High Point, N. C.
Stout, Paul Ellis	Fr. Tex.	24 8th, Box 3826	Sanford, N. C.
Stowe, G. W., Jr.	Jun. Tex. Mgt.	311 W. Park Drive	Belmont, N. C.
Strait, J. H.	So. Tex. Mfg.	327 A	Biddeford, Maine
Strand, H. V.	Jun. E. E.	2211 Hope St.	Norge, Va.
Strawbridge, E. M.	Fr. M. E.	333 8th, Box 3801	Durham, N. C.
Strawbridge, J. N.	Sen. E. E.	2513 Clark Ave.	Durham, N. C.
Strawn, W. R.	Fr. Ag.	2609 Clark Ave.	Peachland, N. C.
Strayhorne, G. V.	Jun. M. E.	212 Wat., Box 3030	Spencer, N. C.
Strickland, H. C., Jr.	Fr. Cer. E.	120 8th, Box 3720	Angier, N. C.
Strickland, J. E.	Fr. Cer. E.	11 Maiden Lane	Warsaw, N. C.
Strong, Harris G.	So. Ch. E.	312 Linden Ave.	Bryn Mawr, Pa.
Strong, M. D.	Sen. Ch. E.	312 Linden Ave.	Bryn Mawr, Pa.
Stripling, S. A.	So. M. E.	102 C, Box 4201	Raleigh, N. C.
Stroud, C. K.	Fr. Ch. E.	11 8th, Box 3813	Charlotte, N. C.
Stroud, Ray	Fr. M. E.	208 8th	Wilkesboro, N. C.
Stroup, H. W.	Sen. Ag. Ed.	326 8th, Box 3974	Cherryville, N. C.
Stroupe, G. N.	Fr. M. E.	129 7th, Box 3329	Morganton, N. C.
Struthers, D. L.	Jun. C. E.	312 South, Box 3576	Wilmington, N. C.
Stuart, A. N.	So. Tex. C. & D.	Withdrew Sept. 19	Snow Camp, N. C.
Stuart, R. F., Jr.	Fr. Ag. Ed.	209 A, Box 4139	Rowland, N. C.
Stubbs, W. B.	Fr. Tex. Mfg.	306 6th, Box 3266	Rockingham, N. C.
Stuckey, M. A.	Fr. Ch. E.	1911 Sunset Drive	Fremont, N. C.
Stuckey, R. C., Jr.	Sen. Cer. E.	217 Wat., Box 3035	Charlotte, N. C.
Stuckey, W. C., Jr.	Fr. M. E.	14 8th, Box 3816	Goldsboro, N. C.
Sturkey, J. M.	Jun. Ch. E.	319 A, Box 4182	Albemarle, N. C.
Stutts, J. L.	Sen. M. E.	4 Ferndell Lane	Black Mountain, N. C.
Suggs, J. R.	Fr. Ag. Ed.	135 A, Box 4128	Whiteville, N. C.
Sullam, Victor	Grad. Dairy Mfg.	120 Woodburn Rd.	Venice, Italy
Sullivan, C. S.	Fr. M. E.	222 8th, Box 3756	Greensboro, N. C.
Sullivan, E. T.	So. For.	130 Forest Rd.	Douglaston, N. Y.
Summers, L. N., Jr.	So. Ag. Ed.	128 A, Box 4123	Statesville, N. C.
Sumner, J. W.	So. Ag. Ed.	216 A, Box 4145	Conway, N. C.
Suniewick, J. L.	Fr. Ch. E.	11 Fieldhouse, Box 5282	South Bound Brook, N. J.
Surratt, W. Q.	Sen. For.	116 Groveland Ave.	Burlington, N. C.
Suther, F. L., Jr.	So. Tex. Mfg.	231 A, Box 4160	Charlotte, N. C.
Sutton, C. M.	Fr. Ag.	2412 Everett St.	Goldsboro, N. C.

Name	*Classification*	*School Address*	*Home Address*
Sutton, W. M.	Jun. W. & D.	115 Wat., Box 3015	Rocky Mount, N. C.
Suydam, W. H.	Fr. For.	218 7th, Box 3318	High Point, N. C.
Swaffar, C. D.	Grad. An. Prod.	204 Park Ave.	Raleigh, N. C.
Swain, B. C.	Sen. E. E.	110 6th, Box 3246	Cycle, N. C.
Swanker, R. H.	So. M. E.	107 Ashe Ave.	Poughkeepsie, N. Y.
Sweet, H. M.	So. M. E.	218 C, Box 4246	Spencer, N. C.
Sweezy, H. L.	Grad. Plant Path.	414 Chamberlain St.	Locust Grove, Okla.
Swett, J. B., Jr.	Jun. M. E.	314 South	Southern Pines, N. C.
Swinney, G. C., Jr.	So. E. E.	4 South, Box 3600	Draper, N. C.
Sykes, E. C., Jr.	Fr. C. E.	13 East Dixie Drive	Raleigh, N. C.
Sykes, G. H.	Jun. M. E.	305 A, Box 4171	Greensboro, N. C.
Tabscott, J. C.	Jun. Tex. Mfg.	27 8th	Washington, N. C.
Tager, Sidney	Sen. Tex. C. & D.	2304 Clark Ave.	Brooklyn, N. Y.
Talley, C. E.	Sen. C. E.	114 Wat.	Semora, N. C.
Talley, H. B.	Fr. Ag. Ed.	17 8th, Box 3819	Walkertown, N. C.
Tarkington, W. H.	Fr. Tex.	339 C, Box 4298	Manteo, N. C.
Tarleton, C. W.	Jun. Ag. Ed.	208 6th, Box 3256	Marshville, N. C.
Tart, C. V.	Jun. Ag. Ed.	1 South, Box 3597	Dunn, N. C.
Tatum, R. L.	Sen. Ch. E.	2708 Vanderbilt Ave.	Raleigh, N. C.
Taylor, B. H.	Fr. Ag.	206 10th	Tarboro, N. C.
Taylor, C. D.	Jun. Cer. E.		Portsmouth, Ohio
Taylor, G. S.	Fr. Ag. Ed.	126 Forest Rd.	Jackson, N. C.
Taylor, H. G.	Jun. Ag.	109 South, Box 3509	Seaboard, N. C.
Taylor, J. A.	Fr. Tex.	NYA Center	Roanoke Rapids, N. C.
Taylor, J. B.	Fr. Tex.	309 8th, Box 3777	Shelby, N. C.
Taylor, L. W.	Fr. Ag. Ch.	512 N. Blount St.	Newport, N. C.
Taylor, M. H.	Grad. W. C. & Mgt.	2104 Woodland Ave.	High Point, N. C.
Taylor, M. K.	Fr. M. E.	215 8th, Box 3749	Seaboard, N. C.
Taylor, P. H.	So. Land Arch.	226 8th, Box 3760	Flushing, N. Y.
Taylor, R. G.	So. M. E.	2513 Clark Ave.	High Point, N. C.
Taylor, W. P.	Fr. Tex.	W-2-A Cameron Court Apt.	Woodland, N. C.
Teachey, J. B., Jr.	Fr. M. E.	308 9th	Wallace, N. C.
Teague, F. J.	Fr. Ag.	6 8th, Box 3808	Snow Camp, N. C.
Teague, K. H.	Sen. Geol. E.	124 South, Box 3524	Siler City, N. C.
Teague, R. T., Jr.	Fr. Ag.	333 1911	Newland, N. C.
Teal, J. B.	So. M. E.	117 South, Box 3517	McFarlan, N. C.
Teiser, E. S.	Fr. M. E.	125 South, Box 3525	Henderson, N. C.
Terry, H. L.	So. For.	218 C, Box 4246	Spencer, N. C.
Terry, J. M.	Fr. E. E.	102 6th	Rockingham, N. C.
Tharrington, W. B.	Fr. Arch.	211 8th, Box 3745	Kittrell, N. C.
Theiling, E. L.	Fr. Tex.	115 7th, Box 3315	Charlotte, N. C.
Thigpen, J. K.	Grad. C. E.		Rocky Mount, N. C.
Thomas, A. W., Jr.	Fr. Tex. Mfg.	315 C	Scranton, Pa.
Thomas, G. M.	Fr. Ag. Ed.	205 Forest Rd.	Cameron, N. C.
Thomas, H. H.	Sen. Cer. E.	306 9th, Box 4326	Durham, N. C.
Thomas, R. B.	Sen. Ag. Ed.	104 5th, Box 3204	Oakboro, N. C.
Thomas, S. L., Jr.	Sen. Cer. E.	2307 Lake Drive. Mail: 518 Professional Bldg.	Westfield, N. J.
Thomason, J. W.	Fr. M. E.	337 A, Box 4197	Roanoke Rapids, N. C.
Thomason, R. L.	Fr. For.	119 8th, Box 3719	New Bern, N. C.
Thomason, W. A., Jr.	Sen. Tex. Mfg.	103 Chamberlain St.	Charlotte, N. C.
Thompson, Betty R.	So. Tex. W. & D.	1207 Pearce St.	Raleigh, N. C.
Thompson, J. D.	Grad. Soils	105 4th Mail: Agronomy Dept.	Goldsboro, N. C.
Thompson, J. L.	Jun. Arch. E.	821 Hillsboro St.	Rocky Mount, N. C.
Thompson, L. C., Jr.	Fr. For.	116 C	Alexandria, Va.
Thompson, W. B., Jr.	Jun. Ch. E.	21 Enterprise St.	Goldsboro, N. C.
Thompson, W. F.	Sen. Ag. Ed.	126 8th, Box 3726	Elizabeth City, N. C.
Thompson, W. R.	Fr. Ag.	3 Maiden Lane	Black Creek, N. C.

Name	*Classification*	*School Address*	*Home Address*
Thornburg, W. H.	Sen. An. Prod.	12 A, Box 4116	Candor, N. C.
Thornton, J. L., Jr.	Sen. Ch. E.	2316 Hillsboro St.	Spencer, N. C.
Thrailkill, W. J.	Jun. Ag. Ed.	323 South, Box 3587	Apex, N. C.
Thrift, B. G.	Fr. Tex.	1011 Vance St.	Raleigh, N. C.
Throckmorton, W. S.	Fr. Ag.	226 1911	Long Beach, N. J.
Thurmond, R. C.	So. C. E.	314 "C"	Rocky Mount, N. C.
Thurner, J. T.	Jun. For.	120 Forest Rd.	Greensboro, N. C.
Tilley, T. M.	Jun. E. E.	112 Cox Ave.	Bahama, N. C.
Timberlake, F. J.	Fr. Ch. E.	132 8th, Box 3732	Elizabeth City, N. C.
Tinga, Jacob	Jun. Flori.	125 7th, Box 3325	Castle Hayne, N. C.
Todd, E. R.	Sen. Cer. E.	2513 Clark Ave.	Charlotte, N. C.
Todd, F. A.	Soph. Ag Ed.	2512 Clark Ave.	Wendell, N. C.
Toffoli, P. V., Jr.	So. M. E.	222 Park Ave.	Charlotte, N. C.
Tolan, H. S., Jr.	Fr. M. E.	112 7th, Box 3312	Belhaven, N. C.
Tolbert, J. W.	Jun. E. E.	10 Rosemary St.	Collettsville, N. C.
Tolson, C. K., Jr.	Fr. Ag.	21 9th	Morehead City, N. C.
Tolston, James V.	Fr. E. E.	331 7th, Box 3397	Newport, N. C.
Topper, Raymond	Fr. Ind. E.	6 Fieldhouse, Box 5418	Easton, Pa.
Towery, E. S., Jr.	Sen. Ch. E.	23 5th, Box 3215	Concord, N. C.
Traylor, D. F.	Sen. For.	117 W. Edenton St.	Murfreesboro, N. C.
Trescott, Waldo	Jun. Tex. Mfg.	14 Bagwell Ave.	Raleigh, N. C.
Trevathan, L. B.	Sen. Ag. E.	203 Wat., Box 3021	Dobson, N. C.
Trexler, H. F.	Fr. E. E.	330 "A", Box 4193	Wadesboro, N. C.
Trexler, L. L.	So. Tex.	206 5th	Asheville, N. C.
Tripp, J. D.	Fr. Ag. Ed.	17 8th, Box 3819	Blounts Creek, N. C.
Troute, G. W.	Sen. Ag. Ed.	116 Wat., Box 3016	Forest City, N. C.
Troutman, J. M., Jr.	So. Ag.	326 South, Box 3590	Statesville, N. C.
Troxler, G. F.	Jun. An. Prod.	311 6th	Elon College, N. C.
Troxler, R. T.	So. I. A. Ed.	120 South, Box 3520	Elon College, N. C.
Truckner, M. D.	Fr. Ag. Ed.	215 7th, Box 3347	Peletier, N. C.
Truex, A. C.	Jun. M. E.	2004 Hillsboro St., Box 5565	Hendersonville, N. C.
Truitt, J. R.	Jun. M. E.	302 Wat., Box 3038	Greensboro, N. C.
Tsumas, H. G.	Fr. E. E.	201 7th, Box 3333	Statesville, N. C.
Tunstall, Shelton	Fr. Ag.	130 "A", Box 4125	Hester, N. C.
Tunstall, T. H.	So. Ag. Ch.	1310 Hillsboro St.	Lovington, Va.
Turbeville, J. R.	So. E. E.	301 Park Ave.	Hamlet, N. C.
Turlington, A. B.	Fr. Ag. Ed.	328 1911	Clinton, N. C.
Turner, Bruce	Fr. Ag.	1408 Hillsboro St.	Chadbourn, N. C.
Turner, C. W.	Grad. Soils	137 Gardner St.	North Scituate, R. I.
Turner, D. L.	Sen. Tex. C. & D.	305 Watauga, Box 3041	Greensboro, N. C.
Turner, G. H., Jr.	Fr. Ag.	Route 2	Raleigh, N. C.
Turner, J. R.	Fr. F. Bus. Adm.	25 8th, Box 3826	King, N. C.
Turner, P. P., Jr.	Jun. Cer. E.	309 South, Box 3573	Greensboro, N. C.
Turner, T. M.	So. Gen. E.	105 "C", Box 4204	Washington, N. C.
Turner, W. D.	Fr. F. C. & P. B.	204 6th, Box 3252	Henderson, N. C.
Ullrich, F. N., Jr.	Fr. Tex.	201 7th, Box 3333	Forest Hills, N. Y.
Umburger, C. D.	Jun. Ch. E.	118 Wat., Box 3018	Mt. Ulla, N. C.
Underwood, V. H.	Sen. Veg. Gard.	Greenhouse, Box 5254	St. Paul, N. C.
Underwood, W. F.	Fr. E. E.	334 8th, Box 3802	Albemarle, N. C.
Upchurch, W. L.	Fr. Ag. Ed.	240 1911	Raeford, N. C.
Upchurch, W. M., Jr.	Fr. M. E.	229 8th, Box 3763	Durham, N. C.
Upton, F. E., Jr.	So. C. E.	218 South, Box 3550	Camden, N. C.
Urash, R. N. M.	Fr. Geol. E.	130 7th, Box 3330	Woodside, N. Y.
Uzzell, A. T., Jr.	Sen. F. Mkt. & F. Fin.	111 5th, Box 3211	Moore Haven, Fla.
Uzzle, Virginia C.	Spec.	400 N. Person St.	Wilsons Mills, N. C.
Valaer, E. P.	Sen. Dairy Mfg.	202 "C", Box 4233	Washington, D. C.
Valentino, J. P.	So For.	121 "C", Box 4218	Yonkers, N. Y.
Van Arsdale, W. D.	So. E. E.	205 "C", Box 4236	East Orange, N. J.
Vance, F. K.	So. E. E.	203 South, Box 3535	Winston-Salem, N. C.

Name	*Classification*	*School Address*	*Home Address*
Van Landingham, G. P.	Fr. Cer. E.	131 7th, Box 3331	Greensboro, N. C.
Vann, A. R.	Fr. E. E.	129 "C", Box 4226	Selma, N. C.
Vann, J. G., Jr.	Fr. Gen. E.	1606 Scales St.	Raleigh, N. C.
Vaughan, B. F.	Jun. Tex. C. & D.	2304 Hillsboro St.	Raleigh, N. C.
Vaughn, S. C.	Fr. Ch. E.	13 8th	Charlotte, N. C.
Vause, Jack	Fr. Ag.	309 9th	Kinston, N. C.
Vause, R. C.	Jun. Ag. Ed.	117 Wat., Box 3017	La Grange, N. C.
Veach, J. F.	So. F. C. & P. B.	324 "A"	Thomasville, N. C.
Venters, T. R.	So. M. E.	127 "C", Box 4224	Badin, N. C.
Vernon, H. E.	So. Ag.	301 Park Ave.	Blanch, N. C.
Verrill, H. S.	Fr. Tex.	106 9th	Westbrook, Maine
Vick, D. B.	So. M. E.	123½ Park Ave.	Sanford, N. C.
Volkerding, B. F.	Grad. Bot.	123 Brooks Ave.	Ada, Minn.
Wade, C. R.	So. M. E.	11 Maiden Lane	Raleigh, N. C.
Wafford, W. L., Jr.	Fr. E. E.	227 7th, Box 3359	Charlotte, N. C.
Wagner, J. E.	Fr. M. E.	105 7th, Box 3305	Tarboro, N. C.
Wagoner, F. H.	Fr. Ag.	219 8th, Box 3753	Gibsonville, N. C.
Wagoner, J. B.	Fr. Ag.	219 8th, Box 3753	Gibsonville, N. C.
Wakefield, F. W.	Fr. Ag.	9 4th	Cresco, Pa.
Walker, G. F.	So. C. E.	125 Woodburn Rd.	Spring Hope, N. C.
Wall, H. L., Jr.	Sen. Ag. E.	13 South, Box 3609	Elams, N. C.
Wall, J. R.	Sen. Tex. Mfg.	109 5th, Box 3209	East Bend, N. C.
Wall, Shuford M.	So. Ag. E.	210 Wat., Box 3028	Lilesville, N. C.
Wallace, P. N.	Fr. Tex. Mfg.	312 "C", Box 4274	Franklinville, N. C.
Walace, R. D., Jr.	So. Ch. E.	1200 Glenwood Ave.	Raleigh, N. C.
Wallace, R. G.	Jun. M. E.	3 S. Person St.	Durham, N. C.
Walls, J. B.	Fr. Tex.	324 7th	Forest Hills, N. Y.
Walter, R. C.	Grad. M. E.	2406 Hillsboro St.	Chicago, Ill.
Walton, C. P.	So. M. E.	1 West Park Dr.	Raleigh, N. C.
Walton, W. L.	Fr. Ag. Ed.	Route 1	Raleigh, N. C.
Ward, B. F.	Fr. E. E.	Route 1, Wendell, N. C.	Zebulon, N. C.
Ward, E. H.	So. For.	228 "C"	Blackstone, Va.
Ward, J. B., Jr.	Fr. Ag.	5 9th	Ash, N. C.
Ward, R. L.	Fr. M. E.	101 10th	Charlotte, N. C.
Ward, R. S.	Fr. Ag.	207 9th	Nashville, N. C.
Ward, T. M.	Grad. Ag. Ch.	Angier	Angier, N. C.
Warlick, R. D.	Jun. Ag. Ed.	Dairy Cottage, Box 5451	Belwood, N. C.
Warner, A. N.	Fr. E. E.	208 10th	Asheville, N. C.
Warren, D. R., Jr.	Fr. Ag.	326 1911	Dunn, N. C.
Warren, J. A.	Fr. Ag. Ed.	115 Woodburn Rd.	Roseboro, N. C.
Warren, R. M.	Fr. M. E.	311 9th	Greensboro, N. C.
Warren, W. C., Jr.	Fr. I. A. Ed.	329 8th, Box 3797	Roxboro, N. C.
Warrick, W. C., Jr.	Sen. Ag. Ed.	106 6th, Box 3242	Clayton, N. C.
Waterhouse, W. T.	Fr. C. E.	2212 Hope St.	Norwich, Conn.
Waters, W. S., Jr.	So. Arch.	302 "C", Box 4267	Wilmington, N. C.
Watkins, G. H.	Jun. Tex. Mfg.	213 Woodburn Rd.	Wentworth, N. C.
Watkins, M. P.	Fr. Tex.	124 7th, Box 3324	Norwood, N. C.
Watlington, H. C.	Jun. Ch. E.	216 "C", Box 4244	Spencer, N. C.
Watson, C. K.	Grad. Tex.	2230 Hillsboro St.	Red Springs, N. C.
Watson, G. F.	Sen. Tex. Mfg.	2209 Hope St.	Salisbury, N. C.
Watson, J. M.	Fr. M. E.	Power Plant, Box 5241	Charlotte, N. C.
Watson, M. E.	Sen. E. E.	101 Wat., Box 3001	Winston-Salem, N. C.
Watson, O. F.	Sen. Ag. E.	101 Wat.	Winston-Salem, N. C.
Watson, R. S., Jr.	Sen. An. Prod.	335 "A"	Swan Quarter, N. C.
Watt, H. W.	Fr. E. E.	209 South	Charlotte, N. C.
Watters, J. V.	Sen. I. A. Ed.	331 "A", Box 5351	Bridgeport, Pa.
Watts, J. M.	So. Ag.	220 Chamberlain St.	Statesville, N. C.
Watts, R. H., Jr.	Sen. W. & D.	2513 Clark Ave.	Baldwin, N. Y.
Weant, G. E., Jr.	Sen. C. E.	104 Logan Court	Salisbury, N. C.
Weatherly, E. R.	So. Ch. E.	307 "C", Box 4271	Columbia, N. C.

Name	*Classification*	*School Address*	*Home Address*
Weaver, D. S.	Jun. Ch. E.	520 Daughtridge St.	Raleigh, N. C.
Weaver, F. D., Jr.	Jun. Ch. E.	226 South, Box 3558	Wilmington, N. C.
Weaver, J. R., Jr.	Jun. M. E.	309 6th, Box 3269	Hickory, N. C.
Weaver, K. E.	Fr. I. A. Ed.	401 New Bern Ave.	Raleigh, N. C.
Weaver, R. E.	So. Ch. E.	14 Dixie Trail	Asheville, N. C.
Webb, J. A.	Jun. Tex. Mfg.	2407 Clark Ave.	Mt. Airy, N. C.
Webster, E. K., Jr.	Fr. M. E.	233 7th, Box 3365	Haddon Heights, N. J.
Weems, G. L.	Fr. Ag.	332 1911	Westfield, N. J.
Welch, S. B.	Jun. Tex. Mfg.	4 Ferndell Lane	Charlotte, N. C.
Wellons, J. A.	Sen. C. E.	517 Polk St.	Raleigh, N. C.
Wessell, C. B.	Fr. Geol. E.	316 "C", Box 4278	Wilmington, N. C.
Wesson, R. H.	So. Ag.	301 Park Ave.	Littleton, N. C.
Wesson, W. T.	Grad. F. M. & F. F.	2220 Hillsboro St.	Raleigh, N. C.
West, S. G., Jr.	So. M. E.	2407 Clark Ave.	Greensboro, N. C.
Westbrook, O. A., Jr.	Fr. M. E.	618 Hillsboro St.	Garner, N. C.
Westbrook, S. E.	Fr. Ag.	123 8th, Box 3723	Dunn, N. C.
Westbrook, W. G., Jr.	So. M. E.	1104 Harp St.	Raleigh, N. C.
Westray, J. W.	Fr. M. E.	327 1911	Spring Hope, N. C.
Wharton, W. L., Jr.	Fr. For.	228 1911	Winston-Salem, N. C.
Wheatley, C. H.	Sen. Arch. E.	18 Horne St.	Washington, N. C.
Wheeler, D. H.	Fr. Ag. Ed.	228 8th	Louisburg, N. C.
Wheeler, G. J.	So. Ag. Ed.	111 W. Jones St.	Louisburg, N. C.
Wheeler, M. H.	Sen. E. E.	206 Wat., Box 3024	Benson, N. C.
Wheless, R. E.	Fr. Ag.	329 8th, Box 3797	Louisburg, N. C.
Whetstone, G. W.	Fr. Ag. Chem.	315 8th, Box 3783	Philadelphia, Pa.
Whitaker, J. O.	Jun. Dairy Mfg.	15 South, Box 3611	Horse Shoe, N. C.
White, C. W., Jr.	Fr. Ag. Ed.	126 8th, Box 3726	Aulander, N. C.
White, E. S.	Fr. Ag. Ed.	115 Woodburn Rd.	Colerain, N. C.
White, F. B., Jr.	So. Tex. Mfg.	303 Wat., Box 3039	Lenoir, N. C.
White, Joseph E., Jr.	Jun. M. E.	209 Wat., Box 3027	Oak Hill, W. Va.
White, Julian E., Jr.	Jun. Dairy Mfg.	309 W. Edenton St.	Raleigh, N. C.
White, J. M., Jr.	Fr. M. E.	1103 Harvey St.	Raleigh, N. C.
White, J. R.	Fr. M. E.	221 8th, Box 3702	Elizabethtown, N. C.
White, N. B.	Sr. F. C. & P. B.	204 6th, Box 3252	Manson, N. C.
White, V. E.	Jun. Ag. Ed.	305 4th, Box 3131	Aulander, N. C.
Whitehead, L. G.	Fr. Ag.	234 1911	Scotland Neck, N. C.
Whitehead, W. L.	Jun. Ch. E.	8 Ferndell Lane	Charlotte, N. C.
Whitehurst, W. B.	So. Tex. Mfg.	222 "C", Box 4250	Greensboro, N. C.
Whitener, W. J.	Fr. Cer. E.	202 8th, Box 3736	Gastonia, N. C.
Whiteside, Carl	Jun. An. Prod.	105 6th, Box 3241	Rutherfordton, N. C.
Whitfield, J. K.	Fr. M. E.	225 8th, Box 3759	Asheboro, N. C.
Whitley, M. R.	Sen. E. E.	110 5th, Box 3210	Washington, N. C.
Whitley, R. W.	Grad. Soils.	106 4th, Box 3116	Raeford, N. C.
Whitley, S. D.	So. Ag. Ed.	202 4th, Box 3120	Matthews, N. C.
Whitson, Charles	Sen. M. E.	212 South, Box 3544	Asheville, N. C.
Whitted, David R.	Jun. E. E.	122 "C", Box 5384	Elizabethtown, N. C.
Whitten, H. A.	Grad. Ag. Chem.	308 4th, Box 3132	Glendale, S. C.
Whittington, C. W.	Jun. Ch. E.	229 South	Snow Hill, N. C.
Wicker, J. S.	Sen. W. C. & Mgt.	5 South, Box 3601	Sanford, N. C.
Wiggin, N. K.	So. Tex. Mfg.	235 "A", Box 4162	Manoa, Pa.
Wiggins, C. A., Jr.	Fr. M. E.	133 8th, Box 3733	Kinston, N. C.
Wiggs, J. H.	Fr. M. E.	113 "C", Box 4210	Mt. Olive, N. C.
Wiggins, G. T.	So. An. Prod.	19 South, Box 3615	Sunbury, N. C.
Wiggins, J. E., Jr.	Sen. For.	14 8th, Box 3816	Rocky Mount, N. C.
Wilburn, J. M., Jr.	Sen. Ag. Ed.	Route 5	Raleigh, N. C.
Wilder, C. A.	Jun. Ag. Ed.	119 South, Box 3519	Carthage, N. C.
Wiley, T. A., Jr.	Fr. M. E.	206 7th, Box 3338	Key West, Fla.
Wilfong, J. J.	Jun. Ag.	229 "A", Box 4158	Mocksville, N. C.
Wilkie, H. G.	Fr. M. E.	114 8th, Box 3714	Forest City, N. C.
Willard, G. S., Jr.	Grad. Ind. Ed.	Wilson, N. C., Box 1241	Raleigh, N. C.
Willcox, John, Jr.	Fr. Ag.	324 7th	Carthage, N. C.

Name	*Classification*	*School Address*	*Home Address*
Willey, W. S., Jr.	Fr. For.	1706 Center Road	Raleigh, N. C.
Williamowsky, D. J.	So. M. E.	309 "C", Box 4272	Washington, D. C.
Williams, C. F., Jr.	Fr. M. E.	2711 Everett Ave.	Raleigh, N. C.
Williams, D. E.	Fr. Ag.	West Raleigh, Box 5723	Raleigh, N. C.
Williams, D. M.	Fr. Ag.	State College Sta., Box 5723	Raleigh, N. C.
Williams, F. C.	Auditor.	1814½ Arlington St.	Raleigh, N. C.
Williams, F. D.	Jun. For.	303 "A", Box 4169	Rocky Mount, N. C.
Williams, H. L.	Fr. Tex.	N. Y. A. Center, Box 5477	Goldsboro, N. C.
Williams, J. E.	Sen. Tex. Mfg.	18 Horne St.	Greenville, N. C.
Williams, J. F., Jr.	So. For.	303 "A"	Windsor, N. C.
Williams, J. R.	So. For.	1107 Glendale Ave.	Greenville, N. C.
Williams, J. Ronald	Sen. C. E.	115 Woodburn Rd.	Arlington, Va.
Williams, L. C., Jr.	So. C. E.	211 Hawthorne Rd.	Salisbury, N. C.
Williams, L. H.	So. Ag. Chem.	1913 McCarthy St.	Raleigh, N. C.
Williams, M. S.	So. Ag.	109 "A", Box 4107	Hillsboro, N. C.
Williams, O. A., Jr.	Fr. Arch. E.	118 7th, Box 3318	Goldsboro, N. C.
Williams, R. B.	Sen. Ch. E.	327 South, Box 3591	Warrenton, N. C.
Williams, T. D.	Sen. Ch. E.	2008 Hillsboro St.	Winston-Salem, N. C.
Williams, T. G.	Fr. Arch.	209 7th, Box 3341	Greensboro, N. C.
Williams, T. M.	Sen. Ch. E.	405 Calvin Rd.	Raleigh, N. C.
Williams, W. S., Jr.	Jun. Tex. Mfg.	233 "A"	Middlesex, N. C.
Williamson, Bailey Peyton	Fr. Ag.	1514 Glenwood Ave.	Raleigh, N. C.
Williamson, J. C., Jr.	So. Ag.	2406 Hillsboro St.	Bethel, N. C.
Williford, W. C.	Fr. Ag.	205 9th	Elm City, N. C.
Willis, D. S., Jr.	Fr. Flori.	2902 Clark Ave.	Raleigh, N. C.
Willis, J. W.	Sen. Elec. E.	12 South, Box 306	Memphis, Tenn.
Wilson, B. D., Jr.	Fr. Arch. E.	2408 Fairview Rd.	Raleigh, N. C.
Wilson, C. E., Jr.	Fr. E. E.	305½ Calvin Rd.	Raleigh, N. C.
Wilson, D. W.	Fr. Ag.	239 1911	Linwood, N. C.
Wilson, G. W., Jr.	So. Ag.	112 5th, Box 3212	Danville, Va.
Wilson, John A.	So. Flori.	320 "A", Box 4183	Louisburg, N. C.
Wilson, James Malcolm	Fr. Tex.	N. Y. A., Box 5477	Roanoke Rapids, N. C.
Wilson, J. W., Jr.	Fr. Ag.	302 7th, Box 3368	Louisburg, N. C.
Wilson, S. K., Jr.	So. Ag.	115 6th, Box 4212	Guilford College, N. C.
Wilson, S. L.	Sen. For.	1720 Hillsboro St.	Arlington, Va.
Wilson, T. E.	Jun. Entomology	121 Montgomery St.	Soonchum, Korea
Wilson, W. S.	Sen. E. E.	103 Fifth, Box 3113	Yanceyville, N. C.
Winborne, Willard T.	So. Ag. Ed.	134 Woodburn Rd.	Bailey, N. C.
Winchester, D. R.	So. Ch. E.	310 South, Box 3574	Monroe, N. C.
Winchester, J. D.	Fr. Ag. E.	3 9th, Box 4336	Summerfield, N. C.
Winchester, R. B.	Grad. Ag. Ed.	2409 Stafford Ave.	Summerfield, N. C.
Windley, W. D.	Sen. M. E.	105 6th, Box 3241	Belhaven, N. C.
Winfrey, I. E., Jr.	So. C. E.	325 "C", Box 4287	Winston-Salem, N. C.
Wingate, J. J.	Fr. Arch. E.	307 7th, Box 3373	Durham, N. C.
Winn, Wendall L.	Jun. Land. Arch.	4 Ferndell Lane	Norfolk, Va.
Winslow, A. T.	So. Tex.	222 South, Box 3554	Scotland Neck, N. C.
Winstead, B. E., Jr.	Fr. M. E.	132 7th, Box 3332	Rocky Mount, N. C.
Winstead, R. C.	Jr. I. Arts. Ed.	317 South, Box 3581	Semora, N. C.
Winstead, R. W.	Fr. For.	109 "C"	Macclesfield, N. C.
Winston, E. H.	So. Tex. Mfg.	311 "C", Box 4273	Brooklyn, N. Y.
Witten, A. E.	Jun. C. E.	203 "C", Box 4234	Gastonia, N. C.
Wofford, W. G.	So. Poul. Sc.	205 Forrest Rd.	Hartsville, S. C.
Woltz, H. H.	Fr. F. C. & Pl. Br.	2211 Hope St.	Bullock, N. C.
Wommack, K. L.	Jun. M. E.	309 8th, Box 3777	Winston-Salem, N. C.
Wommack, W. W.	So. Ch. E.	302 Wat., Box 3038	Winston-Salem, N. C.
Wood, J. A.	Fr. For.	234 7th, Box 3366	Brevard, N. C.
Wood, R. B.	Fr. M. E.	105 10th	Coral Gables, Fla.
Wood, R. N.	Fr. Ag.	203 7th, Box 3335	Graham, N. C.
Wood, R. W.	So. For.	333 "C", Box 4294	Port Richmond, N. Y.
Wood, T. L., Jr.	Fr. Arch.	117 8th, Box 3717	Winston-Salem, N. C.
Woodall, E. L., Jr.	So. Cer. E.	102 Wat., Box 3002	Smithfield, N. C.

Name	*Classification*	*School Address*	*Home Address*
Woodard, G. V.	So. Ag.	115 "C"	Spring Hope, N. C.
Woodhouse, C. B.	Sen. W. C. & Mgt.	5 South, Box 3601	Elizabethtown, N. C.
Woody, G. S.	So. Ag.	2512 Clark Ave.	Snow Camp, N. C.
Woolard, B., Jr.	Fr. For.	5 Maiden Lane	Washington, N. C.
Wooler, Gus Nick	Fr. E. E.	218 7th, Box 3350	Wilson, N. C.
Woolley, C. B., Jr.	Fr. E. E.	205 10th	Charlotte, N. C.
Wooten, E. F.	Jun. E. E.	205 6th, Box 3253	Wilson, N. C.
Wooten, F. L., Jr.	So. Ch. E.	130 Woodburn Rd., Box 5344	Winston-Salem, N. C.
Wooten, J. A., Jr.	So. E. E.	314 "C", Box 4276	Rocky Mount, N. C.
Wooten, J. C., Jr.	Fr. M. E.	312 9th, Box 4332	Gastonia, N. C.
Wooten, J. E.	Fr. E. E.	2316 Hillsboro St.	Wake Forest, N. C.
Wooten, R. H.	Fr. M. E.	303 8th, Box 3771	Yadkinville, N. C.
Wooten, T. M.	Jun. Ag. Ch.	109 Oberlin Rd.	Greenville, N. C.
Worley, T. W., Jr.	So. M. E.	214½ Cox Ave.	Raleigh, N. C.
Worrell, T. S.	So. Ch. Engr.	107 6th, Box 3243	Mt. Airy, N. C.
Worsley, Ollie Carmer	Jun. M. E.	313 South	Charlotte, N. C.
Worth, Colvin M.	Jun. Ch. E.	500 Whitaker Mill Rd.	Raleigh, N. C.
Wrenn, Eugene L., Jr.	Fr. Tex. C. & D.	130 Woodburn Rd.	Kannapolis, N. C.
Wrenn, O. Z., Jr.	Jun. Ch. E.	10 South, Box 3606	Durham, N. C.
Wrenn, R. W.	Grad. Ch. E.	220½ Cox Ave.	Raleigh, N. C.
Wright, D. R., Jr.	So. Ch. E.	333 "A", Box 4195	Wilkesboro, N. C.
Wright, G. H.	So. M. E.	315 South, Box 3579	Laurinburg, N. C.
Wright, Lewis C.	Jun. Ch. E.	103 Chamberlain St.	Asheville, N. C.
Wylie, W. O.	Fr. Tex.	207 10th	Charlotte, N. C.
Yancey, S. A.	Fr. Ag.	218 "A", Box 4147	Varina, N. C.
Yancey, W. A.	So. Flori.	College Greenhouse, Box 5254	Raleigh, N. C.
Yao, Nai-Zer	Jun. Tex. Mfg.	2514 Clark Ave.	Shanghai, China
Yarbrough, F. L.	Fr. E. E.	328 7th, Box 3394	Hendersonville, N. C.
Yates, M. E.	Fr. Ind. E.	6 Ferndell Lane	Rochester, N. Y.
Yoder, W. L., Jr.	So. E. E.	2208 Ridgecrest St.	Raleigh, N. C.
Yopp, Glenwood	Fr. M. E.	204 10th	Wilmington, N. C.
York, B. M.	So. Arch. E.	23 Logan Court	Raleigh, N. C.
York, T. L.	So. Ag.	218 "A", Box 4147	Waynesville, N. C.
Young, A. N.	Fr. M. E.	205 7th	Oxford, N. C.
Young, B. L., Jr.	Fr. M. E.	102 8th, Box 3702	Salisbury, N. C.
Young, E. O.	Sen. E. E.	240 1911	Oxford, N. C.
Young, G. G.	Sen. E. E.	316 Wat., Box 3052	Swannanoa, N. C.
Young, J. W.	Sen. Ch. E.	316 Wat., Box 3052	Asheville, N. C.
Young, Marvin P., Jr.	So. E. E.	319 South, Box 3583	Princeton, N. C.
Young, R. E.	Fr. Arch. E.	325 8th, Box 3793	Winston-Salem, N. C.
Yount, Charles B.	Fr. Ag.	228 1911	Hickory, N. C.
Younts, W. E., Jr.	Fr. Dairy Mfg.	331 1911	Greensboro, N. C.
Youse, J. R.	Fr. Tex.	111 7th, Box 3311	Baltimore, Md.
Yung, Yang Zung	Sen. Tex. Mfg.	8 Ferndell Lane	Shanghai, China
Zachary, L. P., Jr.	So. Ch. Engr.	113 "A", Box 4110	Taylorsville, N. C.
Zeckendorf, S. L.	Fr. Soils	226 7th, Box 3358	Newark, N. J.
Zehner, Richard F.	Jun. Ag. Ed.	2715 Vanderbilt Ave.	Reading, Pa.
Zellweger, E. R.	Fr. Gen. E.	301 "C", Box 6624	Palisade, N. J.