CATALOGUE

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VOL. 16 No. 1

JUNE, 1917

WEST RALEIGH, N. C.

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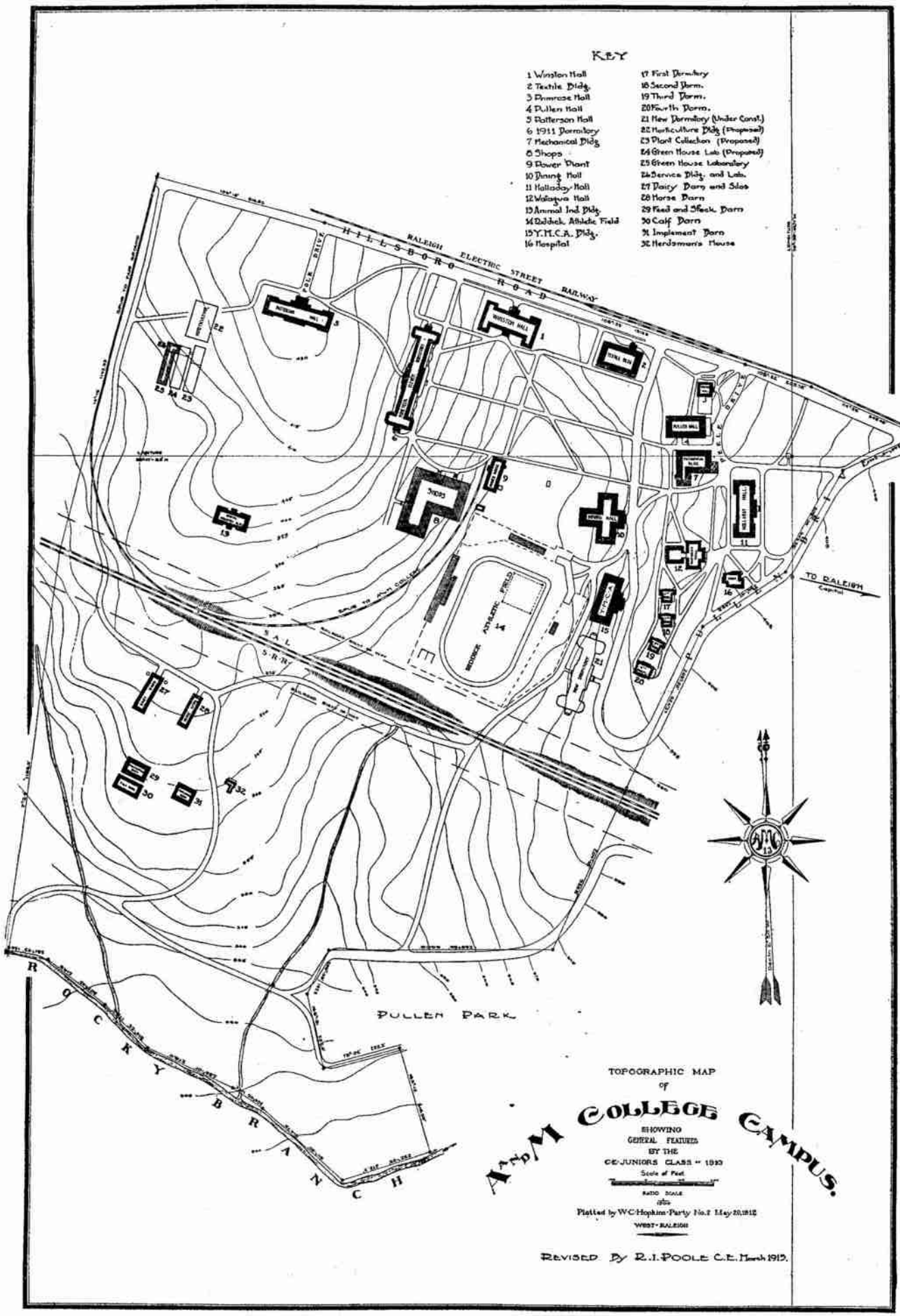
KEY
1 Winston Hall
2 Textile Bldg.
3 Primrose Hall
4 Pullen Hall
5 Patterson Hall
6 1911 Dormitory
7 Mechanical Bldg.
8 Shops
9 Power Plant
10 Dining Hall
11 Holladay Hall
12 Wallace Hall
13 Animal Ind. Bldg.
14 Riddick Athletic Field
15 Y.M.C.A. Bldg.
16 Hospital
17 First Dormitory
18 Second Dorm.
19 Third Dorm.
20 Fourth Dorm.
21 New Dormitory (Under Const.)
22 Horticulture Bldg (Proposed)
23 Plant Collection (Proposed)
24 Green House Lab (Proposed)
25 Green House Laboratory
26 Service Bldg. and Lab.
27 Dairy Barn and Silos
28 Horse Barn
29 Feed and Sheep Barn
30 Calf Barn
31 Implement Barn
32 Herdsmen's House
HILLSBORO ROAD
RALEIGH ELECTRIC STREET RAILWAY
PULLEN DRIVE
WINSTON HALL
PATTERSON HALL
PRIMROSE HALL
PULLEN HALL
HOLLADAY HALL
SHOPS
POWER PLANT
HOSPITAL
Y.M.C.A.
BRIDGE ATHLETIC FIELD
TO RALEIGH
Capitol
S.A.L. R.R.
ROCKY BRANCH
PULLEN PARK
TOPOGRAPHIC MAP
OF
A and M COLLEGE CAMPUS.
SHOWING
GENERAL FEATURES
BY THE
CE-JUNIORS CLASS — 1913
Scale of Feet
RATIO SCALE
1/600
Platted by W.C. Hopkins-Party No. 2 May 20, 1912
WEST-RALEIGH
REVISED BY R.I. POOLE C.E. March 1913.

THE

NORTH CAROLINA STATE COLLEGE

OF

AGRICULTURE AND ENGINEERING

WEST RALEIGH

1916-1917

RALEIGH
EDWARDS & BROUGHTON PRINTING COMPANY
STATE PRINTERS AND BINDERS
1917

Published June, 1917

Calendar

1917

JANUARY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

FEBRUARY

				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

MARCH

				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

APRIL

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

MAY

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

JUNE

					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

JULY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

AUGUST

			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

SEPTEMBER

						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

OCTOBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

NOVEMBER

				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

DECEMBER

						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

1918

JANUARY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

FEBRUARY

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3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

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3	4	5	6	7	8	9
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31						

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S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

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5	6	7	8	9	10	11
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S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
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				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
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25	26	27	28	29	30	31

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1	2	3	4	5	6	7
8	9	10	11	12	13	14
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S	M	T	W	T	F	S
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8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

TABLE OF CONTENTS.

COLLEGE CALENDAR.

1917.

Tuesday,	June	12.	Summer School begins.
Wednesday,	September	5.	Entrance examinations at the College, 8:30 a.m.
Thursday,	September	6.	First Term begins; Registration Day.
Tuesday,	October	30.	Farmers' Course begins.
Thursday,	November	29.	Thanksgiving Day.
Thursday,	December	20.	First Term ends.

1918.

Thursday,	January	3.	Second Term begins; Registration Day.
Sunday,	May	26.	Baccalaureate Sermon.
Monday,	May	27.	Alumni Day. Annual Oration.
Tuesday,	May	28.	Commencement Day. Annual Meeting of Trustees.

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Name.	*Postoffice.*	*Term Expires.*
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C. W. GOLD	Greensboro	March 20, 1919.
T. E. VANN	Como	March 20, 1919.
P. S. BOYD	Mooresville	March 20, 1919.
W. E. DANIEL	Weldon	March 20, 1921.
W. H. RAGAN	High Point	March 20, 1921.
W. B. COOPER	Wilmington	March 20, 1921.
A. M. DIXON	Laurinburg	March 20, 1921.
M. B. STICKLEY	Concord	March 20, 1923.
T. T. BALLENGER	Tryon	March 20, 1923.
W. H. WILLIAMSON	Raleigh	March 20, 1923.
O. L. CLARK	Clarkton	March 20, 1923.
EVERETT THOMPSON	Elizabeth City	March 20, 1925.
R. H. HICKS	Rocky Mount	March 20, 1925.
W. R. BONSAL	Hamlet	March 20, 1925.
D. R. NOLAND	Crabtree	March 20, 1925.

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A.B. 1885, University of North Carolina; C.E. 1890, Lehigh University; LL.D. 1917, Wake Forest College.

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A.B. 1883, A.M. 1885, Davidson College; Fellow in Chemistry, 1889-1890, Cornell University.

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A.M. 1889, Wake Forest College.

THOMAS NELSON,
Professor of Textile Industry.

Preston (England) Technical School.

CLIFFORD LEWIS NEWMAN,
Professor of Agriculture.

B.S. 1886, M.S. 1887, Alabama Polytechnic Institute.

WILLIAM HAND BROWNE,
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A.B. 1890, Certificate in Electrical Engineering 1892, Johns Hopkins University.

HOWARD ERNEST SATTERFIELD,
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B.S. 1904, M.E. 1909, Purdue University.

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B.S. 1886, S. C. Military Academy; Ph.D. 1891, Johns Hopkins University.

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B.Agr. 1899, B.S. 1900, University of Missouri; D.V.S. 1903, Kansas City Veterinary College.

JOSHUA PLUMMER PILLSBURY,
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B.S. 1910, Pennsylvania State College.

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B.S. 1908, University of Missouri; M.S. 1909, University of California.

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B.A. 1907, Ohio State University.

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A.B. 1902, Wake Forest College.

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B.A. 1909, Leland Stanford University.

BENJAMIN FRANKLIN KAUPP,
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*On leave.

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B.S. 1915, N. C. College of Agriculture and Mechanic Arts.

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Assistant Director in Charge Mountain Station, Buncombe County, Swannanoa, N. C.

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T. M. HILL,
Assistant Chemist.

[3]V. R. HERMAN,
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[3]J. H. HALL, JR.
Assistant Agronomist.

S. F. DAVIDSON,
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[2]A. L. JERDAN,
Field Agent, Beef Cattle Work.

[2]L. I. CASE,
Assistant Field Agent, Beef Cattle Work.

C. E. HASKETT,
Assistant in Marketing.

E. E. CULBRETH,
Examiner in Rural Credits.

A. F. BOWEN,
Bursar.

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---

[1] In coöperation with the United States Department of Agriculture, States Relations Service.
[2] In coöperation with the United States Department of Agriculture, Bureau of Animal Industry.
[3] In coöperation with the United States Department of Agriculture, Bureau of Plant Industry.
[4] In coöperation with the United States Department of Agriculture, Office of Roads and Rural Engineering.
[5] In coöperation with the United States Department of Agriculture, Office of Farm Management.

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These agents are employed jointly by the College and the State Department of Agriculture and the United States Department of Agriculture.

Name.	*Postoffice.*	*County.*
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T. E. Browne,	West Raleigh,	Wake.
A. K. Robertson,	West Raleigh,	Wake.
E. S. Millsaps,	Statesville,	Iredell.
T. D. McLean,	Aberdeen,	Moore.
R. W. Freeman,	Wilson,	Wilson.
J. P. Kerr,	Haw River,	Alamance.
E. C. Turner,	Mebane,	Alamance.
J. W. Cameron,	Polkton,	Anson.
R. K. Craven,	Abbottsburg,	Bladen.
J. E. Latham,	Surry,	Beaufort.
E. L. Perkins,	Morganton,	Burke.
R. T. Melvin,	Supply,	Brunswick.
E. D. Weaver,	Weaverville,	Buncombe.
J. C. Hunter,	Yanceyville,	Caswell.
H. H. B. Mask,	Newton,	Catawba.
R. L. Edwards,	Ore Hill,	Chatham.
R. M. Gidney,	Shelby,	Cleveland.
G. M. Goforth, Jr.,	Lenoir,	Caldwell.
R. D. Goodman,	Concord,	Cabarrus.
J. J. Hunter,	Chadbourn,	Columbus.
C. W. Clark,	Fayetteville,	Cumberland.
J. W. Sears,	New Bern,	Craven.
L. C. Gilstrap,	Murphy,	Cherokee.
E. D. Bowditch,	Hayesville,	Clay.
M. R. McGirt,	Durham,	Durham.
Zeno Moore,	Whitakers,	Edgecombe.
John A. Boone,	Franklinton,	Davidson.
Bruce Anderson,	Winston-Salem,	Forsyth.
E. H. Anderson,	Greensboro,	Guilford.
J. M. Gray,	Gastonia,	Gaston.
J. A. Morris,	Oxford,	Granville.
D. J. Middleton,	Snow Hill,	Greene.

Name.	*Postoffice.*	*County.*
W. H. Ferguson,	Waynesville,	Haywood.
R. N. Looper,	Raeford,	Hoke.
E. W. A. McMurray,	Scotland Neck,	Halifax.
W. J. A. Patterson,	Airlie,	Halifax.
W. H. Turlington,	Duke,	Harnett.
G. E. Dull,	Statesville,	Iredell.
Lacy John,	Smithfield,	Johnston.
R. R. McIver,	Sanford,	Lee.
W. L. Smarr,	Lincolnton,	Lincoln.
M. A. Bennett,	Troy,	Montgomery.
Clyde L. Davis,	Aberdeen,	Moore.
J. R. Sams,	Marshall,	Madison.
J. L. Holliday,	Williamston,	Martin.
R. W. Graeber,	Charlotte,	Mecklenburg.
R. W. Bailey,	Marion,	McDowell.
J. P. Herring,	Wilmington,	New Hanover.
G. D. Burroughs,	Nashville,	Nash.
F. A. Brown,	Roxboro,	Person.
B. T. Ferguson,	Greenville,	Pitt.
C. L. Proffitt,	Columbus,	Polk.
G. W. Falls,	Elizabeth City,	Pasquotank.
I. H. Faust,	Asheboro,	Randolph.
J. B. Hicks,	Rockingham,	Richmond.
L. E. Blanchard,	Lumberton,	Robeson.
S. S. Stabler,	Salisbury,	Rowan.
C. C. Proffitt,	Rutherfordton,	Rutherford.
F. S. Walker,	Reidsville,	Rockingham.
J. A. Turlington,	Salemburg,	Sampson.
McDonald Davis,	Clinton,	Sampson.
S. J. Lentz,	Norwood,	Stanly.
W. P. Holt,	Danbury,	Stokes.
J. W. Johnson,	Mount Airy,	Surry.
T. J. W. Broom,	Monroe,	Union.
F. B. Newell,	Warrenton,	Warren.
N. B. Stevens,	Plymouth,	Washington.
W. H. Chamblee,	Wakefield,	Wake.
A. G. Hendren,	Straw,	Wilkes.
J. Brockington,	Wilson,	Wilson.
F. E. Patton,	Burnsville,	Yancey.

MILITARY ORGANIZATION.

Commandant of Cadets.

CAPTAIN HUGH H. BROADHURST, United States Cavalry.
FIRST SERGEANT W. R. DUPREE, U. S. Army, Assistant Instructor Military Science.

Cadet Lieutenant Colonel.

G. K. MIDDLETON.

Cadet Majors.

N. W. WELDON.
W. E. MATTHEWS.

Regimental Staff.

G. G. AVANT, Captain and Adjutant.
J. A. STALLINGS, Captain and Quartermaster.

Noncommissioned Staff.

W. Z. BETTS, Regimental Sergeant Major.
G. B. BLUM, Regimental Quartermaster Sergeant.

Band.

G. G. BAKER, Captain.
J. K. COGGIN, First Sergeant.
A. DUNHAM, Sergeant.
R. L. LEWIS, Sergeant.
C. B. SKIPPER, Sergeant.
R. S. COLLINS, Corporal.
W. D. JOHNSON, Corporal.
W. T. RICE, Corporal.

Company A.

A. S. CLINE, Captain.
T. J. MARTIN, Jr., First Lieutenant.
D. S. COLTRANE, First Sergeant.

J. J. JACKSON, Sergeant.
F. L. LASSITER, Sergeant.
R. J. PEARSALL, Sergeant.
F. H. PRITCHARD, Sergeant.
W. V. BAISE, Corporal.
W. R. CUTHBERTSON, Corporal.
J. C. DUNLAP, Corporal.
H. HUDNELL, Corporal.
C. F. PHILLIPS, Corporal.

Company B.

F. J. HAIGHT, Captain.
J. W. COOPER, First Lieutenant.
J. T. LARKINS, First Sergeant.
J. L. BENBOW, Sergeant.
G. A. CLUTE, Sergeant.
G. C. COX, Sergeant.
C. K. COOKE, Sergeant.
N. A. McEACHERN, Sergeant.
J. T. WEATHERLY, Sergeant.
H. H. GORDON, Corporal.
T. P. MORRIS, Corporal.
P. W. PRESSLY, Corporal.
S. S. WALKER, Corporal

Company C.

B. D. HODGES, Captain.
E. P. HOLMES, First Lieutenant.
G. B. MILLSAPPS, First Sergeant.
S. K. JACKSON, Sergeant.
W. C. JONES, Sergeant.
B. B. STOCKARD, Sergeant.
G. F. BARBREY, Corporal.
S. O. BAUERSFELD, Corporal.
A. L. HUMPHREY, Corporal.
F. C. MORROW, Corporal.
H. M. STOFFREGEN, Corporal.
R. P. WATSON, Corporal.

Company D.

W. H. ELLIOTT, Captain.
J. F. WILLIAMS, JR., First Lieutenant.
E. A. ADAMS, First Sergeant.
E. W. FULLER, Sergeant.
E. A. HARSHAW, Sergeant.
D. R. SAWYER, Sergeant
S. G. WALKER, Sergeant.
L. W. HANDLEY, Corporal.
J. S. HATHCOCK, Corporal.
J. L. REA, Corporal.
C. B. WOOLLEY, Corporal.

Company E.

J. L. GREGSON, Captain.
Z. B. BRADFORD, First Lieutenant.
J. R. HAUSER, First Sergeant.
B. C. ALLEN, Sergeant
J. M. BARNHARDT, Sergeant.
A. J. BOYD, Sergeant.
P. B. FLEMING, Sergeant.
H. P. MASSEY, Sergeant.
G. L. CLEMENT, Corporal.
H. L. HERMAN, Corporal.
F. B. LONG, Corporal.
J. B. TURLEY, Corporal
B. C. WILLIAMS, Corporal.

Company F.

J. W. HENDRICKS, Captain.
W. L. PARSONS, First Lieutenant.
T. B. ELLIOTT, First Sergeant.
T. A. BELK, Sergeant.
E. B. GARRETT, Sergeant.
C. R. LEONARD, Sergeant.
W. D. LEE, Sergeant.
W. M. RUSS, Sergeant.
E. D. WALDIN, Sergeant.
J. H. CLICK, Corporal.
A. B. McCORMICK, Corporal.
M. P. SANFORD, Corporal.
T. G. YOUNG, Corporal.

Company G.

L. E. WOOTEN, Captain.
F. C. McNEILL, First Lieutenant.
M. H. CHEDESTER, Second Lieutenant.
W. T. COMBS, First Sergeant.
W. C. AUSTIN, Sergeant.
B. C. BAKER, Sergeant.
R. A. CROWELL, Sergeant.
M. G. JAMES, Sergeant.
R. V. TERRY, Sergeant.
W. T. WRAY, Sergeant.
H. S. DREW, Corporal.
C. J. GOLDSTON, Corporal.
H. J. HUNT, JR., Corporal.
J. E. COURTNEY, Corporal.
B. U. ROSE, Corporal.

Company H.

E. H. HOLTON, Captain.
J. W. AVERA, Sergeant.
L. KISER, First Sergeant.
J. W. BAILEY, Sergeant.
M. M. DEW, Sergeant.
T. W. HANCOCK, Sergeant.
B. D. GLENN, Sergeant.
J. H. W. BONITZ, Corporal.
J. G. LEONARD, Corporal.
M. L. MATTHEWS, Corporal.
W. C. MURRELL, Corporal.
G. R. ROBINSON, Corporal.

GENERAL INFORMATION.

During the years in which North Carolina was emerging from the economic havoc wrought by Civil War and Reconstruction, some farsighted men began to see the necessity of rearing industrially equipped men. They felt keenly the need of competent men to build and direct new industries, and to restore the land which had been impoverished partly by slave labor. They recognized that men capable of doing what was needed would have to be educated in industrial schools and technical colleges.

The first organized body to take steps for the establishment of a State industrial institution in North Carolina was the Watauga Club. This club, composed of bright young men, explained its mission by declaring that it was "an association in the city of Raleigh designed to find out and make known information on practical subjects that will be of public use." In 1885 this club presented to the Legislature a memorial urging that body "to establish an industrial school in North Carolina which shall be a training place for young men who wish to acquire skill in the wealth-producing arts and sciences."

This memorial quickened general interest in the proposed school, and several bills looking to its foundation were introduced in the Legislature of 1885. On March 7th, one of these bills, introduced by Hon. Augustus Leazar, of Iredell County, became a law. This law provided that the Board of Agriculture should seek proposals from the cities and towns of the State, and that the school should be placed in the town offering the most inducements. The Board of Agriculture finally accepted an offer from the city of Raleigh.

Meantime, the ideas of the advocates of the school had been somewhat broadened as to the character of the proposed institution.

These men saw that Congress was about to supplement the original land grant by an additional appropriation for agricultural and mechanical colleges in each State. The originators of the conception then sought the aid of progressive farmers in order to change the school into an Agricultural and Mechanical College. Col. L. L. Polk, the editor of the newly-established Progressive Farmer, threw the weight of his paper heartily into the idea. Meetings were held in various places, and two very large meetings in Raleigh considered the proposition. As a result, the school already provided for was by action of the Legislature of 1887

changed into an Agricultural and Mechanical College, and the Congressional Land Scrip Fund was given the newly formed institution. In addition, the law directed that any surplus from the Department of Agriculture should go into the treasury of the college. Mr. R. Stanhope Pullen, one of Raleigh's most broad-minded citizens, gave the institution eighty-three acres of land in a beautiful suburb of Raleigh. Additional funds were afterwards provided by the Supplemental Morrill Bill passed by Congress in 1890, by the Nelson Bill of 1907, and by State appropriations. The first building was completed in 1889, and the doors of the College were opened for students in October, 1889. Seventy-two students, representing thirty-seven counties, were enrolled the first year. The faculty consisted of six full professors and two assistants. From this small beginning in 1889, the College has grown steadily from year to year.

The College is beautifully located on the extension of Hillsboro Street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from the city mains and from twelve deep wells on the College grounds. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns four hundred and eighty-six acres of land. Fifteen hundred young trees and nine hundred and forty vines are growing in an orchard of twenty-five acres. Seven acres are devoted to truck growing. The campus consists of about thirty acres of rolling land, which is being improved as rapidly as circumstances permit.

BUILDINGS.

The College possesses the following buildings all of which are well lighted, heated and ventilated, and adequately protected against fire:

Holladay Hall, the administration building, 170 feet long by 64 feet deep, is a three-story brick structure with a basement. The basement floor is devoted to the class-rooms and laboratories of the Physics Department. The main floor contains the offices of the Executives and class-rooms of the English and Mathematics Departments.

Patterson Hall, the main Agricultural building, is a buff press-brick structure, 204 feet long by 74 deep, of two stories and a basement. The lower floor is used as a dairy with wash-rooms and sterilization chamber. The first floor provides room for the offices of the Experiment Station, and for class-rooms and laboratories

of the departments of Agronomy, Horticulture, Soils, and Agricultural Extension. The second floor accommodates the departments of Botany and Plant Pathology, and of Physiology and Veternary Medicine.

The Animal Husbandry Building is of brick, two stories and basement. Rooms of the Poultry Department and a stock-judging room are included in the basement. The first floor is occupied by the departments of Animal and Poultry Husbandry. The second floor is devoted to the Department of Zoology and Entomology for laboratories and class-rooms.

Winston Hall is built of brick, with reinforced concrete floors, three stories high, including the basement. The basement and main floor are occupied by the Civil and Electrical Engineering Departments for laboratories, instrument rooms, classrooms, and drafting rooms. The second floor contains recitation rooms and laboratories of the Department of Chemistry and the Chemical Department of the State Experiment Station.

The Mechanical Engineering Building is a plain, substantial, two-story brick building furnishing room for the drawng and recitation rooms of the Mechanical Engineering Department.

The Textile Building is a two-story brick building, 125 by 75 feet, with a basement. Its construction is similar to that of a cotton mill, and is an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

Primrose Hall, one story and a basement, is used for the classrooms of the departments of Economics and Modern Languages.

The Shop and Laboratory Building is an illustration of the standard construction of modern shop buildings. It is a one-story and part basement L-shaped structure, one dimension being 170 feet and the other 195. The basement serves as a laboratory and storage room. The main floor embraces a machine shop, woodshop, forge shop, foundry, and demonstration rooms, and tool rooms.

Pullen Building is a two-story colonial brick building with a basement. The lower floor is used as an armory. The main floor gives quarters for the library and two classrooms. The upper story serves as the College auditorium, and seats about one thousand people.

The Dining Hall, which is 144 by 54 feet, will accommodate the entire student body. A large kitchen completely supplied with modern conveniences and utensils, the preparation rooms, serving

rooms, storerooms, etc., along with the hall proper make this building an attractive feature of the college.

The Y. M. C. A. Building is the home of the greater part of voluntary student activities. It is an attractive two-story and basement brick building handsomely equipped with mission furniture throughout. The basement contains the gymnasium, swimming pool, bowling alleys, shower baths, and athletic rooms. The main floor has a large lobby, which embraces open reading and game rooms, an auditorium, a banquet hall, several bedrooms for visitors, and offices of the Association and for College publications. The upper floor contains two large society halls and rooms for Bible study classes.

The Infirmary is a two-story brick building containing separate rooms and wards for the care of the sick. Offices and rooms for the College physician and matron are also provided. The building is well equipped to serve its purposes.

Watauga Dormitory provides rooms for one hundred and twenty students. It is a three-story brick structure with a basement.

Nineteen-Eleven Dormitory, the largest dormitory on the grounds, is divided into sections by fireproof walls. It furnishes rooms for two hundred and forty students. Large and convenient bathrooms are located in the basement of the building.

First Dormitory, a two-story brick structure, affords accommodations for twenty students.

Second Dormitory, built on the same plan as the First Dormitory, will house twenty students.

Third Dormitory has rooms for twenty students.

Fourth Dormitory, a three-story brick structure, furnishes rooms for forty-eight students.

South Dormitory is a completed wing of what will soon be a handsome building similar to Nineteen-Eleven Dormitory. The wing furnishes rooms for forty-eight students.

The Farm Buildings are nine in number: six barns, capacious and modern in every respect, for the housing of the stock and storing of feedstuffs and implements; the home of the farm foreman, near the barns; the Horticulturist's home in the orchard; and the Poultry Plant, comprising the home of the instructor in charge and the various buildings and pens for the raising of fowls.

The Central Power Plant furnishes heat, light, and power for all the College buildings. The boiler plant consists of two 75-horsepower and two 100-horsepower boilers with a working steam pressure of 150 pounds. The engine plant embraces a 100-horsepower engine, generators, and steam and vacuum pumps.

AGRICULTURAL EQUIPMENT.

Agronomy.—The department has the necessary accessories for present-day instruction in Agronomy. For practice work in the field the College farm is available.

Soils.—A completely equipped laboratory affords exceptional facilities for instruction in general soils. The College farm is used for the practical work in drainage, terracing, fertilization, and study of soil types.

Horticulture.—The Service Building, Greenhouse, and a laboratory furnished with necessary apparatus are devoted to this department. The Horticultural grounds of twenty-five acres contain "Student" vegetable gardens, orchards, vineyards, plantings of berries, and spaces used for nursery purposes. The department also has charge of the development of the College campus.

Botany.—The several rooms occupied by this department are excellently equipped with apparatus and conveniences.

Animal Husbandry.—The livestock equipment represents the leading breeds. The Division owns a dairy herd of over eighty head, a flock of about seventy head of sheep, a number of hogs and Percherons. The dairy laboratory is fitted for up-to-date instruction in farm dairying. Adjoining this laboratory are two rooms equipped with modern creamery machinery. The creamery which is maintained as a commercial enterprise, provides for instructional work in cheese manufacturing.

Poultry Husbandry.—The poultry plant contains breeding pens suited to poultry keeping in North Carolina. Incubators, brooders, and other equipment are supplied. The laboratories are furnished complete with poultry appliances.

Veterinary Science.—The laboratories, dissecting and pharmacy rooms are supplied with all necessary apparatus. For class and laboratory instruction there are mounted skeletons, specimens of disease, and a collection of parasites which infest domestic animals.

Zoology and Entomology.—The second floor of the Animal Husbandry Building is devoted to this department. An excellent laboratory is provided with the usual equipment of a Zoological laboratory. The department has a museum and its own library.

ENGINEERING EQUIPMENT.

Civil Engineering.—The equipment consists of all instruments necessary for laboratory and field practice in Civil Engineering, such as transits, levels, plane tables, sextants, etc. Apparatus is

also furnished for testing cement. The department has its own library, and is well supplied with filing cases and reference maps.

Mechanical Engineering.—The Forge Shop is equipped with forty anvils and twenty double forges of the down-draft type, an exhaust system, a special gas furnace for the treatment of steel, and other necessary apparatus.

The **Foundry** equipment consists of a cupola, brass furnace, sand sifter, core machine, core oven, molding machines, and all necessary tools for bench and floor work.

The **Woodshop** is excellently equipped with lathes, saws of various kinds, planes, jointers, mortisers, sanders, and other machinery essential to an up-to-date woodshop.

The **Machine Shop** contains lathes, shapers, drill presses, grinders, planer, milling machine, and a full equipment of necessary minor tools and conveniences.

The **Mechanical Laboratory** is supplied with steam, gasolene, oil, and automobile engines; with instruments for measuring, testing, and analyzing; with 50,000-pound and 15,000-pound testing machines. The Power Plant is also available for tests.

Electrical Engineering.—For this department are provided classrooms supplied for demonstration work, a suitably furnished designing room, an instrument laboratory fitted up with standardizing apparatus and measuring instruments, a dynamo laboratory, etc. The dynamo laboratory is equipped with various kinds and sizes of dynamos and motors, and with the general apparatus used in the study of electrical machines. The machinery of the College Power Plant and of the local power company is also available for instruction and testing.

Physics.—The William Kearny Carr Physical Laboratory embraces two lecture rooms and four laboratories, excellently equipped. The research laboratory offers exceptional facilities for advanced study in Physics.

CHEMISTRY EQUIPMENT.

The entire second floor of Winston Hall is given over to three classrooms, three large laboratories, a library, and other rooms of the Chemistry Department. The equipment is extensive and complete for the many courses offered.

TEXTILE EQUIPMENT.

The equipment of this department consists of the latest types of cotton-mill machinery, manufactured by American builders. Elec-

tricity is used as a motive power, the machinery of each department in the building being driven by a separate motor.

Carding Department.—The carding machinery is located on the second floor of the building. The opening room contains the machinery for ginning, thread-extracting, and lapping. The carding machinery consists of flat cards, drawing frames, lap machines, combing machines, roving frames, a railway head and a slubber.

Spinning Department.—This department is also located on the second floor. The equipment consists of four spinning frames, and machinery for spooling, twisting, reeling, winding, and warping.

Weaving Department.—The entire main floor is given over to this department. For warp preparation the equipment consists of bobbin-winding machines, beaming machines, and a slasher. The looms, twenty-six in number, manufacture sheeting, gingham, toweling, bagging, and all kinds of fancy goods. The finishing is done by sewing and rolling, inspecting, and brushing machines.

Dyeing Department.—The basement of the building is fitted up with a classroom, laboratory, and dyehouse for instruction in dyeing and with dyeing machinery. The laboratory has all the necessary apparatus for experimental and practical instruction. The dyehouse is equipped with the proper machinery needed in the dyeing of large quantities of material.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly, ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, known as the Hatch Act, which made a donation to each State for the purpose of investigations in agriculture, and for publishing the same. The funds of the Experiment Station were further supplemented by the act of Congress of March 16, 1906, known as the Adams Act. Under the requirements of the Hatch Act, the Station became a department of the College and was conducted jointly by the College and the Department of Agriculture from 1889 to 1907, with the exception of three years. Under an agreement entered into between the Board of Trustees of the College and the Board of Agriculture in January, 1912, and authorized by act of the Legislature of 1913, the work of the Experiment Station, which covers all of the experimental work in agriculture in the State, is jointly conducted and supported by the College and State Department of Agriculture.

The experimental work in the field in agriculture, horticulture, stock and poultry raising, dairying, etc., is conducted on the College farm and on the test farms of the Department of Agriculture in different parts of the State, and the laboratory investigations are conducted in the laboratories of the two institutions.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering questions.

Bulletins relating to general farm matters, embodying the results of the experiments, are sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, West Raleigh, will bring these publications. The Station is glad also to answer letters of inquiry.

AGRICULTURAL EXTENSION SERVICE.

Yearly increasing amounts of Extension work have been done by the College of Agriculture and Mechanic Arts, the North Carolina Department of Agriculture, and the Experiment Station since their organization. At first this took the form of analyses of fertilizers, marls, phosphates, composts, and various agricultural products, and advice on these several matters. Farmers' Institutes were started at a later date and are continued at the present, and other forms of Extension service have been conducted along a number of lines. In 1906 Farm Demonstration work, through county agents and special workers, was begun, and Boys and Girls' clubs were soon made a part of it.

This division conducts the Corn Clubs, Poultry Clubs, Pig Clubs, Potato Clubs, and Peanut Clubs for the boys and girls of the State, and the Canning Clubs for the girls. The active membership of these clubs is confined to young people between the ages of ten and eighteen years, but adults are permitted to join the Pig and Poultry Clubs, and get all instruction sent the active members. In these clubs the young people are taught to grow crops or animals upon their own farms according to the teachings of modern science, and are shown the wonderful possibilities of farming in accordance with a few fundamental scientific laws.

In addition to the instruction through monthly letters, bulletins, and visits of the Extension workers, club schools are held at the farm-life schools and at county-seats during the summer, at which the members are given two or three days of technical instruction.

There is also held at the Agricultural and Mechanical College during each August a one-week Short Course for members of all the clubs conducted by the Extension Division.

Under a joint arrangement between the State College of Agriculture, the State Department of Agriculture and the State Department of Education, perfected October 1st, 1916, the State Agent in Boys' Club Work was appointed State Supervisor of Secondary Agricultural Education. His duties pertain particularly to the supervision of the farm life schools and the direction of agricultural teaching in the rural schools of the State.

Because of the very close relation between the club work and the school work, those in authority deemed it wise to place the direction of all this work under one supervision. The club work should be made the vitalizing agency for all agricultural teaching in the rural schools. By utilizing the "Home Project" plan and having all this work supervised from the same office, the teaching and practical work will be more closely related.

In January, 1912, under an agreement entered into between the Board of Trustees of the College and the Board of Agriculture, and authorized by an act of the Legislature in 1913 (chapter 68, Public Laws of 1913), all of the Extension and Demonstration work in the State was brought together and conducted jointly by the two institutions, in coöperation with the United States Department of Agriculture.

The Congressional Smith-Lever Act of May 8, 1914, has made possible a larger development of the Extension Service. The Extension Service has for its main object the carrying of new facts and good practices obtained in experimental work and in good farming to the farmers and farm women of the State, through county men and women agents and workers in special lines. These workers spend most of their time in the field in efforts to bring about better farming, better homes, coöperation among farmers, marketing farm products, etc.

The Extension forces at headquarters are housed in the buildings of the College of Agriculture and Mechanic Arts and of the State Department of Agriculture, offices and conveniences for work having been supplied by these two institutions, and in the main equipped by them.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in many lines of industry in which training and skill are

requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill workers, manufacturers, stock raisers, fruit growers, truckers, and dairymen, by giving them not only a liberal, but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Chemistry, Dyeing, and Textile Industry. It also offers practical training in Carpentry, Woodturning, Blacksmithing, Machinist's work, Mill work, Boiler tending, Engine tending, Dynamo tending and Installation, Electric light Wiring, Armature Winding, and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads lacking in physical development, mental capacity, or moral fiber, nor for those who are unable or unwilling to observe regularity, system, and order in their daily work.

WHAT THE COLLEGE EXPECTS OF ITS STUDENTS.

The College does not have many rules. It expects that its students will live rightly for their own sakes and for the sake of the State that is educating them. The fundamental law of the College is this: Always and everywhere, be a gentleman.

A record is kept of every student. If it is apparent from this record that a student is not studying or that his conduct is not meeting the requirements of the College, such student will be required to withdraw. Scandalous, vicious, or immoral conduct will necessitate an immediate dismissal.

Students attend this College, of course, to fit themselves for a technical business life. They are therefore expected to be business-like in their habits; to be prompt in their attendance and regular at chapel, classes, shops, drills, inspections, and all other duties. To prepare themselves for their daily work, students are expected to observe in their own rooms the regular morning and evening hours of study, and to be absent from College only at the regularly

specified periods. These periods are as follows: For Juniors, Friday, Saturday, and Sunday nights; for Sophomores, Saturday and Sunday nights; for Freshmen, Sunday nights. Saturday and Sunday afternoons are liberty afternoons.

Students are expected to keep their rooms neat and sanitary; to refrain from disturbing one another by noise in the buildings or on the grounds—in short, to conduct themselves in their College home with the same courtesy, self-respect, and propriety that they do in their own homes.

Visiting poolrooms, leaving College after 11 o'clock at night, continued cigarette smoking, willful destruction of College property, drinking, immorality, gambling in all forms, hazing of any kind, disrespect to members of the Faculty or officers of the College, any conduct unbecoming a gentleman—these offenses it is expected that a student's self-respect will lead him to abstain from, and should any student be found guilty of them he will be excluded from College.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship are sent by the Registrar to parents and guardians at the end of each term. Special reports are made whenever necessary. Whenever a student fails on a subject during a month, such failure is reported to his parents. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself nor to the College.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister or layman.

Each student is expected to attend religious service in Raleigh on Sunday morning at the church of his choice. The students are always welcomed in the Sabbath schools of Raleigh, and a large number of them attend these services.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association is a voluntary organization among the students for the purpose of centralizing and directing the moral and religious life of the student body. The work

is under the direction of a General Secretary, who is employed to give his entire time to the work, and of the following student officers: president, vice-president, corresponding and recording secretaries, and treasurer. Active assistance is also given by an Advisory Committee, which includes three members of the Faculty and six prominent business men in Raleigh. The president and treasurer of the Association are *ex officio* members of this committee.

The membership fee for all College students is two dollars a year. This small fee was made possible during the session of 1916-17, when the student body, as a whole, expressed its desire of having every student, at the beginning of each term, pay over to the College Bursar *one dollar* as his dues for the ensuing term.

Only members of evangelical churches may become active members.

A hand-book, giving general information about the College, is published each spring and sent to prospective students, with a personal letter of welcome from the officers of the Association.

A large number of men are trained each year in active Christian service through membership on the following standing committees, all of which are trained by the General Secretary in their particular work: Bible Study Committee, which has charge of the organization of voluntary Bible Study classes among the students; Religious Meetings Committee, which provides speakers and arranges programs for the weekly meetings of the Association; Mission Study Committee, which provides for Mission Study among the students; Social Committee, which provides means of social entertainment and diversion; and Finance Committee. Each committee is held responsible for its part of the Association activities.

The Association is supported by a yearly appropriation from the College, and by gifts from the Faculty, the Parents of the boys, the Alumni and by its regular membership.

The Y. M. C. A. occupies its own building on the campus, which was erected at a cost of $41,000.

Parents or students wishing to obtain further information about the work of the Association may do so by addressing the General Secretary, West Raleigh, N. C.

ATHLETICS.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty it pro-

motes practice in baseball, basketball, football, track athletics, etc. The Association employs a director who devotes all of his time to the interests of this department. The athletic park is situated in the center of the College campus. It is provided with a grandstand and uncovered seats and meets the needs of the various athletic teams.

It is the aim of the College to encourage participation in athletic sports by all students as far as possible. In order to promote interest in athletics the College teams are allowed to play a limited number of games with the teams of other colleges, while all students are allowed and encouraged to take part in intramural games. The College recognizes that college athletics are promoted for the benefit of its bona-fide students, and in order to prevent abuses the following regulations in regard to intercollegiate games are in force:

Eligibility Rules of the North Carolina State College of Agriculture and Engineering.

Any student of good and regular standing shall be eligible to represent this College in athletic contests, subject to the following conditions:

1. Before any student can become a member of any athletic team in the College and take part in any intercollegiate contest, he must apply to the Faculty Committee on Athletics and secure its approval of his application. It shall be the duty of the Faculty Committee on Athletics to see that the said student is properly enrolled in the College.

2. It shall be the duty of the Athletic Committee to inquire into and make record of the athletic experience of the applicant, and it shall be the duty of the applicant to appear before the committee and answer on his honor such questions as the committee may see fit to ask.

3. No student shall take part in any contest who has taken part in intercollegiate contests for four academic years, either at this College or at any other college or university.

4. No student shall participate who is receiving, has received, or has been promised, directly or indirectly, any money or financial concessions as compensation for, or prior consideration to his playing.

5. No student shall participate in athletic sports who does not matriculate within thirty (30) days of the opening date of the current session.

6. No student shall participate who has played baseball on any league team belonging to the National Association, or to any league recognized by the National Baseball Commission as an "outlaw

league"; or who has missed any time from College work in order to play on any organized so-called "summer baseball team."

7. No student who is recognized by the Athletic Council as a member of any team shall be eligible the following session, unless he has remained as a resident student two-thirds of the preceding session, and can give satisfactory reason for not remaining the whole session.

8. No graduate student who is not a bona-fide applicant for a degree conferred by this College shall be allowed to participate.

9. No person whose name appears in the Catalogue list of officers of instruction or administration of the College and who receives remuneration therefor shall be a member of any athletic team representing the College.

10. No undergraduate student shall take part in any athletic contest who is not pursuing one of the regular prescribed courses of instruction or its equivalent, nor will he be allowed to participate if his class work be unsatisfactory.

11. No student shall be allowed to represent the College in any intercollegiate contest during any month if he has been reported deficient on a majority of his work for the preceding month.

12. No student who has been a member or a substitute member of the football or baseball team of another college or university during the preceding year shall be permitted to become a member of either team at this College during his first session. In no case shall such student be eligible for these teams at this College unless he shall have been a student here for at least one-half of the preceding session; and no student who is unable to pass examination on two-thirds of the work required for admission to the Freshman class shall be allowed to participate until he has been in College one term.

13. The object of these rules is to allow only bona-fide students to take part in athletic contests, and if it shall appear to the Faculty and Athletic Committee that any student is, or has ever been, a professional athlete, or that he is in college for the purpose of taking part in athletics and not of getting an education, such student shall not be allowed to represent the College in any athletic contest.

Note 1.—The term substitute is interpreted to mean any student who has taken part in two or more intercollegiate contests.

Note 2.—The term college is interpreted to mean any college named in the latest report of the Commissioner of Education which has as many as one hundred and fifty male students of collegiate grade recorded in its catalogue for the preceding year.

Note 3.—The term session is interpreted to mean a college year of two terms.

One-Year Residence, 1918.—Beginning with the fall of 1918, no first-year student will be eligible to take part in intercollegiate athletic contests.

LIBRARY AND READING-ROOM.

The College Library occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about eight thousand volumes. There are also reference libraries in the different departments. The library is kept open from 9 a. m. to 6 p. m. The Librarian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh is free to students, and they have the privilege of borrowing books from it.

Students are also allowed to consult books in the **State Library.**

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific, and technical research and training.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The membership is limited to twelve. The society meets monthly for the discussion of biological and agricultural questions.

Farmers' Progressive Association.—The students in the Farmers' Course in Agriculture meet every Wednesday night during the winter term for a discussion of practical problems. The meetings are conducted in the manner of a Farmers' Institute, and give training in conducting farmers' meetings, in *ex tempore* speaking on agricultural questions, and in the writing and reading of reports on various farm operations.

The Agricultural Club.—The purpose of this club is to interest the Agricultural students in the practical side of Agriculture and start them to working along progressive lines.

Weekly meetings are held at which practical topics are discussed. Essays dealing with specific problems are read and debates held on

current Agricultural questions. Liberal prizes are given in the various contests. A corn Show open to all Agricultural students is held each year by the club.

The Tompkins Textile Society.—The purpose of this society is to discuss textile problems and other subjects in connection with the textile industry. Meetings are held fortnightly, and great interest is taken in them by the textile students.

The Mechanical Engineering Society meets every week for the discussion of engineering subjects. The society is composed of Seniors and Juniors taking the Mechanical Engineering Course. Its work has proved very beneficial to its members.

Electrical Engineering Society.—A student branch of the American Institute of Electrical Engineers was organized at the College several years ago. It holds weekly meetings for the reading and discussion of papers. At convenient intervals the society makes trips for inspecting interesting electrical installations. From time to time addresses are made by visiting engineers.

Berzelius Society meets fortnightly for discussion of chemical topics, and for reports upon the leading articles in the chemical journals.

The Pullen and the Leazar Literary Societies afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Alumni Association meets each year on the Monday preceding Commencement Day, transacts its annual business, hears the Alumni oration, and attends the annual Alumni banquet. This association purposes raising funds to erect an Alumni building at the College.

The Poultry Science Club.—The Poultry Science Club is a society for the promotion of the interests of poultry study. Semi-monthly meetings are held in the Animal Husbandry and Poultry Building classrooms. At these meetings programs on poultry topics are carried out. Membership is open to all students of the College interested in the study of poultry subjects.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age and must bring a certificate of good moral character from the school last attended.

To the Four-Year Courses.

Admission to the Freshman Class of all four-year courses is by the unit system. A unit is defined as a subject pursued in schools

of approved grade for five periods a week throughout the year, each period being at least forty minutes in length.

In 1917 and until notice of change is given, eleven units will be required for unconditioned admission to the Freshman Class of all four-year courses.

Of these eleven units, eight and one-half are in specified subjects, two and one-half are elective.

Specified Subjects.

Subjects.	Units.
English	3
History	2
Mathematics	2½
Science	1
	8½

Elective Subjects.

Subjects.	Units.
Agriculture or Farm Practice	½ or 1
Botany	½ or 1
Bookkeeping	½
Chemistry	½ or 1
Civics	½
Drawing (Freehand or Mechanical)	½
History	1
French, German, or Spanish	1
Latin	3
Manual Arts	½
Mill Practice	½
Physical Geography	1
Physics	½ or 1
Physiology	½
Science, General Introductory	½
Zoology	½ or 1

Explanation of Requirements.

ENGLISH.	Units.
(*a*) Grammar and Composition	1
(*b*) Reading and Practice	1
(*c*) Study and Practice	1

(a) Grammar and Composition.—English grammar should be carefully reviewed during the high-school course, with special emphasis on correct terminology, the functions of the parts of speech, and the analysis of sentences. The study of composition is given system and unity by the use of a good text-book, but this should be accompanied with frequent written and oral exercises. Without constant practice in writing the study of the principles of composition is a waste of time. It is suggested that the exercises be generally short, one page being sufficient, on subjects chosen from the student's personal experiences and observations, not exclusively from literature. The fundamentals in composition—correct spelling, punctuation, and grammer—should be insisted upon.

(b) Reading and Practice.—The aim of this work is to foster in the student the habit of intelligent reading and to develop a taste for good literature, by giving him first-hand knowledge of some of its best specimens. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of what he reads. With a view to large freedom of choice, the books provided for reading are arranged in the following groups, from each of which at least two selections are to be made except as otherwise provided under Group 1:

GROUP 1—Classics in Translation; two to be selected: The Old Testament, comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther. Homer's *Odyssey*, with the omission, if desired, of Books, I, II, III, IV, V, XV, XVI, XVII. Homer's *Iliad*, with the omission, if desired, of Books XI, XIII, XIV, XV, XVII, XXI. Vergil's *Æneid*. The *Odyssey*, the *Iliad*, and the *Æneid* should be read in English translation of recognized literary excellence. For any selection of this group a selection from any other group may be substituted.

GROUP 2—Shakespeare; two to be selected: Shakespeare's *Midsummer Night's Dream*, *Merchant of Venice*, *As you Like It*, *Twelfth*

Night, The Tempest, Romeo and Juliet, King John, Richard II, Richard III, Henry V, Coriolanus, Julius Cæsar, Mabeth, Hamlet. (The last three only if not chosen for study.)

GROUP 3—Prose Fiction; two to be selected: Malory's *d'Arthur* (about 100 pages). Bunyan's *Pilgrim's Progress*, Part I, Swift's *Gulliver's Travels* (Voyages to Lilliput and to Brobdingnag). Defoe's *Robinson Crusoe*, Part I. Goldsmith's *Vicar of Wakefield*. Frances Burney's *Evelina;* Scott's novels: any one; Jane Austen's novels: any one; Maria Edgeworth's *Castle Rackrent*, or *The Absentee*. Dickens's novels: any one. Thackeray's novels: any one. George Elliot's novels: any one. Mrs. Gaskell's *Cranford;* Kingley's *Westward Ho!* or *Hereward the Wake*. Reade's *The Cloister and the Hearth*. Blackmore's *Lorna Doone*. Hughes's *Tom Brown's School Days*. Stevenson's *Treasure Island*, or *Kidnapped*, or *The Master of Ballantrae*. Cooper's novels: any one. Poe's *Tales*. Hawthorne's *The House of the Seven Gables*, or *Twice Told Tales*, or *Mosses from an old Manse*. A collection of short stories by various standard writers.

GROUP 4—Essays, Biography, etc.; two to be selected: The *Sir Roger de Coverley Papers*, or selections from the *Tatler* and the *Spectator* (about 200 pages). Boswell's *Life of Johnson* (about 200 pages). Franklin's *Autobiography*. Irving's *Sketch Book* (about 200 pages), or *Life of Goldsmith*. Southey's *Life of Nelson*. Selections from Lamb's *Essay's of Elia* (about 100 pages). Lockhart's *Life of Scott* (about 200 pages). Thackeray's Lectures on Swift, Addison, and Steele, in *English Humorists*. Macaulay, one of the following essays: *Lord Clive, Warren Hastings, Milton, Addison, Goldsmith, Frederic the Great*, or *Madame d'Arblay*. Trevelyan's *Life of Macaulay* (about 200 pages). Ruskin's *Sesame and Lilies*, or selections (about 150 pages). Dana's *Two Years Before the Mast*. Lincoln: the two Inaugurals, and the speeches in Independence Hall and at Gettysburg, the Last Public Address, and Letter to Horace Greeley, together with a brief memoir or estimate of Lincoln. Parkman's *The Oregon Trail*. Thoreau's *Walden*. Selected essays of Lowell (about 150 pages). Holmes's *The Autocrat of the Breakfast Table*. Stevenson's *Inland Voyage*, and *Travels with a Donkey*. Huxley's *Autobiography* and selections from *Lay Sermons*, including the addresses on *Improving Natural Knowledge, A Liberal Education*, and *A Piece of Chalk*. A collection of essays by Bacon, Lamb, DeQuincey, Hazlitt, Emerson, and later writers. A collection of letters by various standard writers.

GROUP 5— Poetry; two to be selected: Palgrave's *Golden Treasury* (first series), Books II and III, with special attention to Dry-

den, Collins, Gray, Cowper, and Burns. Palgraves's *Golden Treasury* (first series), Book IV, with special attention to Wordsworth, Keats, and Shelley (if not chosen for study). Goldsmith's *The Traveller* and *The Deserted Village*. Pope's *The Rape of the Lock*. A collection of English and Scottish Ballads, as, for example, some Robin Hood Ballads. *The Battle of Otterburn, King Estmere, Young Beichan, Bewick and Grahame, Sir Patrick Spens*, and selections of later ballads. Coleridge's *The Ancient Mariner, Christabel*, and *Kubla Khan*. Byron's *Childe Harold*, Canto III or IV, and *The Prisoner of Chillon*. Scott's *The Lady of the Lake* or *Marmion*. Macaulay's *The Lays of Ancient Rome, The Battle of Naseby, The Armada, Ivry*. Tennyson's *The Princess*, or *Gareth and Lynette, Launcelot and Elaine, The Passing of Arthur*. Browning's *Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to Aix, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, Herve Riel, Pheidippides, My Last Duchess, Up at a Villa—Down in the City, The Italian in England, The Patriot, "De Gustibus," The Pied Piper, Instans Tyrannus*. Arnold's *Sohrab and Rustum* and *The Forsaken Merman*. Selections from American poetry, with special attention to Poe, Lowell, Longfellow, and Whittier.

(c) **Study and Practice.**—This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the understanding of allusion. The books provided for study are arranged in four groups, from each of which one selection is to be made.

GROUP 1—Drama; one to be selected: Shakespeare's *Julius Cæsar, Macbeth, Hamlet*.

GROUP 2—Poetry; one to be selected: Milton's *L'Allegro, Il Penseroso*, and either *Comus* or *Lycidas*. Tennyson's *The Coming of Arthur, The Holy Grail*, and *The Passing of Arthur*. The selections from Wordsworth, Keats, and Shelley in Book IV of Palgrave's *Golden Treasury* (first series).

GROUP 3—Oratory; one to be selected: Burke's *Speech on Conciliation with America*. Macaulay's *Speeches on Copyright*, and Lincoln's *Speech at Cooper Union*. Washington's *Farewell Address*, and Webster's *First Bunker Hill Oration*.

GROUP 4—Essays; one to be selected: Carlyle's *Essay on Burns*, with a selection from Burns's poems. Macaulay's *Life of Johnson*. Emerson's *Essay on Manners*.

History.	Units.
(a) American History	1
(b) English History	1
(c) Ancient History	1
(d) General Mediæval and Modern History	1

American history must be offered for one of the specified units in history, and one of the others named for the second. Only one elective unit in history can be offered. Standard textbooks of high-school grade should be studied.

Mathematics.	Units.
(a) Algebra (high-school textbook)—	
To Quadratics	1
Quadratics through Progression	½
(b) Plane Geometry (complete)	1

Science and Vocational Subjects.	Units.
(a) Botany	½ or 1
Chemistry	½ or 1
Physics	½ or 1
Physiology	½ or 1
Zoology	½ or 1
(b) Agriculture	½ or 1
Bookkeeping	½
Civics	½
Drawing (freehand or mechanical)	½
Manual Arts	½ or 1
Mill Practice	½
Physical Geography	½ or 1
Science, General Introductory	½

The specified science must be chosen from group (*a*). Any other than that chosen as the specified science from group (*a*) or any one from group (*b*) may be offered as an elective subject.

In drawing the stress should be placed on accurate observation, and on definite and truthful representation. It is recommended that the pupils be taught to draw from the object itself. Elementary rules of perspective, light, and shade should be given, and the drawing of the simpler geometrical plane and solid figures and of simple pieces of machinery.

As the work is as yet scarcely begun in the schools of the State, no definite requirements can be indicated for high-school instruction in manual arts. The following branches are suggested as pointing the direction in which the work should be developed: joinery, forging, machine and sheet-metal work, molding, and pattern making.

One unit is allowed for a science when work in the textbook is supplemented with laboratory practice; only a half unit is allowed for the study of the textbook without laboratory. If full credit is asked, the applicant for admission must present a satisfactory note book indicating the amount and the charter of the laboratory work done, and certified by the teacher, the principal, or the superintendent of his school.

Foreign Languages.		Units.
French—	(*a*) Grammar and Composition	½
	(*b*) Translation (250 pages of prose)	½
German—	(*a*) Grammar and Composition	½
	(*b*) Translation (200 pages of prose)	½
Latin—	(*a*) Grammar and Composition	1
	(*b*) Cæsar (Books I-IV of the Gallic War)	1
	(*c*) Vergil (Books I-VI of the Æneid)	1
	(*d*) Cicero, six orations	1
Spanish—	(*a*) Grammar and Composition	½
	(*b*) Translation (250 pages of prose)	½

The faculty of the College reserves the right to pass upon the adequacy of an applicant's preparation in any subject to fulfill the requirements of admission.

Admission on Certificate.—Applicants for admission to the Freshman Class, who present certified statements on the official College admission blanks from principals of high schools or other preparatory schools of approved standing that the applicant has satisfactorily completed the eleven units required by the College, will be

admitted without further examination. These certificates must be submitted to the Dean of the College for approval.

No applicant will be registered until his certificate is presented.

To the Two-Year Courses.—Applicants for admission to the two-year courses in Agriculture, Mechanic Arts, and Textile Industry will be examined or must present certificates of proficiency on Arithmetic complete and Algebra through fractions, English Grammar and Composition, and American History.

To the One-Year Course in Agriculture.—Applicants for admission to the one-year course in Agriculture will be required to pass on Arithmetic through decimal fractions, on English Grammar, and on American History.

To the Farmers' Course.—No entrance examination is required of candidates for admission to the farmers' course. No one under eighteen years of age will be admitted to the farmer's course.

ADVANCED CREDIT.

Students who have attended colleges of approved standing will be allowed credit for work done upon the presentation of proper certificates to the Dean, who with the heads of the departments concerned, will determine their value. None except entrance credit is allowed for work done in secondary schools without examination at the College.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Tuesday in May, with a vacation of about two weeks at Christmas.

WASTE AND BREAKAGE.

In order to promote greater care on the part of students in their use of college supplies, and their treatment of college property, a deposit of $5 is required of each student to cover unnecessary breakage and waste. All losses due to carelessness and wanton destruction will be charged to this fund, and whatever balance remains at the end of the session will be returned to the students.

EXPENSE.

The total college expense of a Freshman student need not exceed $250.

The total average college expense of a Freshman student having a scholarship is $190.

These amounts include cost of board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, and drawing instruments. They do not include allowance for clothing, other than for uniform and cap, nor for spending money and contingencies.

Allowance for clothing, spending money, and contingencies should be kept within reasonable bounds. The allowances which parents make their sons for contingencies and spending money, it is suggested, should be kept small; for small allowances frequently take away temptation to unwise living.

DETAILED INFORMATION.

The largest payment is made in September. On entrance, a Freshman student will need $90 to meet all of his various payments for the first month. But of this amount a payment of $22.50 for tuition may be deferred, if desired, to the first of November. This will reduce the first, or entrance, payment to $62.50. This amount includes payment to the College of $45 (this may vary one or two dollars according to the course of instruction); a deposit of $5 with the dealer for uniform and cap, and $12.50 for the purchase of books and incidentals. In the case of day students, or students rooming and boarding out of College, tuition will be paid on entrance.

Board is $11 per month, payable in advance on the first day of each calendar month from September through to May. Board for less time than one month is charged for at the rate of 40 cents a day. Refunds for board will be made on the basis of these charges.

Students withdrawing from College within two weeks from date of entrance will be refunded all money paid by them to the College Bursar except charges for board and lodging during the time they are in College. In special cases the right is reserved to modify or entirely revoke this rule.

Refunds to students withdrawing later than two weeks from date of entrance will be made in proportion to the length of time they are in college. The right in special cases to modify or to revoke this rule is reserved.

EXPENSE BY MONTHS.

On entrance a Freshman student will need about $90 to meet his various expenses. Of this sum, as the table below specifies, $72.50 is paid to the College for regular College dues. About $12.50 will be needed for books and incidentals, and $5 must be deposited with

the contractor when the regulation uniform is ordered. Of the amount paid to the College the tuition, $22.50, may be deferred, if necessary, to November 1st.

SEPTEMBER: Room rent, fuel and lights, $15; incidental fee, $2; medical and hospital fee, $3; lecture fee, $1; library fee, $1; furniture fee, $1; physical culture fee, $3; military equipment deposit, $5; waste and breakage deposit, $5; mechanical and physical laboratory fees, $3; board for September, $12, a total of $50 to be paid to the College. Tuition for one-half session, $22.50, may be paid at this time, which will make a total of $72.50 to be paid to the College. In addition, there is required by the merchant a deposit of $5 for uniform and cap when the measure of the student is taken; and about $10 to $15 is required to buy books and drawing instruments, and for incidentals.

Fees and deposits for Agricultural, Chemistry, Textile, and Engineering Freshmen vary as shown in the table of fees and deposits.

OCTOBER: Board, $12, and balance to merchant for uniform and cap, $15.

NOVEMBER: Board, $12; tuition, if it was not paid in September, $22.50.

DECEMBER: Board, $12.

JANUARY: Tuition, $22.50; lodging and fuel and lights, $15; medical and hospital fee, $3; furniture fee, $1; physical culture fee, $3; board, $12. A total of $55.50.

FEBRUARY: Board, $12.

MARCH: Board, $12.

APRIL: Board, $12

MAY: Board, $12.

The amount of the September or entrance payment for students varies with the class, the course, and the division. This variation is caused by the additional collection of fees and deposits for laboratory work and for supplies. The amount of these fees and deposits is given in the table below, for all classes and courses.

FEES AND DEPOSITS FOR AGRICULTURAL STUDENTS.

	Senior	Junior	Sophomore	Freshman
Agronomy	Chemistry $2 Entomology 1 Bacteriology 3 6	Soils $3 Chemistry 2 Poultry 1 Pruning 1 Agronomy 1 8	Plant Propagation $1 Dairying 4 Chemical Lab. 4 Zoology 2 Plant Physiology 1 Animal Physiology 1 13	Botany $1 Chemical Lab. 2 Woodwork and Drawing 1 Zoology 2 6
Animal Husbandry and Dairying	Chemistry $2 Entomology 1 Bacteriology 3 6	Soils $3 Poultry 1 Chemistry 2 Agronomy 1 7	Same as Agronomy	Same as Agronomy
Horticulture	Entomology $1 Bacteriology 3 4	Soils $3 Chemistry 2 Pruning 1 Entomology 1 Agronomy 1 8	Same as Agronomy	Same as Agronomy
Normal	Chemistry $2 Bacteriology 3 Plant Diseases 1 Agronomy 1 Entomology 1 8	Soils $3 Poultry 1 Chemistry 2 Pruning 1 Agronomy 1 8	Same as Agronomy	Same as Agronomy
Veterinary	Anatomy $2 Materia Medica 1 Pathology 1 Chemistry 2 Zoology 2 Bacteriology 3 11	Agronomy $1 Poultry 1 Histology 1 Anatomy 2 Chemistry 2 7	Same as Agronomy	Same as Agronomy
Poultry	Chemistry $2 Poultry 4 6	Chemistry $2 Pruning 1 Soils 3 Poultry 2 8	Same as Agronomy	Same as Agronomy

FEES AND DEPOSITS FOR ENGINEERING STUDENTS.

	Senior	Junior	Sophomore	Freshman
Civil Engineering	Drawing.....$1 1	Drawing.....$1 1	Drawing.....$1 Physical Lab... 1 Chemical Lab.. 3 5	Physical Lab...$1 Shop and Drawing..... 2 3
Mechanical Engineering	Shop and Drawing.....$2 M. E. Lab..... 1 3	E. E. Lab.....$1 Shop and Drawing...2.50 3.50	Physical Lab...$1 Chemical Lab.. 3 Shop and Drawing..... 2 6	Same as C. E.
Electrical Engineering	E. E. Lab.....$2 M. E. Lab..... 1 3	Direct Current Lab.....$2 Shop and Drawing..... 2 4	Same as M. E.	Same as C. E.
Chemical Engineering	Chemistry.....$8 Chemistry..... 2 Chemistry..... 2 12	Chemistry.....$4 Chemistry..... 3 7	Physical Lab...$1 Chemical Lab.. 4 Physics..... 1 6	Physical Lab...$1 Chemical Lab.. 2 Botany..... 1 4
Textile Industry	Design.....$3 Dyeing..... 3 Machine Shop . 1 7	Design.....$3 Dyeing..... 3 6	Design.....$4 Chemical Lab.. 4 Drawing..... 1 9	Chemical Lab..$2 Shop and Drawing..... 2 4
Textile Dyeing	Chemistry.....$8 Dyeing..... 3 11	Chemistry.....$4 Chemistry..... 3 Dyeing..... 3 10	Chemical Lab..$4 Drawing..... 1 5	Chemical Lab..$2 Shop and Drawing..... 2 4

FEES AND DEPOSITS FOR SHORT COURSES.

One-Year Course in Agriculture.

Shop	$ 1.00
Physics	1.00

Two-Year Course in Mechanic Arts.

FIRST YEAR:	
Shop and Drawing	$ 2.00
SECOND YEAR:	
Shop and Drawing	2.00

Two-Year Course in Textile Industry.

FIRST YEAR:	
Designing	$ 4.00
Drawing	1.00
	5.00
SECOND YEAR:	
Designing	3.00
Dyeing	3.00
Shop	1.00
	7.00

NOTE.—The College Bursar is forbidden by the Trustees to give credit.

All unused deposits are refunded to the student at the end of the session or upon his withdrawal from College. If he has overdrawn his deposit he is required to pay the amount of the overdraft.

If the student has a scholarship, he does not pay tuition.

Students entering after September will pay on entrance all the items enumberated under "September," less a credit in part for tuition and room rent.

WHAT A STUDENT NEEDS FOR HIS ROOM.

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

SCHOLARSHIPS CARRYING FREE TUITION.

1. Regular Scholarships.—When the College was chartered the Legislature required the Trustees to admit, free of tuition, one hundred and twenty young men. The only conditions attached to these scholarships are that they shall go to young men (1) who are unable to pay for all their education, and (2) who are of excellent moral character. As far as possible these appointments are distributed among the different counties. Appointments are made by the President of the College, after inquiries as to the needs and character of applicants and after a written recommendation from a member of the Legislature from the applicant's county. Certificates of inability to pay have to be made by the applicant and his parents. Blanks are furnished for this purpose.

2. Agricultural Scholarships.—The Legislature of 1913 authorized the College Trustees to give a limited number of agricultural scholarships to students who agree to teach for two years in an agricultural school, or to serve in an agricultural experiment station, or to farm in the State for two years after graduation. The same conditions as to financial inability and moral worth go with these scholarships as go with the regular ones.

3. Norfolk Southern Railway Scholarships.—Two scholarships, each valued at $75, are given by the Norfolk Southern Railway to deserving young men who reside in counties on the lines of this railway. These are awarded only to agricultural students.

4. Mr. R. M. Miller, of Charlotte, offers a scholarship to one student in the Textile School. This scholarship covers the tuition of the holder.

5. Finley Loan Fund.—As a memorial foundation to William Wilson Finley, President of the Southern Railway Company at the time of his death, that company has established a Finley Loan Fund for needy students of agriculture. The fund consists of $1,000. This will be lent to students who are making their way through college, and returned by them to the fund after they have finished college and gone to work. It will be administered by the Faculty of the College and all appointments will be made by the College.

SELF-HELP.

Some students who are alert and energetic frequently earn part of their expenses in College. Some of the agricultural students find work at odd hours on the farm, in the orchard, in the barn, in the dairy. Some students act as agents for laundries, for furnishing-houses, for pressing clubs. The College employs a few students for

the dining-room and for other purposes. A student's ability to help himself will depend largely on his own power to find work and to hold it after he finds it. It must, however, be remembered that the duties of the classroom take most of a student's time. College duties begin at 8 a. m. and do not end until 4 p. m., and then drill comes from 4 p. m. to 5 p. m.; hence hours for remunerative work are very limited.

STUDENT LOAN FUND.

The Alumni Association of the College established in the year 1900 a small fund to be lent to needy students of talent and character. This has been augmented from various sources and now amounts to $6,435.28. The loans are made at 6 per cent, and good security is required. Sufficient time for repayment is given to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, alumni, and friends of education generally. The fund is administered by the College Bursar, under the direction of the President.

TIME OF REGISTRATION.

All students are required to register within twenty-four hours after reaching Raleigh. A failure to comply with this rule may lead the Faculty to decline to allow an applicant to register. A registration fee of $5 will be charged to students failing to register on the day appointed.

ABSENCES FROM COLLEGE.

The College authorities wish to emphasize the danger of allowing the students' work to be interrupted by unnecessary absences from college. Students wishing to visit their homes will be required to present requests from their parents, addressed to the Dean. It should be remembered that all time missed must be made up, under disadvantages. Absences from college usually mean the accumulation of extra work for the student to do. Most students have their time fully occupied with regular work. It is, therefore, especially important that students who are not carrying their work well shall not run up absences. Nor should it be forgotten that students who are doing well in their studies lose much by absences from their regular duties here, not only in time actually lost, but also in the attendant distraction from their work.

BOARD AND LODGING.

All students are required to board in the College dining hall or in approved boarding-houses near the College, and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is $12 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillow-cases, pillows, bedspreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

ROOMS.

Dormitory accommodations at the College are sufficient to provide for only five hundred and sixty students. It becomes necessary, therefore, to guard closely the assignment of rooms, so that when College opens there will be no rooms not in actual use. To this end we do not assign rooms to applicants who have not submitted certificates of preparation and been admitted to some class in the College. All who are assigned rooms pay a deposit of $5 when their assignments are made. This is, of course, only part payment of room rent, which will be refunded and assignment canceled, provided notice is given the Registrar in time to give the room to some other applicant. The final date when such notice shall be given is August 25.

The best rooms are assigned first. Hence the advantage of applying early.

MILITARY TRAINING.

Under the provisions of an act of Congress, June 3, 1916, provision was made for the establishment of the "Reserve Officers' Training Corps."

Students becoming members of this Corps will be furnished uniforms without cost.

DRILL.

In return for the Morrill Fund of the United States Government, the College is under contract to require its students to drill at least three times each week, and an Army officer is detailed to conduct the drills. No student will be excused from drill unless the College Physician, after examination, deems him unfit for military duty.

The Corps will be established in 1917 and will be used to qualify students to become reserve officers of the United States Army. The

training will be given with the least practical interference with their civil careers, so that in time of National emergency there may be a sufficient number of educated men, trained in military science and tactics, to officer and lead intelligently the units of the large armies upon which the safety of the country will depend. The Corps will be considered as a Federal organization for the above purpose only. There is no obligation to become a part of the National Guard nor of the Regular Army; no oath is taken that service will be required other than for the purpose of education. A training camp will be held for four weeks at the end of each academic year, the expense of these camps to be borne by the United States Government and suitable uniforms furnished therefor.

Four hours weekly will be devoted to this military training during the Freshman and Sophomore years and four hours weekly during the Junior and Senior years. Beginning with the Junior year, such students as have completed satisfactorily the Freshman and Sophomore work may, if they wish, undertake the four hours a week course. These men will be allowed, in addition to their uniforms, a cash bonus of about $80 per year by the United States Government.

All students taking the advanced courses must agree in writing to continue in the Reserve Officer's Training Corps during the remainder of their college course, to devote five hours per week during such period to the military training prescribed and to pursue the courses of camp training during such period, prescribed by the Secretary of War.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections are made monthly by the College Physician.

Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness, a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College Physician visits the Infirmary daily at 3 o'clock p. m., and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times. The payment of the medical fee entitles a student to all the privileges of the Infirmary; and this includes the regular visits of the College physician for all ordinary sickness. However, if a special nurse is needed in case of serious contagious disease or in case of other seri-

ous illness, parents are of course expected to pay such nurse or nurses. The medical fee does not cover special surgical operations or the attention of any medical specialist.

VACCINATION.

By direction of the Trustees, no young man will be registered unless he has been successfully vaccinated within the past two years. The College greatly prefers that all applicants for admission should be vaccinated at home, and that a certificate of successful vaccination within the past two years be brought from the family physician. In case this cannot be done, the College Physician will vaccinate applicants before they are registered at the College, and a fee will be charged for vaccination. A blank form to be filled by the home physician will be mailed on application. It will save a great deal of time and trouble, therefore, to be vaccinated before applying for registration. In this way applicants will avoid the inconvenience and discomfort resulting from vaccination while at College. The size of scar resulting from a previous vaccination is not proof that revaccination is not needed.

TYPHOID INOCULATION.

Believing that students may be safeguarded from typhoid fever by inoculation against this disease, to which young people are peculiarly susceptible, the College offers this preventive free of charge, and urges, but does not require, all of its new students to take the treatment. Parents are requested to join the College in recommending that their sons be inoculated here or to have them inoculated at home.

PHYSICAL EXAMINATION.

Physical examination by the College Physician is required of all new students. The object of this examination is to discover any physical defects and to take proper steps to correct them.

COURSES OF INSTRUCTION.

The College offers courses of instruction in the following subjects:

I. Agriculture.

- **a. Four-year Course in Agronomy.**
- **b. Four-year Course in Animal Husbandry and Dairying.**
- **c. Four-year Course in Agricultural Chemistry.**
- **d. Four-year Course in Horticulture.**
- **e. Four-year Course in Vocational Education.**
- **f. Four-year Course in Poultry Science.**
- **g. Four-year Course in Veterinary Science.**
- **h. One-year Course in General Agriculture.**
- **i. Farmers' Course in General Agriculture.**

II. Engineering, Mechanic Arts, and Chemistry.

- **a. Four-year Course in Chemical Engineering.**
- **b. Four-year Course in Civil Engineering.**
- **c. Four-year Course in Electrical Engineering.**
- **d. Four-year Course in Mechanical Engineering.**
- **e. Two-year Course in Mechanic Arts.**

III. Textile Industry.

- **a. Four-year Textile Course.**
- **b. Four-year Dyeing Course.**
- **c. Two-year Textile Course.**

IV. Summer School.

A six weeks' Summer School for Teachers, of subjects of Primary, of Grammar, and of High School grade; for School Officials; and for candidates for admission to College. See page 152.

V. Graduate Courses.

Extending over one or more years and leading to advanced degrees. These are intended for students who have completed the four-year course and who desire further instruction and training in special subjects. For information regarding the graduate degrees, see page 161.

VI. Degrees.

The four-year courses offer a combination of practice and theoretical work, about half the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, poultry yards, fields, and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Science is conferred upon a graduate of the four-year courses in Agriculture, in Chemistry, and in Dyeing; and the degree of Bachelor of Engineering is conferred upon a graduate of the four-year Engineering course, or the four-year Textile course.

The short courses include nearly all of the practical work of the four-year courses with less theoretical instruction. They are intended for students who desire chiefly manual training. They do not lead to a degree.

FOUR-YEAR COURSES

I. AGRICULTURAL COURSES.

a. Four-year Course in Agronomy.
b. Four-year Course in Animal Husbandry and Dairying.
c. Four-year Course in Agricultural Chemistry.
d. Four-year Course in Horticulture.
e. Four-year Course in Vocational Education.
f. Four-year Course in Poultry Science.
g. Four-year Course in Veterinary Science.

AGRICULTURAL COURSES.

The Agricultural Courses are organized and arranged so that they will enable students to acquire a correct knowledge of agriculture as a science and at the same time become proficient in agricultural practices. The subjects taught in the first two years of the courses are fundamental, broadening and cultural, and give the information and training necessary for the best attainment and utilization of the technical work given as the courses progress. Thus the curriculæ of all the Agricultural Courses include English, Mathematics, Chemistry, Physics, Botany, Zoology, Geology, Soils, etc. At the beginning of his Junior year each student must elect that Division in which he will take his major work.

Instruction is given by text-books, lectures, and reference readings, and in laboratories, fields, orchards, gardens, dairy, and poultry yards. Opportunity is given for specialization as the courses progress, that the student may become more proficient in his chosen Division.

Young men who have completed the Agricultural Courses of instruction with good credit have exceptional opportunities for remunerative employment in many positions. In addition to the preparation given for the successful operation of their own farms, graduates in Agriculture may become farm managers, demonstration agents, teachers of agriculture and science in Farm-Life and other rural schools, orchardists, dairymen, poultrymen, and many other responsible positions requiring technical training, such as teachers in colleges, experiment station and extension workers, various offices with the United States Department of Agriculture, and many other responsible positions.

DEPARTMENT OF AGRICULTURE.

I (a). Four-year Course in Agriculture.

This course leads to the degree of Bachelor of Science.

Freshman Year.

Subjects	Periods a Week	
	1st Term	2d Term
Botany, 101-102	3	3
Chemistry, 101-102	2	2
Chemistry, 111-112	1	1
Drawing, Mechanical Engineering, 141	2	0
Drill, 101-102	4	4
English, 101-102	3	3
Mathematics, 101-102	5	5
Woodworking, Mechanical Engineering, 142	0	2
Zoology, 101-102	3	3
Totals	23	23

Sophomore Year.

Farm Equipment, Agronomy, 201	2	0
Dairying, Animal Husbandry, 202	0	3
Botany, 201-202	3	2
Chemistry, 201-202	3	3
Drill, 201-202	4	4
English, 201-202	3	3
Geology, 202	0	2
Plant Propagation, Horticulture, 201	3	0
Physics, Electrical Engineering, 231-232	3	3
Comparative Physiology, Veterinary Medicine, 201-202	3	0
Zoology, 202	0	2
Totals	24	24

Junior Year.

Subjects	Divisions					
	Agron.	A. H.	Hort.	Voc. Ed.	Poultry	Vet.
Agronomy, 301-302	3-3	3-3	3-3	3-3	3-3	3-3
Anatomy, Veterinary Medicine, 321-322						3-3
Breeds, Animal Husbandry, 301	~~3-0~~	3-0		3-0		~~3-0~~
Feeds, Animal Husbandry, 302	0-3	0-3	0-3	0-3	0-3	0-3
Chemistry, 301-302	2-2	2-2	2-2	2-2	2-2	2-2
Education, 301-302				3-3		
English, 301-302	3-3	3-3	3-3	3-3	3-3	3-3
Entomology, Zoology, 301			3-0			
Histology, Veterinary Medicine, 311-312						3-3
Practical Pomology, Horticulture, 301	~~3-0~~		3-0	3-0	3-0	
Pruning and Orchard Protection, Horticulture, 302.	0-3		0-3		0-3	
Vegetable Gardening, Horticulture, 312.	0-3	0-3	0-3	0-3	0-3	
Materia Medica, Veterinary Medicine, 332						0-3
Poultry, 301	3-0	3-0	~~3-0~~		3-0	3-0
Poultry, 311-312					3-3	
Soils, 301-302	3-3	3-3	3-3	3-3	3-3	
Veterinary Medicine, 301-302		3-3				
Elective—						
Military Art, 301-302	~~4-4~~	~~4-4~~	~~4-4~~	~~4-4~~	~~4-4~~	~~4-4~~
or						
Modern Language, 301-302	2-2	2-2	2-2	2-2	2-2	2-2
and						
Economics, 301-302	2-2	2-2	2-2	2-2	2-2	2-2
Totals	24	24	24	24	24	24

Senior Year—Required Studies.

Subjects	Divisions					
	Agron.	A. H.	Hort.	Voc.Ed.	Poultry	Vet.
Agronomy, 401-402	3-3	0-3	0-6	3-3		
Agronomy, 411-412	3-3					
Agronomy, 421	3-0	3-0			3-0	
Breeding, Animal Husbandry, 401	3-0	3-0	3-0		3-0	3-0
Animal Husbandry, 411		3-0				
Animal Husbandry, 412 or 422		0-3			0-3	0-6
Animal Husbandry, 431-402		3-3			3-3	
Anatomy, Veterinary Medicine, 411-412						3-3
Bacteriology, Botany, 402		0-3	0-3		0-3	0-3
Plant Diseases, Botany, 401			3-0	3-0		
Chemistry, 471-472	3 3	3 3			3-0	
Diagnosis, Veterinary Medicine 442						0-3
English, 401		3-0			3-0	
Electives[1]	6-6	6-6	6-6	6-6	6-6	6-6
Economics, 401 402				3-3		
Education, 401-402				3-3		
Education 411-412				3-3		
Greenhouse Management, Horticulture, 40			3-0			
Systematic Pomology, Horticulture, 411			3-0			
Plant Breeding, Horticulture, 412	0-3		0-3			
Landscape Gardening, Horticulture, 421			3-0			
Horticulture, Elective, 422			0-3			
Poultry, 401-402					3-3	
Poultry, 412					0-3	
Poultry, 422					0-3	
Physiology, Veterinary Medicine, 421-422						3-3
Pathology, Veterinary Medicine, 451-452						3-3
Pharmacy, Veterinary Medicine, 441						3-0
Fertilisers, Soils, 402	0-3		0-3	0-3		
Drainage, Soils, 401	3-0		3-0	3-0		
Embryology, Zoology, 401						0-0
Entomology, Zoology, 402	0-3			0-3		
Entomology, Zoology, 422		0-3				
Entomology, Zoology, 432			0-3			
Totals	24	24	24	24	24	24

[1]Those students who elected Military Art in their Junior year will elect Military Art 401-402, and Modern Languages, 401-402 (Spanish). Those who elected Modern Languages 301-302, and Economics, 301-302, will elect six hours each term from the following table.

Senior Electives.

Subjects	Divisions					
	Agron.	A. H.	Hort.	Voc.Ed.	Poultry	Vet.
Agronomy, 402						0-3
Farm Management, Agronomy, 421			3-0		3-0	
Animal Husbandry, 441-442, 451-452, 461		3-3				
Animal Husbandry, 402, 412, 422, 442					0-3	
Plant Diseases, Botany, 401	3-0					
Bacteriology, Botany, 402	0-3					
Chemistry, 471-472			3-0	3-3	0-3	3-3
Education				3-3		
Economics, 401-402	3-3	3-3	3-3		3-3	3-3
English, 401-402	3-3	0-3	3-3	3-3	0-3	3-3
Landscape Gardening, Horticulture, 421				3-0		
Modern Languages, 311-312, 431-432	3-3	3-3	3-3	3-3	3-3	3-3
Veterinary Medicine, 431-432	3-3		3-3		3-3	
Poultry, 312, or 412, or 422		0-3	0-3	0-3		
Soils, 411-412	3-3			3-3		
Veterinary Medicine, 401-402		3-3		3-3	3-3	
Zoology, 401					3-0	
Zoology, 411-412				3-3		

Four-year Course in Agricultural Chemistry. This course leads to the degree of Bachelor of Science.

Freshman Year.

Subjects	Periods a Week	
	1st Term	2d Term
Botany, 101-102	3	3
Chemistry, Inorganic, 101-102	2	2
Chemistry, Inorganic Laboratory, 111-112	1	1
Drawing, Mechanical Engineering, 141	2	0
English, 101-102	3	3
Mathematics, 101-102	5	5
Military Art, 101-102	4	4
Woodworking, Mechanical Engineering, 142	0	2
Zoology, 101-102	3	3
Totals	23	23

Sophomore Year.

Dairying, Animal Husbandry, 202	0	3
Botany, 201-202	3	2
Chemistry, Qualitative and Quantitative Analysis, 201-202	3	3
English, 201-202	3	3
Geology, 202	0	2
German, Modern Languages, 201-202	2	2
Plant Propagation, Horticulture, 201	3	0
Military Art, 201-202	4	4
Physics, Electrical Engineering, 231-232	3	3
Physiology, Comparative, Veterinary Science, 201-202	3	2
Totals	24	24

Junior Year.

Subjects	Periods a Week	
	1st Term	2d Term
Agronomy, 301-302	3	3
Chemistry, Organic, 331-332	3	3
Chemistry, Organic Laboratory, 341-342	1	1
Chemistry, Quantitative Analysis, 311-312	3	3
English, 301-302	3	3
German, 311-312	3	3
Soil, 301-302	3	3
Electives—		
Military Art, 301-302	4	4
or		
Modern Languages, 301-302	2	2
and		
Economics, 301-302	2	2
Totals	23	23

Note.—Students electing Military Art during the Junior year must take it during the Senior year, and students who do not elect it during the Junior year will not be permitted to elect it during the Senior year.

Senior Year.

Subjects	Periods a Week	
	1st Term	2d Term
Chemistry, Physical, 431-432	3	3
Chemistry, Physical, Laboratory, 441-442	1	1
Chemistry, Quantitative Analysis, 411-412	8	8
Chemistry, Theoretical and Historical, 481-482	2	2
Elect ten periods from the following:		
Animal Husbandry, Feeds, 302	0	3
Botany, Bacteriology, 402	0	3
Chemistry, Industrial, 461-462	3	3
Chemistry, Inorganic, 422	0	2
Chemistry, Micro-analysis, 421	2	0
Chemistry, Organic, Laboratory, 491-492	2	2
Chemistry, Physiological, 401-402	2	2
Chemistry, Physiological, Laboratory, 403-404	1	1
Economics, 401-402	3	3
English, 401-402	3	3
German, Modern Languages, 421-422	3	3
Military Art, 401-402	4	4
Soils, Fertilizers, 402	0	3
Other subjects if approved by the Professor of Chemistry	--	--
Totals	24	24

Note.—Students who elected Military Art during the Junior year are required to take Military Art during the Senior year, and students who did not elect Military Art during the Junior year are not permitted to elect it during the Senior year.

II. ENGINEERING COURSES.

a. Four-year Course in Chemical Engineering.
b. Four-year Course in Civil Engineering.
c. Four-year Course in Electrical Engineering.
d. Four-year Course in Mechanical Engineering.

The Engineering Courses give a thorough grounding in such fundamental sciences as Mathematics, Physics, and Chemistry, and thorough drill in the application of the principles thus learned to engineering problems. The student is given practice in the use of engineering instruments and methods, and is encouraged to rely upon his own resources in the solution of problems. Though the courses are primarily technical and practical, they include subjects of general culture throughout all four years.

The Freshman years of all the Engineering Courses are identical and include a great deal of practice. The student in the different shops learns the use of tools and the handling and manipulation of materials of construction. Instruction is given in working wood and iron. In the Sophomore year this work is continued in the pattern-making shop and in the foundry. Also in the Physical laboratory much attention is paid to the practical value of such instruction. Here the student is taught the science of measurement and is trained to observe and work accurately. During these two years he is also given a thorough training in Mechanical Drafting, skill in which is essential in all lines of engineering work.

Differentiation of the different engineering courses begins in the Sophomore year. The practical work here, in the shop, in the field or in the laboratory, directs the student's attention to the specific phases of that branch of the profession he is to follow. In the Junior year the study of engineering methods is begun and is continued more fully in the Senior year.

Upon the satisfactory completion of these courses the degree of Bachelor of Engineering is conferred. The advanced degrees of Civil Engineer, Electrical Engineer, and Mechanical Engineer may also be conferred upon graduates of three years standing who have had responsible charge of important work, upon complying with the College requirements.

More detailed descriptions of the different courses follow.

COURSE IN CHEMICAL ENGINEERING.

Chemistry is one of the subjects fundamental to the study of matter, and it has been defined popularly as the "science of matter."

Instruction in chemistry is given in every course in this College leading to bachelor's degree, and with rare exceptions it has a place in the undergraduate curriculum in all courses of study in all higher educational institutions. The engineer needs the subject in considering the materials of construction and the subsequent changes which take place in them. The textile manufacturer is specially concerned with dyeing and bleaching and the chemicals used in these processes. In the study of soils, fertilizers, feeding stuffs, and human foods, the practical farmer and the agricultural scientist alike are dealing with chemical problems of a most complex character.

The chemical instruction for engineering students is given during the Sophomore year, and consists of classroom work and laboratory practice, aggregating 5 periods a week.

Students in the Textile Course, during their Freshman and Sophomore years, receive instruction in general chemistry, qualitative and quantitative analysis—these subjects together aggregating 6 periods. The students in the course in dyeing continue their chemistry during the Junior and Senior years, receiving instructon in quantitative analysis, organic chemistry, and organic chemistry laboratory—the chemical subjects for the course aggregating 23 periods.

Agricultural students receive chemical instruction during the first three years of their course, aggregating 9 periods, and including the subjects of general and agricultural chemistry, qualitative and quantitative analysis. All the agricultural Seniors except those in one group take, in addition, organic chemistry 3 periods a week.

The Chemistry Department was established, not only to furnish the necessary instruction for engineering, textile, and agricultural students, but to prepare young men for careers in chemistry. For many years there has been a great demand for analytical chemists. With the growth of the Agricultural Experiment Station, there has been an increasing demand for chemists, and these make up about one-half the entire number of the technical workers of the various stations.

The manufacturers of fertilizers, dyestuffs, explosives, spraying materials, steel, copper, aluminum, and other metals, cement, sulphuric acid, petroleum products, alkalis, and other chemicals, are

dependent upon chemical principles. The larger railroad systems, flour mills, cotton mills, and industrial plants are finding it greatly to their advantage to employ chemists.

The demand in recent years along all these lines has increased by leaps and bounds, and this College has been unable to supply the demand for its graduates. There appears to be no prospect of abatement.

The chemical graduates are usually engaged for $60 a month or more. The increase in compensation is rapid. Many of our recent graduates are receiving salaries of from $1,500 to $2,000 a year. Several are receiving $3,000, some $5,000, and one $7,000 annually.

Our graduates are numbered among those who have been appointed to fellowships, instructorships, and professorships in America's leading universities; who hold responsible positions in the largest manufacturing and industrial plants; who are connected with the best known Agricultural Experiment Stations; who have conducted researches which have found places in the leading chemical journals; who have been elected to the highest positions in various chemical and scientific societies, and who have produced books of first rank.

The students who are looking forward to careers as chemists receive instruction in this department during each of the four years of their course, the subjects covered being inorganic chemistry, organic chemistry, qualitative analysis, quantitative analysis, microchemistry, physical chemistry, agricultural chemstry, bio-chemistry, etc., these subjects aggregating about 33 periods or about two-fifths of their entire course of study. The remaining three-fifths of their time is devoted to the kindred subjects, physics, geology, soils, fertilizers, botany, bacteriology, physiology, stock feeding, etc., together with English, German, economics, mathematics, drawing, military science, tactics, etc.

A large portion of the chemical instruction is given in the laboratory, the student himself making the experiment, the determination, or the substance, as the case may be. There is also constant and thorough drill in the classroom for the purpose of having the student understand the fundamental theories and laws involved in these operations.

Provision is made also for graduate students, the course of study leading to the degree of Master of Science. These courses are arranged along the special lines in which the student is most interested. Our graduate and advanced undergraduate courses will specially appeal to graduates of colleges who have become interested in chemistry and wish to pursue the subject further. Some of the

subjects offered this year for graduate study are inorganic chemistry, physical chemistry, quantitative analysis, micro-chemical analysis, organic chemistry, physiological chemistry, and nitrification.

There are several chemical plants in the city which are open to our students through the courtesy of the owners. The chemical laboratories of the North Carolina Department of Agriculture and of the several divisions of the Agricultural Experiment Station afford the students an opportunity for keeping in touch with the interesting work of these institutions.

The State Museum contains a splendid collection of minerals, ores, and building stones, and affords the students an opportunity for the study of the natural resources of the State.

The Four-year Course in Chemical Engineering. This course leads to the degree of Bachelor of Science.

Freshman Year.

Subjects	Periods a Week	
	1st Term	2d Term
Chemistry, Inorganic, 101-102	2	2
Chemistry, Inorganic, Laboratory, 111-112	1	1
English, 101-102	3	3
Mathematics, 101-102, 112	5	5
Drawing, Mechanical Engineering, 111-112	2	2
Military Art, 101-102	4	4
Physics, Electrical Engineering, 101-102	4	4
Physics, Laboratory, Electrical Engineering, 111-112	1	1
Wood Shop-work, Mechanical Engineering, 121	2	0
Totals	24	22

Sophomore Year.

Subjects	Periods a Week	
	1st Term	2d Term
Chemistry, Qualitative and Quantitative Analysis, 201-202	3	3
English, 201-202	3	3
German, Modern Languages, 201-202	2	2
Mathematics, 201-202, 212	5	5
Drawing, Mechanical Engineering, 212	0	2
Forge, Mechanical Engineering, 132	0	2
Foundry, Mechanical Engineering, 201	2	0
Pattern Making, Mechanical Engineering, 211	2	0
Military Art, 201-202	4	4
Physics, Electrical Engineering, 201-202	2	2
Physics, Laboratory, Electrical Engineering, 211-212	1	1
Totals	24	24

Junior Year.

Chemistry, Organic, 331-332	3	3
Chemistry, Organic, Laboratory, 341-342	1	1
Chemistry, Quantitative Analysis, 311-312	3	3
Electrical Engineering, 311-312	2	2
Electrical Engineering, Laboratory, 331-332	1	1
English, 301-302	3	3
German, Modern Languages, 311-312	3	3
Heat Engines, Mechanical Engineering, 301-302	3	3
Laboratory, Mechanical Engineering, 341-342	1	1
Electives—		
Military Art, 301-302	4	4
or		
Economics, 301-302	2	2
and		
French or Spanish, Modern Languages, 431-432, 401-402	2	2
Totals	24	24

Note.—Students electing Military Art during the Junior year are required to take it during the Senior year, and students who do not elect Military Art during the Junior year will not be permitted to elect it during the Senior year.

Senior Year.

Subjects	Periods a Week	
	1st Term	2d Term
Chemistry, Industrial, 461-462	3	3
Chemistry, Physical, 431-432	3	3
Chemistry, Physical Laboratory, 441-442	1	1
Chemistry, Quantitative Analysis, 411-412	8	8
Chemistry, Theoretical and Historical, 481-482	2	2
Elect seven periods from the following:		
Chemistry, Inorganic, 422	0	2
Chemistry, Micro-analysis, 421	2	0
Chemistry, Organic, Laboratory, 491-492	2	2
Economics, 401-402	3	3
English, 401-402	3	3
German, Modern Languages, 421-422	3	3
Military Art, 401-402	4	4
Other subjects if approved by the Professor of Chemistry	--	--
Totals	24	24

Note.—Students electing Military Art during the Junior year must take Military Art during the Senior year, and students who do not elect Military Art during the Junior year will not be permitted to elect Military Art during the Senior year.

COURSE IN CIVIL ENGINEERING.

The aim of the course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and draughting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in draughting. At the same time it is recognized that a successful engineer requires a well-trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in all those branches of applied mathematics which are involved in the solution of engineering problems.

The aim has been to make this pre-eminently a technical course; but subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II (a). The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

Subjects	Periods a Week	
	1st Term	2d Term
Mechanical Drawing, Mechanical Engineering, 111-112	2	2
Woodwork, Mechanical Engineering, 121-122	2	2
Forge Work, Mechanical Engineering, 132	--	2
Engineering Lectures, Mechanical Engineering, 101	2	--
Algebra, Mathematics, 101	5	--
Geometry, Mathematics, 102	--	4
Advanced Algebra, Mathematics, 112	--	1
Physics, Electrical Engineering, 101-102	4	4
Physical Laboratory, Electrical Engineering, 111-112	1	1
Composition and Rhetoric, English, 101-102	3	3
Military Drill, 101-102	4	4
Totals	23	23

Sophomore Year.

Subjects	Periods a Week	
	1st Term	2d Term
Architecture, Civil Engineering, 211	2	--
Architectural Drawing, Civil Engineering, 221-222	2	2
Trigonometry, Mathematics, 201	5	--
Analytical Geometry, Mathematics, 202	--	5
Descriptive Geometry, Mechanical Engineering, 202	--	2
Physics, Electrical Engineering, 201-202	2	2
Physical Laboratory, Electrical Engineering, 211-212	1	1
General Chemistry, 211-212	3	3
General Chemistry (laboratory), 221-222	2	2
English, 201-202	3	3
Public Speaking, English, 212	--	
Military Drill, 201-202	4	4
Totals	24	24

Junior Year.

Road Building, Civil Engineering, 351-352	1	1
Surveying, Civil Engineering, 301	2	--
Railroad Engineering, Civil Engineering, 322	--	2
Surveying (field work), Civil Engineering, 341-342	2	2
Construction, Civil Engineering, 331	2	--
Topographical Drawing, Civil Engineering, 311-312	2	2
Graphic Statics, Civil Engineering, 302	--	2
Mechanics, Civil Engineering, 321	3	3
Calculus, Mathematics, 301-302	4	4
English, 301-302	3	3
Elective—		
Military Art, 301-302	4	4
or		
Modern Languages, 301-302	2	2
and		
Economics, 301-302	2	2
Totals	23	23

Senior Year.

Subjects	Periods a Week	
	1st Term	2d Term
Mechanics of Materials, Civil Engineering, 431	3	--
Roofs and Bridges, Civil Engineering, 411	3	--
Bridge Design, Civil Engineering, 402	--	3
Municipal Engineering, Civil Engineering, 412	--	2
Surveying (field work), Civil Engineering, 401	2	--
Water Supply, Civil Engineering, 462	--	2
Hydraulics, Civil Engineering, 441	3	--
Railroad Engineering, Civil Engineering, 471-472	3	2
Reinforced Concrete, Civil Engineering, 432	--	3
Astronomy, Civil Engineering, 422	--	2
Laboratory, Civil Engineering, 452	--	2
Mechanics, Civil Engineering, 451	2	--
Those students who elected Military Art, 301-302, in the Junior year will elect Military Art, 401-402, and Modern Languages, 401-402, in the Senior year. Those students who elected Modern Languages, 301-302, and Economics, 301-302, in the Junior year will elect 6 periods from the following list:		
Classics, English, 401	3	--
Journals, English, 402	--	3
Economics, 401-402	3	3
Modern Languages, 411-412	3	3
Totals	22	22

FOUR-YEAR COURSE IN ELECTRICAL ENGINEERING.

The four-year course in Electrical Engineering is planned for those who wish a thorough practical preparation for following this profession. Only the most thorough training in the fundamental laws and principles of electricity and magnetism will suffice as a preparation for this branch of engineering in which the art is advancing so rapidly. This training is given by a careful study of text-books and coördinated work in the various laboratories. The department, as will be seen from the equipment described below, is well supplied with dynamos, motors, transformers, and other electrical machines, and with testing instruments and apparatus of all descriptions.

II (d). The Four-year Course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

Subjects	Periods a Week	
	1st Term	2d Term
Elementary Physics, Electrical Engineering, 101-102	4	4
Physical Laboratory, Electrical Engineering, 111-112	1	1
Mechanical Drawing, Mechanical Engineering, 111-112	2	2
Woodwork, Mechanical Engineering, 121-122	2	2
Forge Work, Mechanical Engineering, 132	--	2
Engineering Lectures, Mechanical Engineering, 101	2	--
Algebra, Mathematics, 101	5	--
Geometry, Mathematics, 102	--	4
Advanced Algebra, Mathematics, 112	--	1
Composition and Rhetoric, English, 101-102	3	3
Military Drill, 101-102	4	4
Totals	23	23

Sophomore Year.

Subjects	Periods a Week	
	1st Term	2d Term
Physics, Electrical Engineering, 201-202	2	2
Physical Laboratory, Electrical Engineering, 211-212	1	1
Descriptive Geometry, Mechanical Engineering, 202	--	2
Mechanical Drawing, Mechanical Engineering, 212	--	2
Trigonometry, Mathematics, 201	5	--
Analytical Geometry, Mathematics, 202	--	5
General Chemistry, 211-212	3	3
General Chemical Laboratory, 221-222	2	2
Foundry, Mechanical Engineering, 201	2	--
Pattern-making, Mechanical Engineering, 211	2	--
English, 201-202	3	3
Public Speaking, English, 212	--	
Military Drill, 390	4	4
Totals	24	24

Junior Year.

Direct Currents, Electrical Engineering, 301-302	3	3
Direct Current (laboratory), Electrical Engineering, 321-322	2	2
Heat Engines, Mechanical Engineering, 301-302	2	2
Machine-shop Work, Mechanical Engineering, 331-332	1	1
Machine Design, Mechanical Engineering, 321-322	2	2
Mechanics, Mechanical Engineering, 311-312	2	2
Calculus, Mathematics, 301-302	4	4
English, 302	3	3
Elective—		
Military Art, 301-302	4	4
or		
Modern Languages, 301-302	2	2
and		
Economics, 301-302	2	2
Totals	23	23

Senior Year.

Subjects	Periods a Week	
	1st Term	2d Term
Alternating Currents, Electrical Engineering, 401-402	3	3
Electrical Application, Electrical Engineering, 411-412	2	2
Electrical Transmission, Electrical Engineering, 421-422	2	2
Alternating Current (laboratory), Electrical Engineering, 431-432	2	2
Electrical Design, Electrical Engineering, 441-442	3	2
Mechanics, Mechanical Engineering, 421	3	--
Mechanics of Materials, Mechanical Engineering, 422	--	2
Mechanical Engineering (laboratory), Mechanical Engineering, 431-432.	1	1
Hydraulics, Civil Engineering, 442	--	2
Those students who elected Military Art in the Junior year will elect Military Art, 401-402, and Modern Languages, 401-402, in the Senior year. Those students who elected Modern Languages, 301-302, and Economics, 301-302, in the Junior year will elect 6 periods from the following list:		
Classics, English, 401	3	--
Journals, English, 402	--	3
Economics, 402	3	3
Modern Languages, 411-412	3	3
Totals	22	22

FOUR-YEAR COURSE IN MECHANICAL ENGINEERING.

The regular four-year course in Mechanical Engineering offers a training in the fundamental principles of design, construction, manufacture, and operation of all classes of standard and special machinery, and their economic application to railroads, steamships, mills, shops, factories, and power plants, as well as in the technical and executive management of the manufacturing and transportation industries. To this end the course of instruction is as broad as is possible to give in a technical school.

The course begins with a thorough training in mathematics, physics, and chemistry as a foundation for the appropriate technical work which is developed along several parellel lines. Applications of these fundamental sciences to the physical properties of the materials of construction, especially the metals and their practical manipulation, lead through the courses in mechanics, resistance of materials, shop processes, the materials-testing laboratory, drafting and kinematics, to the principles of design, which are fixed by application to the design of machinery for the execution of any kind of process in which machinery is either absolutely essential or more economical than corresponding hand execution of the same process. The principles underlying the performance of machinery are developed by courses in thermodynamics, mechanics, and hydraulics, with experimental laboratory demonstrations. The instruction in the performance, design, and manufacture of machine and power units in the classroom and laboratory, supplemented by visits to power plants and factories, is the basis of the work on the design of plants and mills.

To succeed in any one of these particular branches or phases of this profession a thorough technical training is absolutely indispensable, for it supplies the broad, general foundation, which must in its turn be supplemented by practical experience and by contact with the special line of work chosen.

II (b). The Four-year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

Subjects	Periods a Week	
	1st Term	2d Term
Physics, Electrical Engineering, 101-102	4	4
Military Drill, 101-102	4	4
Composition and Rhetoric, English, 101-102	3	3
Algebra, Mathematics, 101	5	--
Advanced Algebra, Mathematics, 112	--	1
Engineering Lectures, Mechanical Engineering, 101	2	--
Geometry, Mathematics, 102	--	4
Mechanical Drawing, Mechanical Engineering, 111-112	2	2
Wood-shop Work, Mechanical Engineering, 121-122	2	2
Physical Laboratory, Electrical Engineering, 111-112	1	1
Forge Shop Work, Mechanical Engineering, 132	--	2
Totals	23	23

Sophomore Year.

Physics, Electrical Engineering, 201-202	2	2
General Chemistry, 211-212	3	3
English, 201-202 / Public Speaking, English, 212	3	3
Military Drill, 201-202	4	4
Trigonometry, Mathematics, 201	5	--
Analytical Geometry, Mathematics, 202	--	5
Descriptive Geometry, Mechanical Engineering, 202	--	2
Physical Laboratory, Electrical Engineering, 211-212	1	1
General Chemistry (laboratory), 221-222	2	2
Foundry Work, Mechanical Engineering, 201	2	--
Pattern-making, Mechanical Engineering, 211	2	--
Mechanical Drawing, Mechanical Engineering, 212	--	2
Totals	24	24

Junior Year.

Subjects	Periods a Week	
	1st Term	2d Term
Heat Engines, Mechanical Engineering, 301-302	3	3
Mechanics, Mechanical Engineering, 311-312	2	2
Electrical Engineering, 311-312	2	2
Calculus, Mathematics, 301-302	4	4
English, 301-302	3	3
Mechanism, Mechanical Engineering, 321	2	--
Machine Design, Mechanical Engineering, 322	--	2
Machine Shop, Mechanical Engineering, 331-332	1	1
Mechanical Engineering (laboratory, 341-342	1	1
Electrical Laboratory, 331-332	1	1
Elective—		
Military Drill, 301-302	4	4
or		
Modern Languages, 301-302	2	2
and		
Economics, 301-302	2	2
Totals	23	23

Senior Year.

Subjects	Periods a Week	
	1st Term	2d Term
Power Plants, Mechanical Engineering, 401-402	3	2
Gas Engines, Mechanical Engineering, 411	3	--
Mechanics, Mechanical Engineering, 421	3	--
Mechanics of Materials, Mechanical Engineering, 422	--	2
Heating, Ventilation, and Refrigeration, 403	--	2
Hydraulics, Civil Engineering, 442	--	2
Machine Design, Mechanical Engineering, 441	3	--
Gas Engine or Turbine Design, Mechanical Engineering, 442 or 452	--	2
Machine-shop Work, Mechanical Engineering, 461-462	2	2
Mechanical Engineering, Laboratory, 471-472	2	2
Power Plant Design, Mechanical Engineering, 404	--	2
Those students who elected Military Art in the Junior year will elect Military Art, 401-402, and Modern Languages, 401-402, in the Senior year. Those students who elected Modern Languages, 301-302, and Economics, 301-302, will elect 6 periods from the following list:		
Modern Languages, 411-412	3	3
Journals, English, 402	--	3
Automobile Power Plant, Mechanical Engineering, 413-414	3	3
Classics, English, 401	3	--
Economics, 402	3	3
Machine Shop, Mechanical Engineering, 481-482	2	2
Machine Design, Mechanical Engineering, 491-492	2	2
Industrial Engineering, Mechanical Engineering, 412	--	2
Totals	22	22

III. TEXTILE COURSES.

III (a). The Four-year Course in Textile Industry.

THE TEXTILE DEPARTMENT.

The Textile Department, which is a fully equipped Textile School, contains all the necessary machinery for instruction in manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, and cotton fabrics of different kinds, from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department two courses of instruction are offered, the four-year course, leading to the degree of Bachelor of Engineering, and the two-year course in carding and spinning, weaving, designing, and dyeing.

Four-year Course.

The four-year course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year, and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

III (a). The Four-year Course in Textile Industry, leading to the the degree of Bachelor of Engineering.

Freshman Year.

Subjects	Periods a Week*	
	1st Term	2d Term
Carding and Spinning, Textile Industry, 101-102	1	1
Weaving, Textile Industry, 111-112	2	2
Mechanical Drawing, Mechanical Engineering, 111-112	2	2
Shop Lectures, Mechanical Engineering, 101	2	--
Woodwork, Mechanical Engineering, 121-122	2	2
Forge Work, Mechanical Engineering, 132	--	2
Algebra, Mathematics, 101	5	--
Geometry, Mathematics, 102	--	4
Advanced Algebra, Mathematics, 112	--	1
Inorganic Chemistry, 101-102	2	2
Inorganic Chemistry, Laboratory, 111-112	1	1
Composition and Rhetoric, English, 101-102	3	3
Military Drill, 101-102	4	4
Totals	24	24

Sophomore Year.

Carding and Spinning, Textile Industry, 201-202	2	3
Weaving, Textile Industry, 211-212	2	3
Textile Designing, Textile Industry, 221-222	2	1
Cloth Analysis, Textile Industry, 232	--	1
Elementary Physics, Electrical Engineering, 221-222	3	3
Analytical Chemistry (qualitative), 201-202	3	3
Drawing, Mechanical Engineering, 212	--	2
Trigonometry, Mathematics, 201	5	--
English, 201-202	3	3
Public Speaking, English, 212	--	
Military Drill, 201-202	4	4
Totals	24	23

Junior Year.

Subjects	Periods a Week	
	1st Term	2d Term
Carding and Spinning, Textile Industry, 301-302	3	3
Weaving, Textile Industry, 311-312	3	3
Textile Designing, 321-322	2	1
Cloth Analysis, Textile Industry, 332	--	1
Dyeing, Textile Industry, 351-352	2	2
Dyeing, Laboratory, Textile Industry, 361-362	2	2
Heat Engines, Mechanical Engineering, 351-352	2	2
Motors, Electrical Engineering, 341-342	2	2
English, 301-302	3	3
Elective—		
Military Art, 301-302	4	4
or		
Modern Languages, 301-302	2	2
and		
Economics, 301-302	2	2
Totals	23	23

Senior Year.

Carding and Spinning, Textile Industry, 401-402	4	4
Weaving, Textile Industry, 411-412	3	3
Textile Designing, Textile Industry, 421-422	3	3
Cloth Analysis, Textile Industry, 431-432	1	1
Dyeing, Textile Industry, 451-452	1	1
Dyeing, Laboratory Textile Industry, 461-462	3	3
Mill Accounting and Mill Costs, Textile Industry, 441-442	1	1
Those students who elected Military Art, 301-302, in the Junior year will elect Military Art, 401-402, and Modern Languages, 401-402, in the Senior year. Those students who elected Modern Languages, 301-302, and Economics, 301-302, in the Junior year will elect six periods from the following list:		
Journals, English, 402	--	3
Classics, English, 401	3	--
Economics, 402	3	3
Modern Languages, 411-412	3	3
Machine-shop Work, Mechanical Engineering, 461-462	2	2
Totals	22	22

DYEING COURSE.

This course is especially for those who wish to engage in any branch of Textile Chemistry, Dyeing, Bleaching, Finishing, or in the manufacture or sale of dyestuffs and chemicals used in the textile industry, and is designed to give a scientific technical education to those who desire to embrace these branches of industrial technology.

Dyeing as an art has long been practiced, but with the introduction of scientific methods it is rapidly developing and assuming a position in the front rank of applied sciences.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dyestuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with such general studies as English, Mathematics, Physics, and General Chemistry, which are required in all four-year courses.

The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

Subjects	Periods a Week	
	1st Term	2d Term
Chemistry, Inorganic, 101-102	2	2
Chemistry, Inorganic, Laboratory, 111-112	1	1
English, 101-102	3	3
Mathematics, 101-102, 112	5	5
Drawing, Mechanical Engineering, 111-112	2	2
Forge Work, Mechanical Engineering, 132	0	2
Lectures, Mechanical Engineering, 101	2	0
Wood Work, Mechanical Engineering, 121-122	2	2
Military Art, 101-102	4	4
Carding and Spinning, Textile Industry, 101-102	1	1
Weaving, Textile Industry, 111-112	2	2
Totals	23	23

Sophomore Year.

Chemistry, Qualitative and Quantitative Analysis, 201-202	3	3
English, 201-202	3	3
German, Modern Languages, 201-202	2	2
Mathematics, 201	5	--
Drawing, Mechanical Engineering, 212	--	2
Military Art, 201-202	4	4
Physics, Electrical Engineering, 201-202	2	2
Physics, Laboratory, Electrical Engineering, 211-212	1	1
Carding and Spinning, Textile Industry, 201-202	2	3
Cloth Analysis, Textile Industry, 232	--	1
Weaving, Textile Industry, 211-212	2	3
Totals	23	23

Junior Year.

Subjects	Periods a Week	
	1st Term	2d Term
Chemistry, Organic, 331-332	3	3
Chemistry, Organic, Laboratory, 341-342	1	1
Chemistry, Quantitative Analysis, 311-312	3	3
Dyeing ,Textile Industry, 351-352	2	2
Dyeing, Laboratory, Textile Industry, 361-362	4	4
English, 301-302	3	3
German, Modern Languages, 311-312	3	3
Electives—		
Military Art, 301-302	4	4
or		
Economics, 301-302	2	2
and		
French or Spanish, Modern Languages, 301-302, 401-402	2	2
Totals	23	23

Students electing Military Art during the Junior year must take Military Art during the Senior year, and students who do not elect Military Art during the Junior year will not be permitted to elect Military Art during the Senior year.

Senior Year.

Subjects	Periods a Week	
	1st Term	2d Term
Chemistry, Physical, 431-432	3	3
Chemistry, Physical, Laboratory, 441-442	1	1
Chemistry, Quantitative Analysis, 411-412	8	8
Chemistry, Theoretical and Historical, 481-482	2	2
Dyeing, Textile Industry, 451-452	2	2
Dyeing, Laboratory, Textile Industry, 461-462	2	2
Elect six periods from the following:		
Chemistry, Industrial, 461-462	2	2
Chemistry, Inorganic, 422	--	2
Chemistry, Micro-analysis, 421	2	--
Chemistry, Organic, Laboratory, 491-492	2	2
Economics, 401-402	3	3
English, 401-402	3	3
German, Modern Languages, 421-422	3	3
Military Art, 401-402	4	4
Other subjects if approved	--	--
Totals	24	24

Note.—Students electing Military Art during the Junior year must take Military Art during the Senior year, and students who do not elect Military Art during the Junior year will not be permitted to elect Military Art during the Senior year.

SHORT COURSES

I. SHORT COURSES IN AGRICULTURE.

In order to meet the necessities of young men who wish to prepare themselves for the industrial arts rather than for industrial science and art, the following short courses are offered. None of these courses will lead to graduation, and they are not in any sense intended as preparatory courses to the regular four-year classes. They are designed simply to help young men better fit themselves, by a year or two of practical work under competent and interested supervision, for their chosen spheres of industrial activity.

Those students whose inclinations, limitations, or necessities lead them to take these shorter courses will be carefully drilled in the handicraft and mechanism of their art, and in the application of elementary science to the farm, dairy, garden, and orchard.

1. ONE-YEAR COURSE IN AGRICULTURE.

This course offers, in addition to the purely agricultural branches, introductory and cultural subjects, and thus enables the student to secure work in Physiography, Physics, English and Mathematics, in addition, and all the better prepares young men to become farmers, farm managers, and teachers of agriculture and allied branches in the public schools.

One-year Course.

Subjects	Periods a Week	
	1st Term	2d Term
Carpentry, Mechanical Engineering, 13	3	--
Drill, 101-102	4	4
English, 11-12	5	5
Mathematics, 11-12	5	5
Physics, 11-12	2	3
Physiography, Soils, 22	--	3
Physiology and Hygiene, Veterinary Science, 11	3	--
Plant Culture, Horticulture, 42	--	3
Totals	23	23

II. THE FARMERS' COURSE IN AGRICULTURE.

This Short Course in Agriculture is open to all who are either engaged in or interested in farming. It does not prepare for any other course offered by the College. It is designed to aid any who wish to become more modern and more businesslike in the pursuit of farming and it gives an opportunity for the busy man to spend two or four months at the College studying the branches of farming he is interested in. He is brought in close association with the specialists in College, Experiment Station, and Extension Work, and is given the opportunity to become acquainted with the work done by the various departments of the College and Station. The object of the course is to better fit men for the lives they are to live by aiding them to secure a broader view of agriculture and a better skill and higher efficiency in their chosen fields of endeavor.

This Short Course offers eighteen periods per week of required work in the several departments giving instruction in agriculture, and permits the student to elect six periods per week either in Agronomy, in Animal Husbandry and Dairying, in Horticulture, or in Poultry, making a total of twenty-four periods per week.

The Fall Term begins October 30, 1917, and continues for eight weeks. The Spring Term begins January 2, 1918, and continues for eight weeks. While the course is continuous through two terms, students may enter at the beginning either of the Fall Term or of the Spring Term.

FARMERS' COURSE IN AGRICULTURE.

Subjects	Periods a Week	
	1st Term	2d Term
Required Work		
Plant Life, Botany, 11	3	--
Entomology, Zoology, 12	--	3
Farm Equipment, Agronomy, 11	3	--
Grains, Agronomy, 12	--	3
Dairying, Animal Husbandry, 11	3	--
Breeds and Judging, Animal Husbandry, 12	--	3
PlantPropagation, Horticulture, 11	3	--
Pruning and Spraying, Horticulture, 12	--	3
Sanitation and Diseases, Poultry , 11	3	--
Poultry House Construction and Feeding, Poultry, 12	--	3
Soil Geology and Soil Physics, Soils, 11	3	--
Fertilizers and Manures, Soils, 12	--	3
Optional Work		
Agronomy Group—		
Forage Crops, Agronomy, 21	3	--
Cotton, Agronomy, 22	--	3
Corn, Agronomy, 31	3	--
Tobacco, Agronomy, 32	--	3
Animal Husbandry and Dairying Group—		
Swine Production, Animal Husbandry, 21	3	--
Beef Cattle Production, Animal Husbandry, 22	--	3
Milk Production, Animal Husbandry, 31	3	--
Farm Curing of Meat, Animal Husbandry, 32	--	3
Horticulture Group—		
Fruit Growing, Horticulture, 21	3	--
Vegetable Gardening, Horticulture, 22	--	3
Improvement of Home Grounds, Horticulture, 31	3	--
Marketing Horticulture Products, Horticulture, 32	--	3
Poultry Group—		
Incubation and Brooding, Poultry, 21	3	--
Selection and Breeding, Poultry, 22	--	3
Breeds and Judging, Poultry, 31	3	--
Marketing Farm Poultry, Poultry, 32	--	3
Totals	24	24

II. TWO-YEAR COURSE IN MECHANIC ARTS.

In order to meet the necessities of young men who wish to prepare themselves for the industrial arts rather than for industrial science and art, the following two-year course in Mechanic Arts is offered.

This course does not lead to graduation, and it is not in any sense intended as a preparatory course for the regular four-year classes. It is designed simply to help young men better fit themselves, by a year or two of practical work under competent and interested supervision, for their chosen sphere of industrial activity.

Those students whose inclinations, limitations, or necessities lead them to take this course will be carefully drilled in the handicraft of their art, and in the application of elementary science to the shop, drawing-room, and power plant.

First Year.

Subjects	Periods a Week	
	1st Term	2d Term
Mechanical Drawing, Mechanical Engineering, 11-12	3	3
Woodwork, Mechanical Engineering, 21-22	2	2
Forge Work, Mechanical Engineering, 32	--	2
Engineering Lectures, Mechanical Engineering, 41	2	--
Mechanical Technology, Mechanical Engineering, 42	--	2
Physics, Electrical Engineering, 11-12	3	3
Algebra, Mathematics, 11	5	--
Plane Geometry, Mathematics, 12	--	5
English, 11-12	5	5
Military Drill, 101-102	4	4
Totals	23	25

Second Year.

Subjects	Periods a Week	
	1st Term	2d Term
Machine Drawing, Mechanical Engineering, 51-52	3	3
Machine-shop Work, Mechanical Engineering, 61-62	3	3
Power Machinery, Mechanical Engineering, 71-72	3	3
Elementary Mechanics, Mechanical Engineering, 82	--	2
Gas Engine, Laboratory, Mechanical Engineering, 92	--	1
Machine Shop or Drawing, Mechanical Engineering	--	2
Pattern Work, Mechanical Engineering, 81	2	--
Foundry, Mechanical Engineering, 91	2	--
Algebra, Mathematics, 101	5	--
Geometry, Mathematics, 102	--	5
English, 101-102	3	3
Drill, 201-202	4	4
Totals	25	25

III. TWO-YEAR COURSE IN TEXTILE INDUSTRY.

The two-year course is offered to students who cannot spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving instruction in textile work.

First Year.

Subjects	Periods a Week	
	1st Term	2d Term
Carding and Spinning, Textile Industry, 11-12	2	2
Weaving, Textile Industry, 21-22	3	3
Textile Designing, Textile Industry, 31-32	2	1
Cloth Analysis, Textile Industry, 42	--	1
Mechanical Drawing, Mechanical Engineering, 11-12	2	2
Shop Lectures, Mechanical Engineering, 41	2	--
Forge Work, Mechanical Engineering, 32	--	2
Algebra, Mathematics, 11	5	--
Plane Geometry, Mathematics, 12	--	5
English, 11-12	3	3
Military Drill, 101-102	4	4
Totals	23	23

Second Year.

Carding and Spinning, Textile Industry, 11-12	5	5
Weaving, Textile Industry, 21-22	4	4
Textile Designing, Textile Industry, 31-32	2	1
Cloth Analysis, Textile Industry, 42	--	1
Dyeing, Textile Industry, 51-52	3	3
Machine-shop Work, Mechanical Engineering, 61-62	2	2
English, 101-102	3	3
Military Drill, 201-202	4	4
Totals	23	23

DESCRIPTION OF COURSES.

AGRONOMY

Four-Year Courses.

201. Farm Equipment.—Selecting, laying out, and equipping farms; locating, planning, and constructing farm buildings; fences, gates, bridges, roads; tools, implements and machinery; miscellaneous appliances; farm power, water supply, and sanitation. Two periods, first term. Required of Sophomores. Professor NEWMAN.

301-302. Agronomy: Grains, Grasses, and Legumes.—The history, production, uses, and improvement of these crops; a study of varieties and their adaptation; seeding, culture, and harvest. A portion of the College farm is set aside for the growing of various farm crops by students, that they may become familiar with these crops and the methods of their culture by working with them in the classroom, in the laboratory, and in the field. Each student keeps a complete record of all operations, including date and manner of seeding, amount of seed, preparation of the soil, fertilization, cultivation, seed selection, and all other operations involved in crop production and uses. Fee, $1. Required of Juniors. Three periods, first and second term. Mr. HODSON.

401-402. Agronomy: Farm Crops.—A continuation of Agronomy, course 3, including, in addition, cotton, tobacco, sweet potatoes, peanuts, hay, forage, pastures, and silage production. The first term is devoted to cotton and tobacco, the second term to crops associated with animal production. Three periods Senior year. Required in Agronomy Division. The second term is required in all other divisions except Poultry. Professor NEWMAN.

411-412. Agronomy: Crop Production and Experiments.—A continuation of the class, laboratory, and field work in Agronomy 3. The fall term is devoted to a detailed study of the crops harvested in the fall on the College and Experiment Station farms, the work having begun in the spring term of the Junior year. The spring term is partly devoted to projects carried individually by members of the class. Three periods through the year. Prerequisite, Agronomy 3. Required of Seniors in Agronomy. Professor NEWMAN and Mr. HODSON.

421. Farm Management.—Types of farming and their relation to soil, climate, labor, transportation, population, capital, and land

values; operating expenses, systems of land tenure, farm organization, size of farms; location and arrangement of buildings, roadways, fences, water supply, orchard, garden, etc.; factors governing kind and amount of equipment; financial accounts; farm records; relation of animal and plant production to maintenance of fertility; standard of living; schools and churches. Three periods, first term. Required of Seniors in Agronomy, Animal Husbandry, Normal, and Poultry divisions. Professor NEWMAN.

501-502. Agronomy.—The following courses are offered to graduates taking work in Agronomy: (a) Cereals; Cotton; Tobacco. Three periods. (b) Pastures, Meadows; Hay Production; Forage Crops: Legumes; Green Manuring and Cover Crops; Rotations; Weeds. Three periods. (c) Crop Breeding; Growing, Production and Care of Farm Seeds; Field Crop Experiments; Farm Management. Three periods.

Short Courses.

11. Farm Equipment and Organization.—Each student makes an outline drawing of his home farm showing its present arrangement into fields, pastures, etc., the location of buildings, roads, fences, wooded areas, and other features. The acreage devoted to each crop will be given and from these data a study will be made of the equipment needed and reorganization desirable and profitable. The duty of farm equipment, its care and relationship to man and animal labor, will be studied.

12. Small Grains.—Wheat, oats, rye, barley, and rice will each be studied, a greater time being given wheat and oats. Some of the phases of small grain culture included in the course are soil and regional adaptation, preparation of soil, fertilization, seeding, harvesting; utilization, rotations, vareties, seed selection and improvement.

21. Forage Crops, Hay Production, and Pastures.—Over a large portion of the State the quantity of cheap animal foods available is insufficient for the profitable raising or maintenance of the numbers of live stock each farm should carry. The object of this course is to show how an abundance of forage, hay, and pasturage may be produced and that its production will lead to more and better live stock and more fertile soils.

22. Cotton.—The details of economic cotton production and especially such problems as soil preparation, fertilization, varieties, and improvement by selection of seed. The rapid approach of the boll weevil makes it imperative that the average cotton grower either give up cotton growing or adopt modern cultural practices.

31. Corn.—This great cereal is the most widely grown and the most important of American crops. The fact that the application of correct corn-growing principles and practices by boys under sixteen years of age has more than doubled the acreage yields of corn in the State is conclusive evidence that the men farmers may do as well. The object of this course is to show how better yields of better corn may be made.

32. Tobacco: Miscellaneous Crops.—Only the more recently accepted and approved practices in tobacco growing will be given in this course. Under miscellaneous crops peanuts, soybeans, sorghums, Sudan grass, rape, etc., will be briefly discussed.

ANIMAL HUSBANDRY AND DAIRYING.

Four-Year Courses.

202. Elements of Dairying.—This course consists of the discussion of the fundamental principles of dairying. Lectures are given on the secretion and composition of milk, the testing of milk and cream for butter fat, the care of milk and cream, the construction, operation, and care of the cream separator. Butter-making and cheese-making will be discussed briefly. In the laboratory practical work is given in the testing of milk and cream, in the operation of cream separators, and in farm butter-making. Second term, three periods. Required of Sophomores. Laboratory fee, $2. Mr. SULLINS.

301. Breeds of Livestock and Fundamentals of Livestock Judging.—In this course the student will be made familiar with the names and location of the external parts of the various kinds of livestock, the use of the score card, comparative judging as a method, breeds and breed identification, and types of farm animals. First term, three periods. Required of all Juniors. Mr. SULLINS.

302. Principles of Feeding.—This course consists of lectures, recitations, and quizzes on the principles of feeding, including function of food, physiology of digestion, and feeding for different purposes. When possible, practice will be given in compounding rations and mixing feeds. Second term, three periods. Required of Juniors. Professor GRAY.

401. Principles of Breeding.—This course consists of lectures and recitations on heredity, variation, correlation, and selection as applied to stock breeding. Inbreeding, cross-breeding, and grading will be studied and discussed. First term, three periods. Required of Seniors. Professor GRAY.

402. The Production of Beef Cattle.—This course consists of practical methods of handling the beef cattle herd, emphasizing produc-

tion, maintenance, finishing, and marketing. The utilization of pastures will be given prominent consideration in the discussions. In considering the subject the breeder, feeder, and butcher or consumer will be given close consideration. All work will be based on the breeds of beef cattle adapted to Southern conditions. Work will consist of lectures, judging breed and market types, assigned readings, quizzes, and examinations. Second term, three periods. This course is optional with course 411 for Seniors. Mr. CURTIS.

411. Dairy Cattle and Milk Production.—In this course careful attention is given to a study and discussion of the feeding and care of dairy cattle and dairy calves, and to practical problems of dairy management. The last part of the course consists in drawing plans of dairy barns, milk houses, and refrigerators, and providing for their equipment. Systems of dairying, as suited to different conditions, are also considered. The laboratory work consists in computing rations for dairy cattle and dairy calves, and in practice in dairy management in connection with the College herd. First term, three periods. Optional with course 402 for Animal Industry Seniors. Mr. REED.

412. Sheep Production.—This course consists of practical methods of handling the flock, breeding, feeding, maintenance, housing, and shepherding. Special emphasis is placed on practical methods of combating sheep parasites, and on the production of early market lambs. Rotations for grazing ewes and lambs are emphasized. Close consideration is given to the breeder, feeder, and consumer. Work consists of lectures, reference readings, quizzes, and examinations. Second term, three periods. Required of Animal Industry Seniors. Mr. CURTIS.

422. Horse and Mule Production.—This course consists of practical methods of producing, feeding, and handling horses and mules, and the care and management of stallions, mares, foals, and work animals. The breeds are discussed according to their importance in the South. The breeding, production, maintenance, feeding of work horses, and finishing of horses for market are thoroughly discussed. Work consists of lectures, text-book readings, assigned readings, quizzes, and examinations. Second term, three periods. Required of Animal Industry Seniors. Mr. SULLINS.

431. The Production of Swine.—This course deals with the practical questions of raising, feeding, marketing, and sheltering swine, special emphasis being given to the use of suitable grazing crops. If possible, some time will be devoted to discussion of breeds, types, characteristics, and adaptability. First term, three periods. Required of Animal Industry Seniors. Mr. GRAY and Mr. SULLINS.

441. Farm and Creamery Butter-Making and Creamery Manage-

ment.—This is a text-book and lecture course covering the ripening of cream, the preparation and use of starters, churning and handling butter under farm and creamery conditions. Special attention will be given to creamery management and the coöperative creamery. In the laboratory practical work is given in sampling, weighing, and testing cream, scoring and grading cream, preparing starters, pasteurizing cream for butter-making, operating hand and power churns, and working and packing butter. Scoring and grading butter will also receive attention. First term, three periods. Elective for Senior Animal Industry students. Mr. REED.

442. Farm Meats and Livestock Farm Management.—The first half of the term is devoted to questions relative to farm butchering, curing, and care of meats. A smokehouse is available, so that the studies can be made practical. The second half of the term is devoted to a study of successful methods of operating farms devoted chiefly to livestock production. A study is made of the best systems applied to North Carolina conditions. Second term, three periods. Elective for Senior Animal Industry students. Mr. CURTIS.

452. Cheese-Making.—In this course the subject of cheese-making in general is covered, proper attention beging given to the composition and characteristics of common American and European cheese. The students are given practice in making American, Cheddar, Gouda, and some forms of soft cheese. Second term, three hours. Elective for Animal Industry Seniors. Mr. REED.

451. Advanced Stock Judging.—In this course consideration is given to animal conformation, quality, and condition with reference to market and show-yard requirements; to the selection of horses, beef cattle, dairy cattle, sheep, and swine for the feed lot, the market, and for exhibition, and to judging at live-stock shows. First term, three periods. Elective for Senior Animal Industry students. Dairy cattle will be judged once a week throughout the whole term by Mr. Reed, Beef Cattle and Sheep by Mr. Curtis, and Swine by Mr. Gray.

461. Pedigree Livestock Production.—This course consists of a history of breeds and prominent families of livestock, pedigrees of prominent individuals, and the fundamentals of management of pure-bred herds, with emphasis placed on production and marketing. The course will consist of text-book readings, reference readings, lectures, quizzes, and examinations. First term, three periods. Elective for Senior Animal Industry students. Mr. CURTIS and Mr. SULLINS.

Courses for Graduates.

Students entering graduate work in Animal Industry should have a thorough training in the fundamental principles of the subject. The following graduate courses are offered for the year 1917-1918.

501-502. Animal Nutrition.—In this course there will be a study of recent scientific publications on the chemistry and physiology of the nutrition of animals and the chemical and physiological changes and processes involved in the activities of animal life. The student will be expected to follow out courses in assigned reading, hold conferences with the instructor, and submit regular reports on the progress of his studies. First and second terms.

511-512. Investigational Work.—The Animal Industry Division has many investigational projects under way. The graduate student will be expected to select one of the subjects below and devote half of his time to assisting in carrying the investigation forward: (*a*) Effect of various feeds upon the bodies of swine; (*b*) The removal of onion flavors from milk and butter; (*c*) Effect of high and low rations of cotton-seed meal on the finishing quality, economy of feeding, and health of beef cattle; (*d*) Effect of light and heavy maintenance rations on grazing qualities of steers the following summer; (*e*) Cotton-seed meal as a feed for swine; (*f*) Effect of high and low feeding of lambs in preventing or retarding effect of sheep parasites; (*g*) Effect of cotton-seed meal, when fed under varying conditions, upon the health and generative qualities of calves and heifers; (*h*) The effects of various rations upon egg production; (*i*) The effects of various rations upon body development of poultry; (*j*) The methods of feeding, handling, and control of chick mortality; (*k*) The effects of feeds upon the quality of eggs; (*l*) The effect of feeds upon the quality of flesh of table fowls; (*m*) The effect of cotton-seed meal upon poultry breeding stock, egg production, development of the young, and upon constitutional vigor; (*n*) The relative value of various animal proteins for feeding fowls; (*o*) Mendelian studies. Students who select poultry subjects for major and investigational work will be classified in the Poultry Science Division. Students selecting other livestock investigational problems will be classified in the Animal Husbandry and Dairy Division.

Short Courses.

11. Farm Dairying.—This course is given to furnish the student instruction regarding the dairy industry. It should be of use and interest to any farmer, whether he is especially interested in making dairy farming the largest part of the farm operations or not. The subject material includes the testing of milk and cream for butterfat, need and value of testing individual cows, the composition and properties of milk, its food value and use as a food, the separation of cream and farm butter-making, and the proper method of handling milk and cream. All discussions and laboratory work will be taken

up from the farm viewpoint. Two lectures and one laboratory period a week during the fall term of the Short Course. Mr. T. C. REED.

12. Breeds and Judging.—This course consists of a brief study of the most important breeds and market classes of horses, cattle, sheep, and swine. Their history, development, distinctive characteristics, adaptation and value to the stockman, butcher, and consumer are studied. The differences in function and conformation between pure-bred animals and scrubs or natives is pointed out. By lectures, demonstrations, and personal score-card practice the student learns the good points and defects of the animals before him in the show ring. After the use of the score-card is learned, work will be given in comparative judging. Second term, three periods. MR. SULLINS.

21. Swine Production.—This course consists of a brief study of the most economic and best methods of producing hogs on Southern farms, also preparing them for market or exhibition. Special attention is given to home-grown feeds and to the practical management of hogs. The distinctive characteristics and the adaptability of the most important breeds are discussed. First term, three periods. MR. SULLINS.

22. Beef Cattle Production.—This course consists of practical methods of handling the beef cattle herd, emphasizing production, maintenance, finishing, and marketing. The utilization of pastures will be given prominent consideration in the discussions. In considering the subject the breeder, feeder, and butcher or consumer will be given close consideration. All work will be based on the breeds of beef cattle adapted to Southern conditions. Work will consist of lectures, judging breed and market types, assigned readings, quizzes, and examinations. Second term, three periods. MR. CURTIS.

31. Milk Production.—The aim of this course is to furnish practical instruction regarding the dairy cow on the farm. A study of the different breeds will be made, their adaptation to conditions and purposes, selection of individual cows by use of the score-card and by records, keeping production records, general herd improvement, selecting of the herd bull, calf raising, feeding cows, care and management of the herd, and dairy barn construction. A large herd owned by the College, consisting of Jerseys, Holsteins, and Ayrshires, will be used in demonstrations throughout the course. Three lecture periods a week in the fall term of the Short Course. MR. T. C. REED.

32. Farm Curing of Meats.—This work takes up questions relative to farm butchering, curing and care of meats. A study is made

of the best systems applied to North Carolina conditions. A smokehouse is available and other butchering appliances, so that the studies can be made practical. Second term, three periods. Mr. CURTIS.

BOTANY.

Four-Year Courses.

101-102. General Botany.—This course is planned to give a general knowledge of the elementary facts and fundamental principles of botany. It aims to supply the foundation upon which subsequent courses in this division are built, as well as the basic facts upon which rest certain phases of applied botany, such as horticulture and agronomy. The first term will be devoted to the general morphology of the seed plants. Attention will be given to the anatomical features of seeds, flowers, leaves, fruits, stems, roots, cells, tissues, and tissue systems, and to the correlation of anatomical structures with their physiological functions. The second term will be devoted to the general morphology of algæ, fungi, mosses, and ferns, using selected representatives as types in both the lecture and laboratory work. Special emphasis will be laid upon nutrition, reproduction, life history, and evolution of sex of those forms which are of both scientific and economic importance. Fee, $1. Three periods throughout the year. Required of Freshmen. Professor WOLF, Mr. COOPER, Mr. LEHMAN.

201-202. Plant Physiology and Systematic Botany.—This course deals with the physical and chemical phenomena in plant activities. Among the subjects covered will be osmosis, with reference to permeability and the protoplasmic membrane, absorption of water, the water content of soil in relation to plant growth, removal of water from soil by plants, mineral nutrients of the soil in relation to growth processes, mineral requirements of plants, acid and alkali soils, causes and methods of dealing with these conditions, soil infertility, with a discussion of the theories of depletion, accumulation of toxins, and occurrence of microflora, transpiration, movement of water in plants, photosynthesis, including the elaboration, translocation and storage of carbohydrates, fats, and proteins, enzymic activity, respiration, fermentation, and a biological explanation of variation and heredity. A portion of the spring term will be given over to a study of the classification of plants in order to aid students in identifying the more common forms. Fee, $1. Three periods, first term; two periods, second term. Required of Sophomores. Professor WOLF and Mr. LEHMAN.

401. Plant Diseases.—Consideration will be given to those diseases

of farm, garden, and truck crops of parasitic and nonparasitic origin which are of greatest economic importance. The lectures will consist of a review and discussion of the more important publications dealing with the symptoms, life histories, and methods of control of plant diseases. Some attention will be given to the morphology and methods of identification of fungi, emphasizing types of the orders concerned in the production of diseases. The laboratory work is designed to acquaint the student with field and laboratory methods of diagnosis of plant diseases, with laboratory technique involving the isolation of causal organisms and the making of inoculations, and with the preparation of fungicides and disinfectants. Each student will be required to collect and diagnose a considerable number of pathogenic fungi. Fee, 50 cents. Three periods, first term. Open only to students who have completed courses 101-102 and 201-202. Professor WOLF, Mr. COOPER.

402. Agricultural Bacteriology.—The subject-matter of this course includes an introduction to the principles of bacteriology, and is designed to serve as a basis for students contemplating specialization in applied phases of the subject, such as bacteria in relation to plant diseases, to human diseases, and to the diseases of domestic animals; soil bacteriology; dairy bacteriology; sanitation with reference to sewage disposal and water supplies; and the consideration of bacterially produced processes in the industries. The student becomes familiar through laboratory practice with methods employed in the culture and study of bacteria. Fee, $3. Three periods, second term. Open to all students who have completed courses 101-102 and 201-202. Professor WOLF, Mr. COOPER.

411-412. Bacteriology (Advanced).—Those who desire to specialize in any of the fields of bacteriology may elect this course. It is designed that the course be made to fit the needs of those students electing it. Three periods. Credit for either or both terms. Prerequisite, Botany 402. Professor WOLF, Mr. COOPER.

511-512. Mycology.—This course concerns itself with the classificatory characters of fungi. The lectures will deal with the phylogeny, morphology, and development of representative genera of fungi. The laboratory work is designed to acquaint the student with these fungi, with keys, monographs, and other publications, whether written in English or in foreign languages. Open only to graduate students after consultation with the head of this department. Professor WOLF.

521-522. Systematic Botany.—Those who desire to become acquainted with the local flora can take this work to apply as advanced credit. One may choose to become familiar with the classifi-

cation of trees, grasses, weeds, or other indigenous plants. Lectures treating of the principles of the classification and the relationship of the principal families to each other will be given. The laboratory work will acquaint the student with the various books, manuals, and bulletins dealing with taxonomic botany, not only for this section, but other parts of the United States as well. Professor WOLF.

Short Courses.

11. Plant Life.—This study will deal with plants with a view of obtaining a better understanding of their activities. Such topics as the absorption of minerals from the soil, their transport through the stem of the plant, the making of food by the leaves, breathing, digestion, fermentation, seed production and growth of plants will be discussed in an elementary way and the practice work accompanying it will consist of appropriate laboratory demonstrations and tests. This will be followed by a study of the more common diseases of field, orchard, and garden crops. Emphasis will be given to methods of recognizing these diseases and of controlling and preventing them. Preserved and dried specimens of these diseases will be examined in the laboratory. Professor WOLF.

CHEMISTRY.

101-102. Inorganic Chemistry.—Hessler and Smith's *Essentials of Chemistry*. The common elements and their principal compounds, together with the fundamental principles of the science, are studied by means of lectures and recitations. Two periods. Required of Freshmen. Professor WITHERS, Doctor WILLIAMS, and Doctor FREDERICK.

111-112. Inorganic Chemistry.—Laboratory work. Hessler and Smith's *Laboratory Exercises*. Here, under the eye of the instructor, experiments illustrating and emphasizing the work of the classroom are performed by the student. One period. Required of Freshmen. Fee, $2. Doctor FREDERICK.

211-212. General Chemistry.—Smith's *General Chemistry for Colleges*. A study of the non-metallic elements, metals, laws of chemical combination, ionization, electrolysis, neutralization, valence, equilibrium, molecular weights, thermochemistry, etc. Three periods. Required of Sophomores in Engineering. Professor WITHERS, Doctor DOBBINS, and Mr. FETZER.

221-222. General Chemistry.—Laboratory work to accompany Course 211-212, followed by a brief course in qualitative analysis. Two periods. Required of Sophomores in Engineering. Fee $3. Doctor DOBBINS and Mr. FETZER.

201-202. Analytical Chemistry.—Tower's *Qualitative Chemical Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is given thorough practice in the identification of the more common ions, and in the complete analysis of mixtures of pure salts, commercial products, alloys, and minerals. Three periods. Required of Sophomores in Chemistry, Agriculture, and Textile Industry. Fee. $4. Doctor MILLER.

212. An Introduction to Volumetric Quantitative Analysis.—This course is given from about the middle of March to the end of the term following the completion of course 201. In this course the student is introduced to the principles involved in titrometric determinations in Volumetric Quantitative Analysis.

The student is taught to make up and standardize solutions to be used in Acidmetry and Alkalimetry, and also is taught the use of such solutions, as Potassium Permanganate, and Potassium Dichromate, in various determinations.

301-302. Analytical Chemistry.—Lincoln and Walton's *Quantitative Analysis.* Gravimetric and volumetric analysis. Special attention is given to the determination of elements in fertilizers, feedstuffs, and other substances of special interest to agricultural students. Two periods. Required of Juniors in Agriculture. Fee, $2. Doctor WILLIAMS.

311-312. Analytical Chemistry.—Lincoln and Walton's *Quantitative Analysis.* Gravimetric and volumetric analysis of pure salts at first and later of substances of agricultural and industrial importance. Three periods. Required of Juniors in Chemistry. Fee, $4. Doctor WILLIAMS

331-332. Organic Chemistry.—Moore's *Outlines of Organic Chemistry.* A study of the fundamental principles of Organic Chemistry and of the most important organic compounds. Three periods. Required of Juniors in Chemistry. Doctor DOBBINS.

341-342. Organic Chemistry.—Laboratory work. Orndorff's *Laboratory Manual.* A series of experiments illustrating the methods used in the preparation of the principal classes of organic compounds and the fundamental reactions involved in their transformations. One period. Required of Juniors in Chemistry. Fee, $3. Doctor DOBBINS.

411-412. Analytical Chemistry.—Quantitative analysis, advanced. A continuation of Course 311-312. Eight periods. Required of Seniors in Chemistry. Fee $8. Doctor WILLIAMS.

421. Microchemical Analysis.—A laboratory course in which the common elements are detected by means of the microscope. The

student is also taught to identify such fabrics as silk, wool, linen, cotton, etc., and to analyze alloys, soils, fertilizers, and other commercial products for their constituents. Two periods, first term. Required of Seniors in Chemistry. Fee, $2. Doctor MILLER.

422. Advanced Inorganic Chemistry.—A lecture course in which is discussed the development of the science of chemistry, special attention being given to the periodic law, radio activity, the coördination theory, and the modern trend of chemical thought. Two periods, second term. Required of Seniors in Chemistry. Doctor MILLER.

431-432. Physical Chemistry.—Jones's *Introduction to Physical Chemistry.* The fundamental principles of Physical Chemistry are taken up, including the constitution of matter, the gas laws, thermochemistry, photochemistry, electrochemistry, chemical dynamics, and equilibrium, emphasis being laid on the phenomena of solutions. Three periods. Required of Seniors in Chemistry. Doctor FREDERICK.

441-442. Physical Chemistry.—Laboratory work. Here the student carries out experiments involving molecular weight determinations, lowering of freezing point, elevation of boiling point, conductivity measurements, and other determinations as they are deemed expedient. One period. Required of Seniors in Chemistry. Fee, $2. Doctor FREDERICK.

451-452. Bio-Chemistry.—A study of carbohydrates, fats, and proteins. Two periods. Required of Seniors in Chemistry. Professor WITHERS.

461-462. Industrial Chemistry.—A study of the outlines of industrial chemistry, with especial attention to the rapidly growing chemical industries of North Carolina and of the South. This course, which will be made thoroughly practical, will emphasize the intimate relation of chemical industry to agriculture and to all branches of engineering. Three periods. Elective for Seniors. Mr. FETZER.

471-472. Organic Chemistry.—Moore's *Outlines of Organic Chemistry.* A study of the fundamental principles of organic chemistry and of the most important organic compounds, together with laboratory work. Three periods. Required of Seniors in Agronomy, Animal Husbandry, Normal, and Poultry divisions. Doctor DOBBINS.

501-502. Agricultural Chemistry.—Stoddart's *Chemistry of Agriculture.* A study of plants and animals, their nutrition and products, from a chemical standpoint. Three periods, first or second term. Professor WITHERS.

CIVIL ENGINEERING.

202. Descriptive Geometry, Stereotomy.—Text-book, lectures, problems, and completed drawings. Two periods, second term. Required of Sophomores in Civil Engineering. Assistant Professor POOLE.

302. Graphic Statics.—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second term. Required of Juniors in Civil Engineering. Professor MANN.

301. Surveying.—Land surveying, leveling, elements of triangulation, topographical surveying, road location. Two periods, first term. Required of Juniors in Civil Engineering. Associate Professor TUCKER, Assistant Professor POOLE.

311-312. Topographical Drawing.—Conventional signs, computations, forms of field notes, methods of platting, completed map from field notes. Two periods. Required of Juniors in Civil Engineering. Associate Professor TUCKER.

321. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Civil Engineering.

451. Mechanics.—Two periods, first term. Required of Seniors. Professor MANN, Associate Professor TUCKER.

331. Construction.—Building materials, including brick, the various stones, mortar, sand, and cement. Structures, including foundations, dams, retaining walls, arches, piers, and other masonry structures. Special attention is paid to the building qualities of rock found in North Carolina. Baker's Masonry Construction. Lectures. Two periods, first term. Required of Juniors in Civil Engineering. Associate Professor TUCKER.

322. Railroad Engineering.—Reconnaissance, preliminary and location surveys; simple, compound, and reversed curves. Two periods, second term. Required of Juniors. Assistant Professor POOLE.

471-472. Railroad Engineering.—Turnouts, spirals, track-laying; cross-sections, calculations of earthwork, including tables and diagrams; the general principles of railroad construction, with special attention to cost data. Three periods, first term; two periods, second term. Required of Seniors. Searle's Field Engineering, Crandall and Barnes's Railroad Construction, Lectures. Associate Professor TUCKER.

341-342. Surveying.—Field work. Use of instruments, compass, level, and transit. Practical work in land surveying, topography, leveling, railroad surveying, working up notes. Two periods. Required of Juniors in Civil Engineering. Associate Professor TUCKER, Assistant Professor POOLE.

401. Surveying.—Advanced field work. Sextant and plane table. Includes a survey of a section of railroad, over which cross-sections are taken and detailed estimate of cost made. Location of spirals, special problems in railroad engineering, working up notes and the constructon of mass diagrams. Two periods, first term. Required of Seniors in Civil Engineering. Associate Professor TUCKER, Assistant Professor POOLE.

411. Roofs and Bridges.—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's Roofs and Bridges. Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Professor MANN.

402. Bridge Design.—Calculation of stresses, design, specifications, and estimate of cost of a wooden rooftruss and a steel railway bridge. Three periods, second term. Required of Seniors in Civil Engineering. Professor MANN.

412. Municipal Engineering.—Text-books, lectures. Two periods, second term. Required of Seniors in Civil Engineering. Professor MANN.

351-352. Road Building.—Text-book on construction of roads, streets, and pavements. Lectures on practical road making in North Carolina. One period. Required of Juniors in Civil Engineering. Assistant Professor POOLE.

422. Astronomy.—Determination of azimuth, latitude and longitude, and time. Two periods, second term. Required of Seniors in Civil Engineering. Associate Professor TUCKER.

432. Reinforced Concrete.—Turneaure & Maurer's *Principles of Reinforced Concrete Construction.* Problems in beams, columns, retaining walls, etc. Three periods, second term. Required of Seniors in Civil Engineering. Professor MANN.

431. Mechanics of Materials.—Study of stresses in beams, columns, shafts, etc. Merriman's *Mechanics of Materials.* Three periods, first term. Required of Seniors in Civil Engineering. Professor MANN.

441. Hydraulics.—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics.* Three periods, first term.. Required of Seniors in Civil Engineering. Professor MANN. Assistant Professor POOLE.

442. Hydraulics.—Two periods, second term. Required of Seniors in Mechanical and Electrical Engineering. Professor MANN, Assistant Professor POOLE.

452. Laboratory.—Tests of cement and the ingredients of concrete; tests of road-building materials and the binding qualities of the more common bonding substances. Hydraulic measurements. Two periods, second term. Required of Seniors in Civil Engineering. Associate Professor TUCKER and Assistant Professor POOLE.

462. Water Supply.—Investigation of water supplies, methods of treatment, design and construction of filtration and pumping plants, distribution systems. Two periods, second term. Required of Seniors in Civil Engineering. Professor MANN.

ARCHITECTURE.

211. Architecture.—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering Assistant Professor POOLE.

221-222. Architectural Drawing.—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Assistant Professor POOLE.

HIGHWAY ENGINEERING.

The interest in good roads in North Carolina has grown marvelously in the past few years. To meet the resultant demand in the State for well trained highway engineers several of the courses given in the Civil Engineering Department are designed especially to fit young men for practical work in road building.

In courses 301 and 302 the student is given instruction in the use of surveying instruments, theory of surveying, location of roads, grades and their influences, railroad curves, and earth work.

Courses 341 and 342 furnish practical information in the use of level and transit, and other surveying instruments.

Course 311-312 is a practical course in drawing in which the student plats notes taken in actual work and interprets the results. Contours and profiles are platted and studied.

In Courses 331 and 351-352 the student is given thorough instruction in the general principles of construction and road building. An elementary course in Geology is included in course 331 and especial stress is laid upon the rocks of North Carolina suitable for road building.

Courses 411 and 402 afford instruction in bridge building. In Course 402 the students are required to design in every detail a highway bridge.

In the Laboratory Course instruction is given in cement testing and in laboratory experiments in the qualities of various road-building materials.

ECONOMICS.

The courses in this Department are intended for Agricultural, Engineering, and Textile students who desire a knowledge of the business side of their special lines of work.

301-302. Economics of Business; Organization and Management.—Alternate elective with Drill and Military Tactics for Junior Agricultural, Engineering, and Textile students. Two hours, both terms. Professor CAMP.

401. Market Distribution. This course is designed to give the student an understanding of the present system of grading, packing, storing, selling, transporting, financing the sale of and collecting payments for farm products. The cost of the existing agencies will be considered from the point of view of the farmer, middleman, and consumer. A brief survey will be given of the methods of large-scale business organizations as efficient instruments for the distribution of products. Three periods, first term. Elective for all Seniors in Agriculture. Required of Senior Normal students. Professor CAMP.

402. Organization for Marketing and Credit.—A survey will be made of the methods of operation of successful marketing and credit organizations in Europe and the United States. The kind of organizations needed for marketing North Carolina products will be considered. The necessity for credit on the farm and the method of meeting the need by commercial banks, by coöperative banks in Europe and the United States, and by loan agencies generally will be considered in relation to the production, storage, and sale of farm products. Three periods, second term. Elective for all students of Agriculture in the Senior year. Required of Senior Normal students. Professor CAMP.

411-412. Cotton Grading.—A course in cotton grading will be arranged if a sufficient number wish to take it.

EDUCATION.

301. Elementary Psychology.—Three hours per week during the fall term of Junior year. This course will deal with child life, with special reference to the period of adolescence. The mental

processes of attention, interest, memory, perception, instinct, habit, etc., will be studied with a view to giving the student a sympathetic understanding of the child, his capabilities, weaknesses, and emotions.

302. History of Education.—Three hours per week, spring term. Junior year. This course is intended to inform the student of the various stages in the development of education, both in Europe and America. Emphasis will be placed upon modern educational history, with special reference to those types of education which are conforming more closely to the demands upon teachers in the industrial field.

401. Methods of Teaching.—Three hours per week during fall term of Senior year. A study of the relation of subject-matter to the aim of education, and the proper methods of presentation will be studied. An effort will be made to thoroughly acquaint the student with the inductive and deductive method, the synthetic and analytical method of teaching, and their adaptability to the various subjects taught in the secondary schools. The student will be drilled in the importance of differentiating in the presentation of subject-matter.

411. Secondary Education.—Three hours per week, fall term of Senior year. The various types of secondary schools, with special emphasis upon the rural schools, will be studied. The relative importance of the subjects, with reference to their practical value in the life of the child, and their value toward college entrance requirements, will be given attention. The matter of maintaining the interest of the student throughout the secondary school course will be studied in detail.

402. Methods of Teaching Agriculture.—Three hours per week during spring term of Senior year. Special attention will be given to the methods to be used and the assembling and utilizing of materials in teaching (*a*) Agronomy; (*b*) Animal Husbandry and Dairying, and (*c*) Horticulture, together with methods of teaching the related sciences.

412. Schoolroom Management, Practice Teaching, and Observation.—Three hours per week during spring term of Senior year. The students will be instructed in the best methods of controlling a class and a schoolroom, and as far as is practicable will be given an opportunity to do some teaching and observation in nearby schools.

421. Extension and Demonstration.—Three hours per week, fall term of Senior year, elective. This course is intended to prepare the student for extra-mural teaching through the various exten-

sion activities, and to become well versed in the use of demonstration methods and materials.

422. Rural School Problems.—Three hours per week during spring term of Senior year, elective. A thoroughly detailed study will be made of the numerous problems confronting the rural teacher, especially in the secondary schools, with an aim to finding a solution of these problems. A practical study of these problems will be made through surveys, probably selecting a few typical counties.

ELECTRICAL ENGINEERING.

101-102. Physics.—A course designed to give a knowledge of the fundamental principles of Mechanics as a basis for advanced work in Physics and Mechanics given later in the Engineering courses. The second half of the course includes a study of the fundamental principles of sound, heat, and light. Demonstrated lectures are given each week and essays on parallel reading on the History of the Physical Sciences are required each month. Recitations follow the lectures and Black and Davis's *Practical Physics* as a text-book. Four periods. Required of Freshman in Engineering and Chemistry. Associate Professor HECK, Assistant Professor PRITCHETT.

111-112. Physical Laboratory.—In the shops the engineering student handles and works with the materials of construction. In the laboratory he is taught to measure and observe. The course here is arranged to make him familiar through actual observation with physical phenomena and teach him how these are measured and controlled. It includes practice in handling units in the British and Metric systems, measurements, composition and resolution of forces, the lever, the inclined plane, the pendulum, density of materials, and specific gravity, the thermometer, heat and its effect on materials, sound laws of strings, laws of lenses and mirrors. One period. Fee, $1. Required of Freshmen in Engineering and Chemistry. Mr. DERIEUX.

201-202. Sophomore Physics.—A continuation of the study of Physics for Engineers requiring more mathematical preparation and having a more practical application to engineering. The first half of the year is given to the elements of heat, including elementary thermodynamics. The second half of the year is given to electricity and magnetism. A full survey of the phenomena of electricity and a thorough practice in solving general electrical problems is given. Demonstrated lectures and recitations. Two periods. Required of Sophomores in Engineering and Chemistry. Prerequisite, Physics 101-102. Associate Professor HECK.

211-212. Sophomore Physical Laboratory.—A more advanced laboratory course in Physical Measurements. The theory of measurements and estimation of accuracy is given by lectures at the beginning of the work. Accurate measurements of heat and light are given throughout the first half of the year. General quantitative measurements of magnetic and electrical properties of materials comprise the work of the second half of the year. One period. Fee, $2. Required of Sophomores in Engineering and Chemistry. Prerequisite, Physical Laboratory, 111-112. Assistant Professor PRITCHETT.

221-222. Textile Physics.—As textile work continually presents the operations of forces in machines and the more intricate problems of humidity and elasticity, a thorough course in Physics is required of all Textile students. This course emphasizes the particular problems met in textile work and gives a broad basis for interpretation of related engineering problems. The work embraces lectures, recitations on text-book assignments, and practical measurements in the laboratory. Lectures are given with demonstrations of the action of forces in machines and materials as nearly as possible like those the student will meet in practical textile work. The historical development of the science is discussed to give the students a broader outlook and to stimulate a desire for further study. These demonstrations and the work in the laboratory are made with actual machines and problems taken from actual practice. Two periods of recitation and one period of demonstration or laboratory work throughout the year. Required of Sophomores. Assistant Professor PRITCHETT.

231-232. Agricultural Physics.—Physics is the study that treats of the action of all forces wherever found, whether in an engine or in the soil, in the atmosphere causing a change in weather or in a seed causing it to swell. Agricultural students must, therefore, study Physics to get a proper understanding of the cause and method of action of the mechanical and life forces that they meet in their other studies. The course in Physics required of Agricultural students is made thorough, and the subject-matter taken up is made to bear on the practical problems of agriculture. The course embraces lectures, recitations on text-book, and demonstrations and measurements in the laboratory. The lectures are given with demonstrations and measurements of forces actually operating in machines and instruments as nearly as possible like those the student will meet in after life. The lectures also emphasize the historical development of the science for the purpose of giving the student an impulse toward continued development and study. They include a short course in

the study of weather, and during the months of January and February weather maps and local observations are followed so as to give the students practical experience in forecasting. Two periods class work and one period demonstration or laboratory throughout the year. Required of Sophomores. Associate Professor HECK.

11-12. Physics.—A general science course is given under the head of Physics. The course embraces the historical development of the scientific ideas of today, with special emphasis on the development of practical machines and engines. Practical determinations of densities, strength of materials, measurements of heat and electricity, and other everyday determinations are made before the class. Machines are analyzed and the relations of force and energy are worked out. Practical heating and the wiring of electric circuits are also studied. The purpose of the course to be both educative and practical is carefully followed. Required of first-year students. Three periods. Fee, $1. Mr. DEBIEUX.

301-302. Direct Current Machinery and Apparatus.—A thorough study is made of the production and utilization of direct currents, beginning with the theory of the magnetic circuit, the electric circuit, electromagnetic induction, electrical measurements, storage batteries, dynamos and motors, operation and care of direct current machinery, electrical distribution and lighting. Text-book, Franklin and Esty's *Elements of Electrical Engineering.* Three periods, throughout the year. Required of Juniors in Electrical Engineering. Prerequisites, Subjects 201-202. Professor BROWNE, Associate Professor MCINTYRE.

311-312. Electrical Engineering.—An introductory course for students in other engineering departments, consisting of the study of the apparatus used in the production, distribution, and utilization of electrical power. Required of Juniors in Mechanical Engineering. Text-book, Timbie's *Elements of Electricity.* Two periods. Prerequisites, Subjects 201-202. Professor BROWNE, Associate Professor MCINTYRE.

401-402. Alternating Currents and Machinery.—A study of the flow of periodic currents in circuits containing resistance, inductance, and capacity; the construction, operation, and performance of alternating current machinery. Text-book, Franklin and Esty's *Alternating Currents.* Three periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 301-302. Professor BROWNE.

411-412. Industrial Applications of Electricity.—A detailed study is made of the many industrial applications of electricity, such as electric traction, the electric drive in mill and factory, electric

power stations, industrial electro-chemistry and electro-metallurgy, telegraphy, and telephony. Two periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects, 301-302 and 321-322. Professor BROWNE, Associate Professor MCINTYRE.

421-422. Electrical Transmission of Power.—A practical study of the problems involved in the transmission of power from the generating station to the consumer; hydro-electric developments; high-tension transmission. Required of Seniors in Electrical Engineering. Text-book, Ferguson's *The Elements of Electrical Transmission.* Two periods. Prerequisites, Subjects 301-302 and 321-322. Professor BROWNE.

321-322. Direct Current Laboratory.—This study accompanies that of direct current machinery. It includes use of standardizing apparatus, calibration of instruments, advanced electric and magnetic measurements, and the operation and testing of direct-current dynamos and motors. Text-book, Sever and Townsend's *Laboratory and Factory Tests*, supplemented by notes. Two periods. Fee, $2. Required of Juniors in Electrical Engineering. Prerequisites, Subjects 201-202 and 211-212. Associate Professor MCINTYRE, Mr. SNEAD.

331-332. Electrical Engineering Laboratory.—This course accompanies Study 311-312. Instruction is given in the care and operation of direct and alternating current machinery. Required of Juniors in Mechanical Engineering. One period. Fee, $1. Text-book, Sever's *Direct Current Tests.* Prerequisites, Subjects 201-202 and 211-212. Associate Professor MCINTYRE, Mr. SNEAD.

431-432. Alternating Current Laboratory.—This study is taken up simultaneously with the study of alternating currents. It includes practice with alternating currents, measurements of inductance and capacity, experimental study of transformers, alternating current generators and motors, advanced methods of testing electrical apparatus, and shop testing. Text-book, Sever and Townsend's *Laboratory and Factory Tests*, supplemented by notes. Two periods. Fee, $2. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 301-302 and 321-322. Associate Professor MCINTYRE, Mr. SNEAD.

441-442. Electrical Design.—An introductory course in the designing of electrical apparatus, taking up the calculation of circuits and performance, the design of rheostats and heating devices, controllers, electromagnets, transformers, direct and alternating current dynamos and motors. Three periods first term, two periods second term. Required of Seniors in Electrical Engineering. Prerequisites, 301-302. Professor BROWNE, Assistant Professor MCINTYRE.

341-342. Electric Motors.—The elementary laws of electric currents, principles, construction, operation, and care of electrical machinery, electric lamps and illumination. A study of the use of electrical machinery in factories, with special reference to textile mills. Two periods. Required of Juniors in Textile Industry. Associate Professor McINTYRE.

ENGLISH.

For use in English throughout this course every student needs a copy of the Bible with marginal references, and a dictionary as large at least as the desk Standard or Webster's Secondary School Dictionary. These can be bought when the student comes to enter College or purchased upon arrival.

101-102. Composition and Rhetoric.—After a review of the principles of English grammar, special attention is given to the selection of subjects, the planning of essays, and the study of words, sentences and paragraphs. Frequent themes are required, the work being directed mainly upon the mechanics of writing and the making of reports on scientific studies. Required of Freshmen. Three periods, throughout the year. Mr. WEBBER, Mr. BREARLEY.

201-202. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class of the writings of representative American authors. Essays are based largely upon class and parallel reading. Three periods, first term, and second term to March 1. Required of Sophomores. Mr. WEBBER, Mr. BREARLEY.

212. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Three periods after March 1. Required of Sophomores. Associate Professor SUMMEY, Mr. WEBBER.

301. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Scientific exposition in particular is studied in selected essays and addresses; and in frequent essays the principles learned are put into practice. Three periods, first term. Required of Juniors. Associate Professor SUMMEY, Mr. WEBBER.

302. Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the

course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods, second term. Required of Juniors. Professor HARRISON, Associate Professor SUMMEY.

401. Classics.—The lives and works of the great scientists and of other great writers, particularly of the nineteenth century, are studied in this course. Essays will form an important part of the work. Three periods, first term. Open to Seniors. Professor HARRISON.

402. Journals.—To give practical knowledge of technical and of other standard journals is the purpose of this course. The frequent essays required are mainly of scientific and technical character. Three periods, second term. Open to Seniors. Professor HARRISON.

11-12. Short Course.—This is a thoroughly practical course in the elements of grammar and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class, and supplementary reading is assigned for private study. Three hours a week. Required of first-year Short Course students. Mr. BREARLEY.

GEOLOGY.

202. Geology.—Introductory course in Geology. Pirsson and Schuchert's *Text-book of Geology, Part I.* A brief course treating of soil, the action of the various agencies on the land, building up of land by water, and the study of the principal constituents of the soil. Two hours, second term. Required of Sophomores. Doctor WILLIAMS and Mr. MULLEN.

HORTICULTURE.

Four-Year Courses.

201. Plant Propagation.—A course in the multiplication of plants. Seedage, separation and division, cuttage, layerage, and graftage are considered in turn. The most commonly used methods of propagating vegetables, fruit and ornamental plants are emphasized. Three periods, first term; recitation two hours, practice two hours per week. Fee, $1. Required of Sophomores. Mr. HAYDEN.

301. Practical Pomology.—A general course in fruit growing. Among the subjects considered are the choice of locations, the selection of sites and soils; the choice of varieties; the preparation of the land; the planning, planting, fertilization, and management of orchards; and the harvesting, storing and marketing of fruits. Practice consists in the inspection and examination of sites and

soils, the making of orchard plans; laying out orchards; handling and planting trees; and the exercise of modern methods of grading, packing, and marketing fruits. Three periods, first term; recitation two hours, practice two hours per week. Required of Juniors in Horticultural, Normal, Poultry, and Agronomy divisions. Prerequisite, Plant Propagation 201. Professor PILLSBURY.

302. Pruning and Orchard Protection.—A course in the training of fruit plants and their protection from insect pests and fungous diseases. Treatment of special diseases and methods of protection from frost are also considered. A continuation of Practical Pomology. Three periods, second term; recitation two hours, practice two hours per week. Fee, $1. Required of Juniors in Horticultural, Normal, and Agronomy divisions. Prerequisite, Practical Pomology 301. Professor PILLSBURY.

312. Vegetable Gardening.—A course dealing with the principles of vegetable growing and the methods employed in the home, truck, and market gardening areas. Special attention is given to the home garden, and the trucking industry in North Carolina. Consideration is given to sites, soils, manures and fertilizers, seed sowing, transplanting, and the culture, harvesting, storing, and marketing of all important vegetables. Three periods, second term; recitation two hours, practice two hours per week. Fee, 50 cents. Required of Juniors. Prerequisite, Plant propagation 201. Mr. HAYDEN.

401. Greenhouse Management.—A course which treats of the principles and practice of growing plants under glass. It includes the forcing of both vegetable and flowering plants. A given area is assigned to each student and he is required to plan, plant, and manage it to a successful conclusion. Three periods, first term; recitation two hours, practice two hours per week. Required of Seniors in Horticultural Division. Prerequisite, Vegetable Gardening 312. Mr. HAYDEN.

411. Systematic Pomology.—A course which combines both a study of the origin and evolution of our native fruits, and practice in description, identification, classification, and judging of varieties. Three periods, first term; recitation two hours, practice two hours per week. Required of Seniors in Horticultural Division. Prerequisite, Practical Pomology 301. Professor PILLSBURY.

412. Plant Breeding.—A course in the study of the principles of plant breeding, and practice of the most approved methods of pollination, crossing, and selection for the origination and improvement of varieties of plants. Mendelism and biometrical measurements constitute an important part of the course. Three periods,

second term; recitation two hours, practice two hours per week. Required of Seniors in Horticultural, Normal, and Agronomy divisions. Prerequisite, Plant Propagation, 201. Professor PILLSBURY.

421. Landscape Gardening.—A course in the study of the principles of the art of design, and their application to the design of landscapes. The principal styles of composition are considered and compared as to history, development, and adaptation. Practice consists of a study of landscape materials, in mapping, designing plans and specifications, and in the execution of important parts of the practical work of improving grounds. Three periods, first term; recitation two hours, practice two hours per week. Required of Seniors in Horticultural Division. Prerequisite, Plant Propagation 201. Professor PILLSBURY.

422. Horticulture, Elective.—A course designed to give the student an opportunity to elect and pursue the study of some special line of horticultural investigation. Three periods, second term; hours to be arranged. Open to Seniors in Horticulture only. Professor PILLSBURY.

Short Courses.

11. Plant Propagation.—A course designed to give a working knowledge of the best and most commonly employed methods of multiplying plants. Fall term.

12. Pruning and Spraying.—A course which will include instruction and practice both in the training of fruit plants and in the practical methods of protecting them from insect pests and diseases. Winter term.

21. Fruit Growing.—This course will deal with the problems involved in establishment and management of orchards—the productive end of the fruit business. Home orchard problems will be emphasized. Fall term.

22. Vegetable Gardening.—A course which will consist in a study of the principal vegetable crops, and their requirements as to soils, preparation for planting, planting and culture. All-the-year-round vegetable gardens will be given prominence. Winter term.

31. Improvement of Home Grounds.—This course is designed not only to give instruction in the planting of ornamental plants about the home, but also in the planning of the grounds for efficient use. Fall term.

32. Marketing Horticultural Products.—A course in which practical consideration will be given to the best methods of harvesting, packing, and marketing fruits and vegetables. Winter term.

42. Principles of Plant Culture.—A course in which the functions of various parts of plants; the activities engendered by heat, cold, moisture and light; and the effect of soil and climate upon the growth of plants are considered. The propagation, planting, and training of plants are also included. Practice work consists in laboratory and field exercises demonstrating the facts studied. Three periods, second term; recitations one hour, practice two hours per week. Mr. HAYDEN.

MATHEMATICS.

While the subject of mathematics is presented in such a manner that the student obtains a thorough working knowledge of those principles which he needs in his Engineering Course, yet it is not the purpose to subordinate the general theory of mathematics to the practical side. The work consists of recitations, written exercises, and lectures, with frequent oral and written quizzes.

11. Algebra.—Wells' *New Higher Algebra.* A thorough treatment of elementary Algebra, beginning with fractions and embracing simple equations, simultaneous equations in two or more unknowns, problem solving, involution, evolution, theory of exponents, and radicals. Required of all first-year students in the two-year courses. First term, five periods. Assistant Professor HARRELSON, Mr. JETER, Mr. SMITH.

12. Plane Geometry.—Wentworth and Smith's *Plane and Solid Geometry.* A complete course in plane geometry, including numerous original exercises. Required of all first year students in the two-year courses. Five periods, second term. Assistant Professor HARRELSON, Mr. SCARBOROUGH, Mr. JETER, Mr. SMITH.

101. Algebra.—Wells' *New Higher Algebra.* This course begins with quadratic equations and completes summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, and continued fractions. Five periods, first term. Required of Freshmen. Prerequisite, entrance requirements. Professor YATES, Assistant Professor HARRELSON, Mr. SCARBOROUGH, Mr. JETER, Mr. SMITH.

112. Advanced Algebra.—Wells' *New Higher Algebra.* The general theory of equations, the solution of higher equations, determinants, etc. Required of Freshmen. One period, second term. Prerequisite 101. Professor YATES, Assistant Professor HARRELSON, Mr. SCARBOROUGH, Mr. JETER, Mr. SMITH.

102. Solid Geometry—Wentworth and Smith's *Plane and Solid Geometry.* This course begins with and completes Solid Geometry,

including numerous original exercises. Four periods, second term. Required of Freshmen. Prerequisite 101. Professor YATES, Assistant Professor HARRELSON, Mr. SCARBOROUGH, Mr. JETER, Mr. SMITH.

201. Trigonometry.—Plane Trigonometry. Definitions of the trigonometric functions; derivation of formulæ, with their application. Solution of plane triangles, etc. Spherical Trigonometry. Solution of spherical triangles. This course includes the solution of many practical problems. Required of Sophomores in Engineering, Chemical, and Textile Courses. Five periods, first term. Prerequisites, 101 and 102. Professor YATES, Assistant Professor HARRELSON Mr. SCARBOROUGH, Mr. JETER.

202. Analytical Geometry.—Wilson and Tracy's *Analytical Geometry.* Loci of equations, straight line, circle, parabola, ellipse, hyperbola, a discussion of the general equation of the second degree, higher plane curves, and geometry of three dimensions. Required of Sophomores in Engineering and Chemical Courses. Five periods, second term. Prerequisite, 201. Professor YATES, Assistant Professor HARRELSON, Mr. SCARBOROUGH, Mr. JETER.

301-302. Differential and Integral Calculus.—Osborne's *Elements of Calculus.* A thorough treatment of the fundamental principles and derivations of formulæ; applications to various problems, such as expansion into series, evaluation of indeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc., four periods, first term and second term. Required of Juniors in Engineering. Elective for Seniors in Chemistry. Prerequisites for differential calculus 112 and 202, for integral calculus, differential calculus. Professor YATES, Assistant Professor HARRELSON.

MECHANICAL ENGINEERING.

Four-Year Courses.

101. Engineering Lectures.—First term. A series of lectures intended to acquaint students with general engineering terms and principles; also with materials used in engineering work, such as lumber, iron, steel, copper, brass, cement, coal, and other materials. Lantern slides are used wherever possible. Two periods. Required of Freshmen in Engineering and Textile Industry. Professor SATTERFIELD and Assistants.

111. Mechanical Drawing.—First term. Instruction in care and use of instruments; lettering, geometrical drawing; projection drawing; isometric and cabinet projections; drawings from working sketches of machine details; tracing; blue-printing; elements of descriptive geometry; cylinders; cones; prisms; intersecting and

development; miscellaneous problems. Two periods. Required of Freshmen in Engineering and Textile Industry. Mr. BRIGGS.

112. Mechanical Drawing.—Second term. Continuation of 111. Two periods. Required of Freshmen in Engineering and Textile Industry. Mr. BRIGGS.

Note.—Each student will be required to furnish, at his own expense, the following outfit. To insure uniformity in grade of instruments and other supplies, the Department keeps for sale, practically at cost, the articles named below. These may be purchased elsewhere, but must be approved by the Department. Estimated cost of outfit, $12 to $15. Text-book. Drawing board, 22x32 inches. T-square, 30 inches. 60° triangle, 9 inches, transparent. 45° triangle, 7 inches, transparent. 12-inch triangular architect's scale. 4H pencil. H or F pencil. Erasers for ink and pencil. Penholder with five points. Pencil-sharpener. Instrument set consisting of: 6-inch compass with pen, pencil, and lengthening bar; 5½-inch dividers with hair-spring adjustment; 3-inch bow dividers; 3-inch bow pencil; 3-inch bow pen; 5½-inch ruling pen.

141. Drawing.—Elementary drawing, elementary projection, freehand sketching and lettering. Geometrical problems. Freehand drawing. Two periods, first term. Required of Freshmen. Mr. RICHARDSON.

121. Wood Shop Work.—First term. Elementary instruction in bench work, involving the use of ordinary hand tools, such as planes, saws, squares, chisels, etc. All exercises are made from blue-prints and sketches. This work leads up largely to cabinet lines, such as bookcases, tables, drawing boards, and similar things. Special attention is given to making cabinets, tables, and other articles for the different laboratories, and also to a general line of repairing for the College.

The student also gets a good working knowledge of woodworking machinery, such as hand saw, jig saw, rip saw, planers, boring machines, jointers, and other machines.

They also get good experience in hand finishing, scraping, gluing, sand-papering, staining, and varnishing. Two periods. Required of Freshmen in Engineering and Textile Industry. Mr. WHEELER, Mr. MARTIN.

122. Wood Shop Work.—Second term.—Work similar to that outlined under 121. During the latter half of the spring term the time is devoted principally to wood-turning, which includes turning between centers, face plate, chuck work, polishing, and finishing. Two periods. Required of Freshmen in Engineering and Textile Industry, Mr. WHEELER, Mr. MARTIN.

132. Forge Shop Work.—Second term. Treatment of iron and steel, the uses of punches, swages, fullers, and set-hammers, both hand and machine tools. Exercises in drawing, upsetting, forming; scarf, jump, butt, and cleft welding; making of forge and machine-shop tools from blue-prints; hardening and tempering, annealing, carbonizing, and case hardening; selection of tool steels. Special work on equipment and repairs about the College shops and laboratories. Two periods, recitation and exercises. Required of Freshmen in Engineering and Textile Industry. Mr. NICHOLS.

142. Wood Shop.—The use and care of ordinary woodworking and bench tools. Exercises in sawing, planing, and making joints. As much time as possible is spent in making models of small buildings, gates, etc. Required of Freshmen. Two periods, second term. Mr. WHEELER.

202. Descriptive Geometry.—Second term. Instruction in method of representing on a flat surface geometrical magnitudes, points, lines, surfaces, and solids, and the solution of problems relating to them. A practice period follows each hour of instruction. Prerequisite, Mechanical Drawing 111 and 112. Two periods. Required of Sophomores, Mechanical and Electrical Engineers. Professor SATTERFIELD and Mr. RICHARDSON.

201. Foundry Work.—First term. Recitations and exercises in foundry work, including selection and working condition of sand; use and care of tools and machines; floor, bench, machine molding, and core-making; mixing cast-iron and alloys; management of cupola and brass furnace in iron and brass melting; making castings for special machines, general repairs, and machine-shop work; relation and merits of a variety of tools and materials used in foundry practice. Two periods. Required of Sophomores in Mechanical and Electrical Engineering. Mr. NICHOLS.

211. Pattern-making.—A study of pattern-making in its relation to molding; the practical construction of patterns to prevent warping and twisting; the making of special patterns, also patterns for different machines, such as drill presses, lathes, jointers, etc.; cores and core-boxes; introducing draft, shrinkage, finish, and the appliances and usage of modern pattern work. Required of Sophomores in Mechanical and Electrical Engineering. Two periods, first term. Prerequisite, Woodwork 121 and 122. Mr. WHEELER, Mr. NICHOLS.

212. Mechanical Drawing.—Second term. Making drawings and calculations setting forth the general principles of Descriptive Geometry. The design of cams to give specified motions, and problems in elementary machine design. Two periods. Required of Sopho-

mores in Mechanical and Electrical Engineering, and Textile Industry. Prerequisite, Mechanical Drawing 111 and 112. Mr. RICHARDSON.

301. Heat Engines.—First term. A study of elementary thermodynamics, properties of steam, calorimeters and mechanical mixtures, combustion and fuels, boilers and boiler auxiliaries. Three periods. Required of Junior Mechanical Engineers. Professor SATTERFIELD.

302. Heat Engines.—Second term. A study of steam engines, steam turbines, and internal combustion engines—types and details, valve gears and governors; calculations for testing; economy of installation and operation. Three periods. Required of Junior Mechanical Engineers. Professor SATTERFIELD.

311. Mechanics.—First term. Nature and measurements of the various units entering into the study of Mechanics. Statics, as applied to forces acting at a single point and on a rigid body and involving the use of the triangle of forces, the X-component and Y-component and Moment principles. The application of the principles of Statics as applied to the solving of problems in simple mechanics. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Prerequisites, Physics 280, Algebra 340, and Trigonometry 344. Assistant Professor VAUGHAN.

312. Mechanics.—Second term. Graphical statics and its application for the purpose of finding reaction and stresses in members of framed structures. Kinematics, which treats of the motion of bodies without reference to the forces producing the motion or masses of the moving bodies. The solving for velocity and acceleration of bodies when in rectilinear and curvilinear motion. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Prerequisite M. E. 311. Assistant Professor VAUGHAN.

321. Mechanism.—First term. An analysis of the motions and forms of machines. Among the subjects discussed are instantaneous centers, kinematic chains, velocity diagrams, parallel and straight line motions, cams, gearing, worms and worm wheels, belting and intermittent motions. The solution of a large number of practical problems by both graphical and mathematical methods is required. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Prerequisites, M. E. 202 and M. E. 212. Associate Professor ELLIS.

322. Machine Design.—Second term. A study of materials used in machine construction; analysis of stresses in machine parts; design of machine parts, considering them as compression, tension, or torsion members; modification of the above to suit practice and for the

sake of general appearance. Design of simple machines, such as shears, punches, power pumps, etc., all calculations to be made in standard form and handed in with the assigned problem. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Prerequisites, M. E. 202 and M. E. 302. Associate Professor ELLIS.

331. Machine Shop Work.—First term. Bench work, exercises in chipping and filing. One period. Required of Junior Mechanical and Electrical Engineers. Mr. PARK.

332. Machine Shop Work.—Second term. Machine work. Exercises in lathe work, boring, reaming, drilling, planing, milling and shaping. One period. Required of Junior Mechanical and Electrical Engineers. Mr. PARK.

341. Mechanical Engineering Laboratory.—First term. This course will parallel M. E. 301 and 302 and involve the performing of simple tests such as determining the temperature-pressure curve, getting resulting temperatures in mechanical mixtures, etc. Practice in the use of steam calorimeters and fuel calorimeters for determining the heating value of fuels. The operation of instruments for determining the products of combustion in a furnace. One period. Required of Juniors in Mechanical Engineering. Prerequisite, Physics 281. Assistant Professor VAUGHAN, Mr. WHEELER.

342. Mechanical Engineering Laboratory.—Second term. Simple calibration work on steam gages, vacuum gages, indicator springs, etc. Practice in use of indicators and planimeters for the purpose of obtaining indicated horsepower of steam engines and gas engines. Study and operation of lubricators. Testing of lubricants for flash-point, burning-point, and viscosity. One period. Required of Juniors in Mechanical Engineering. Prerequisite, M. E. 341. Assistant Professor VAUGHAN, Mr. WHEELER.

351. Heat Engines.—First term. Nature and measurement of the units of heat, work, and power as used in steam engineering. A study of the properties of steam; use of the "Steam-Tables" for solving problems. The theory of steam calorimeters, mechanical mixtures, and combustion of fuels. The application of the above to boilers for the purpose of determining rating, capacity, and efficiency. The function of the various boiler auxiliaries is critically examined. Two periods. Required of Juniors in Electrical and Textile Engineering. Prerequisites, Physics 281, Algebra 122. Assistant Professor VAUGHAN.

352. Heat Engines.—Second term. The study of elementary thermodynamics as applied to the steam and gas engine cycles, the steam engine, including classification and details, valves, valve gears, and

governors. Determination of indicated and brake horsepowers and heat efficiency from given conditions. Steam turbines and gas engines will be studied briefly. Two periods. Required of Juniors in Electrical and Textile Engineering. Prerequisite, M. E. 351. Assistant Professor VAUGHAN.

401. Power Plants.—First term. A study of fuels and combustion; steam boilers; smoke prevention; superheaters and superheated steam; coal and ash handling apparatus; mechanical draft. A comparative study of steam engines; efficiencies; heat losses; influence of condensing and superheating; costs. Three periods. Required of Mechanical Engineers. Professor SATTERFIELD.

402. Power Plants.—Second term. A study of the elementary theory, efficiency, and economy of the steam turbine; types, functions, and operation of condensers, feed-water heaters and purifiers, pumps, separators, traps, and drains. A study of piping and pipe fittings. Attention is also given to cost of power and to specifications for power-plant equipment. Two periods. Required of Mechanical Engineers. Assistant Professor VAUGHAN.

411. Gas Engines.—First term. Thermodynamics of the gas engine, theoretical comparisons of various types of internal combustion engines. Combustion, including combining weights and volumes, heating value, air required, etc. Gas engine fuels; solid, liquid, and gas. Gas producers, carbureters, and vaporizers. The fuel mixture, pressure, and temperature resulting from combustion. Modern types of internal combustion engines; auxiliaries, including ignition, starting apparatus, and mufflers; regulation, efficiency, and economy. Three periods, first term. Required of Seniors in Mechanical Engineering. Prerequisites, Heat Engines, M. E. 301 and 302, and Mechanics, M. E. 311 and 312. Assistant Professor VAUGHAN.

421. Mechanics.—First term. A study of the kinetics of a particle and the mass center of a rigid body, with the equations of motion for translation, moment of inertia, work, energy, principle of work and its application to mechanics. Three periods. Required of Seniors in Mechanical and Electrical Engineering. Associate Professor ELLIS.

422. Mechanics of Materials.—Second term. A study of the effects of loads and forces in engineering structures by use of the stress-strain diagram. Determination of ultimate stress and elastic limit of materials, with investigation for maximum and minimum bending moment and shear. Torsion and its application to shafting, with theories as to elastic limit and failure. Two periods. Required of Seniors in Mechanical and Electrical Engineering. Prerequisites, M. E. 311 and M. E. 421. Associate Professor ELLIS.

412. Industrial Engineering.—Second term. In this course a study is made of the origin of the Industrial Systems; principles of industrial organization; forms of industrial ownership; nature and distribution of expense; the primary wage systems; philosophies of management; and the buying, handling, and use of materials. Two periods. Required of Mechanical Engineers. Professor SATTERFIELD.

403. Heating, Ventilation, and Refrigeration.—First term. This subject treats of the various methods of heating, such as by open fires, hot air, steam, and hot water; of the proper ventilation of all types of buildings; of the various types of ice-making and refrigerating machinery, and their installation, care, and management; and of the cost of heating and cooling. Three periods, second term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

441. Machine Design.—First term. Advanced machine design based on the thermal and mechanical problems involved in the design of a steam engine for power, economy, and regulation. The students are given the requirements of the engine—such as speed, regulation, and economical point of cut-off for required horsepower—and are required to make calculations and detail drawings for problems assigned. Required of Seniors in Mechanical Engineering. Prerequisites, M. E. 321, 311, 312, 302 and 301. Associate Professor ELLIS.

442. Gas Engine Design.—Second term. The practical application of the principles discussed in M. E. 403 combined with the rational and empiric methods of design as developed in general practice. Two periods. Either this or 452 is to be elected by Seniors in Mechanical Engineering. Prerequisite, M. E. 411. Associate Professor ELLIS.

452. Turbine Design.—Second term. The calculations for the most economical water rate are made and are based on the general principles related to the flow of steam through nozzles with the resulting action upon turbine buckets, including the losses due to friction, rotation, etc. The estimates for the sizes of the nozzles, shaft bearings, etc., with the shape of the buckets to suit the velocity diagrams, are made. The detail and assembly drawings of the turbine are also made. Two periods, spring term. Either this or 442 is to be elected by Seniors in Mechanical Engineering. Prerequisites, M. E. 401 and M. E. 441.

461. Machine Shop Work.—First term. Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Two periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

462. Machine Shop Work.—Second term. Laying out work. Duplicate and interchangeable parts. Working to standard gages. Two periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

471. Mechanical Engineering Laboratory.—First term. The testing of simple machines for efficiency under various conditions of loading. Efficiency and economy tests on injectors, pumps, steam engines, and steam turbines. Boiler tests for determining horsepower and efficiency. In addition to the testing work, advanced heat problem work will be given, dealing with the various heat cycles studied in the laboratory. Two periods. Required of Seniors in Mechanical Engineering. Prerequisites, M. E. 301 and 302 and M. E. 341 and 342. Assistant Professor VAUGHAN, Mr. WHEELER.

472. Mechanical Engineering Laboratory.—Second term. The determination of efficiency and economy of gas, gasolene, and oil engines. Tests for refrigerating effect in a cold-storage plant. The testing of materials of construction for strength in compression and tension; determination of elastic limit, modulus of elasticity, etc. A continuation of the heat problem work from M. E. 461. Two periods. Required of Seniors in Mechanical Engineering. Prerequisites, M. E. 471, 411 and 421. Assistant Professor VAUGHAN, Mr. WHEELER.

404. Power Plant Design.—Second term. A continuation of M. E. 401, consisting of a study of the selection, location, and proportioning of the essential details of steam power plants, such as engines, boilers, pumps, piping, condensers, feed-water heaters, chimneys, etc. The course consists of the study of references, lectures on the subject, and the drawing of the plans of plants. Two periods. Required of Seniors in Mechanical Engineering. Prerequisite, M. E. 441. Associate Professor ELLIS.

481. Machine Shop Work.—First term. The making and assembling of some complete machine, in so far as is possible. Two periods. Elective for Senior Mechanical Engineers. Mr. PARK.

482. Machine Shop Work.—Second term. Continuation of 481. Two periods. Elective for Senior Mechanical Engineers. Mr. PARK.

491. Machine Design.—First term. Advanced work in design, exact subject to be selected by student and professor in charge. Two periods. Elective for Senior Mechanical Engineers. Associate Professor ELLIS.

492. Machine Design.—Second term. Continuation of 491. Two periods. Elective for Senior Mechanical Engineers. Associate Professor ELLIS.

431. Mechanical Engineering Laboratory.—First term. Calibration

of the instruments used in performing tests on mechanical engineering problems. Practice in the use of calorimeters, both steam and fuel; indicators, planimeters, etc. Testing of lubricants for flash-point, burning-point, and viscosity. Checking the formulas used in determining the flow of fluids through orifices and nozzles. One period; required of Seniors in Electrical Engineering. Prerequisites, M. E. 351, 352, 311 and 312. Assistant Professor VAUGHAN, Mr. WHEELER.

432. Mechanical Engineering Laboratory.—Second term. Efficiency tests of pumps, injectors, boilers, steam engines, steam turbines, and gasolene and oil engines. Testing of materials for strength in compression and tension; determination of elastic limit and modulus of elasticity. One period. Required of Seniors in Electrical Engineering. Prerequisite, M. E. 431. Assistant Professor VAUGHAN, Mr. WHEELER.

413-414. Automobile Power Plant.—A critical study of the automobile engine. A text-book study and laboratory practice having to do with fulls, igention systems, lubrication, valve timing and starting and lighting systems. Elective for Senior Mechanical Engineering students. Prerequisites, 301, 302, 341 and 342.

Short Courses.

11-12. Mechanical Drawing.—Instruction in care and use of instruments; lettering, geometrical drawing, projection drawing; isometric and cabinet projections; drawing from working sketches of machine details; tracing; blue-printing; elements of Descriptive Geometry; cylinders; cones; prisms; intersections and developments; miscellaneous problems. Three periods. Mr. RICHARDSON.

Note.—Each student will be required to furnish at his own expense the following outfit. To insure uniformity in grade of instruments and other supplies, the department keeps for sale, at practically cost, the articles named below. These may be purchased elsewhere, but must be approved by the department. Estimated cost of outfit, $12 to $15. Text-book. Drawing board 21 by 30 inches. T-square 30 inches. 60° triangle 9 inches, transparent. 45° triangle 7 inches, transparent. 12-inch triangular architect's scale. Irregular curve. 4H pencil. H or F pencil. Erasers for ink and pencil. Penholder with five points. Pencil sharpener. Instrument set consisting of: 6-inch compass with pen, pencil, and lengthening bar; 5½-inch dividers with hairspring adjustment; 3-inch bow dividers; 3-inch bow pencil; 3-inch bow pen; 5½-inch ruling pen; 4½-inch ruling pen.

21. Wood Shop Work.—First term. Elementary instruction in bench work, involving the use of ordinary hand tools, such as planes, saws, squares, chisels, etc. All exercises are made from blue-prints and sketches. This work leads up largely to cabinet lines, such as book-cases, tables, drawing boards, and similar things. Special attention is given to making cabinets, tables, and other articles for the different laboratories, and also to a general line of repairing for the College. The students also get a good working knowledge of wood-working machinery, such as hand saw, jig saw, rip saw, planers, boring machines, jointers, and other machines. They also get good experience in hand finishing, scraping, gluing, sand-papering, staining, and varnishing. Two periods. Mr. WHEELER, Mr. MARTIN.

22. Wood Shop Work.—Second term. Work similar to that outlined under 105. During the latter half of the spring term the time is devoted principally to wood turning, which includes turning between centers, face plate, chuck work, polishing and finishing. Two periods. Mr. WHEELER, Mr. MARTIN.

32. Forge Shop Work.—Second term. Treatment of iron and steel, the uses of punches, swages, fullers, and set-hammers, both hand and machine tools. Exercises in drawing, upsetting, forming; scarf, jump, butt, and cleft welding; making of forge and machine-shop tools from blue-prints; hardening and tempering, annealing, carbonizing, and case hardening; selection of tool steels. Special work on equipment and repairs about the College shops and laboratories. Two periods, recitation and exercises. Mr. NICHOLS.

41. Engineering Lectures.—First term. A series of lectures intended to acquaint students with general engineering terms and principles; also with materials used in engineering work, such as lumber, iron, steel, copper, brass, cement, coal, and other materials. Lantern slides are used wherever possible. Two periods. Professor SATTERFIELD and Assistants.

42. Mechanical Technology.—Deals with building materials, pulleys, belts, pattern-making, foundry, machine-shop tools and operation, gear proportions, etc. Two periods, second term. Mr. PARK.

51-52. Machine Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blue-printing. Three periods. Prerequisite, 11 and 12. Associate Professor ELLIS.

61-62. Machine Shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper-work. Three periods. Mr. PARK.

71-72. Power Machinery.—Descriptive study of the machinery of steam power plants, engines, boilers, condensers, pumps, steam tur-

bines, piping, care and management, study of gas and oil engines. Combustion of fuels. Indicators; indicated, brake, and boiler horsepower problems. Three periods. Mr. PARK.

82. Elementary Mechanics.—This subject is intended to treat the elementary mechanics problems which arise in connection with machine shop and drafting room practice. Two periods, second term. Mr. THORNBURG.

92. Gas Engine Laboratory.—In connection with a study of the principles of the internal combustion engine in power machinery, this laboratory course is offered for the purpose of acquainting the student with the actual handling of such engines. Practice is given on the various types of gasolene, kerosene, and oil engines. One period, second term. Assistant Professor VAUGHAN.

81. Pattern-making.—A study of pattern-making in its relation to molding; the practical construction of patterns to prevent warping and twisting; the making of special patterns, also patterns for different machines, such as drill presses, lathes, jointers, etc.; cores and core-boxes; introducing draft, shrinkage, finish, and the appliances and usage of modern pattern work. Two periods, first term. Prerequisite, first term work. Mr. WHEELER, Mr. THORNBURG.

91. Foundry Work.—Recitations and exercises in foundry work, including selection and working condition of sand; use and care of tools and machines; floor, bench, machine molding and core-making; mixing cast-iron and alloys. Management of cupola and brass furnace in iron and brass melting; making castings for special machines, general repairs, and machine-shop work; relation and merits of a variety of tools and materials used in foundry practice. Two periods, first term. Mr. THORNBURG.

18. Carpentry.—The use and care of ordinary woodworking and bench tools. Exercise in sawing, planing, and making joints. As much time as possible is spent in making models of small buildings and gates. Required of One-year Course in Agriculture. Three periods. First term. Mr. WHEELER.

MILITARY ART.

101. Military Art.— (*a*) Practical: Physical drill (*Manual of Physical Training*—Koehler); Infantry drill (*U. S. Infantry Drill Regulations*), to include the School of the Soldier, Squad and Company, close and extended order. Preliminary instruction, sighting position and aiming drills, gallery practice, nomenclature and care of rifle and equipment. (*b*) Theoretical: Theory of target practice, individual and collective (use of landscape targets made up by

United States Military Disciplinary Barracks, Fort Leavenworth, Kans.); military organization (Tables of Organization); map reading; service of security; personal hygiene. Four periods. First term. Required of Freshmen.

102. Military Art.— (*a*) Practical: Physical drill (*Manual of Physical Training*—Koehler); Infantry drill (*U. S. Infantry Drill Regulations*), to include School for Battalion; special attention devoted to fire direction and control; ceremonies; manuals (Part V, Infantry Drill Regulations); bayonet combat; intrenchments (584-595, Infantry Drill Regulations); first-aid instruction; range and gallery practice. (*b*) Theoretical: Lectures, general military policy as shown by military history of United States and military obligations of citizenship; service of information; combat (to be illustrated by small tactical exercises); United States Infantry Drill Regulations, to include School of Company; camp sanitation for small commands. Four periods. Required of Freshmen.

201. Military Art.—(*a*) Practical: The same as course 102 (*a*). Combat firing, if practicable, but collective firing should be attempted in indoor ranges by devices now in vogue at United States Disciplinary Barracks. (*b*) Theoretical: United States Infantry Drill Regulations, to include School of Battalion and Combat (350-622); Small Arms Firing Regulations, lectures as in (*b*) course 2; map reading; camp sanitation and camping expedients. Four periods. Required of Sophomores.

202. Military Art.—(*a*) Practical: The same as course 102 (*a*); signaling, semaphore and flag; first-aid. Work with sand table by constructing to scale intrenchments, field works, obstacles, bridges, etc. Comparison of ground forms (constructed to scale) with terrain as represented on map; range practice. (*b*) Theoretical: Lectures, military history (recent); service of information and security (illustrated by small tactical problems in patrolling, advance guards, rear guards, flank guards, trench and mine warfare, orders, messages, and camping expedients); marches and camps (Field Service Regulations and Infantry Drill Regulations). Four periods. Required of Sophomores.

301. Military Art.— (*a*) Practical: Duties consistent with rank as cadet officers or noncommissioned officers in connection with the practical work and exercises laid down for the unit or units. Military sketching. (*b*) Theoretical: Minor tactics; field orders (studies in minor tactics, United States School of the Line); map maneuvers. Company administration, general principles (papers and returns). Military history. Four periods. Elective for Juniors.

302. Military Art.— (*a*) Practical: Same as (*a*) course 301, Military sketching. (*b*) Theoretical: Minor tactics (continued); map maneuvers. Elements of international law. Property accountability; method of obtaining supplies and equipment (Army Regulations). Weight 1. Four Periods. Elective for Juniors.

401. Military Art.— (*a*) Practical: Duties consistent with rank as cadet officers or noncommissioned officers in connection with the practical work and exercises scheduled for the unit or units. Military sketching. (*b*) Theoretical: Tactical problems, small forces, all arms combined; map maneuvers; court-martial proceedings (Manual for Courts-martial). International relations of America from discovery to present day; gradual growth of principles of international law embodied in American diplomacy, legislation, and treaties. Lectures: Phychology of war and kindred subjects. General principles of strategy only, planned to show the intimate relationship between the statesman and the soldier. Four periods. Elective for Seniors.

402. Military Art.— (*a*) Practical: Same as course 401 (*a*). (*b*) Theoretical: Tactical problems (continued); map maneuvers. Rifle in war. Lectures on military history and policy. Four periods. Elective for Seniors.

MODERN LANGUAGES.

The purpose of the work in this department is to enable the student to read and translate intelligently and correctly the scientific literature of German, French, and Spanish and to give a basis for the later development of a written and spoken knowledge of the latter language. With this object in view, grammar is taught secondarily and only as an aid in translating. Work in translation is begun as early as possible and continued with increasing importance throughout the entire course.

Three years work of German and two of Spanish are given each year. Only one year in French is offered, and this is given only by special petition. When given, the work in French will be especially determined by the needs of the students electing it.

One year's work of either German, French, or Spanish is required of all members of the Reserve Officers' Training Corps. It is recommended by the Department of Military Science and Tactics that the students in that department fulfil this requirement by taking the work in Spanishh.

Two years of the work in German are required of all students in the Chemical and the Dyeing courses, and it is strongly recommended that, when possible, the students taking the Chemical work will also elect the third year's work in German.

Graduate students electing to do work in Modern Languages and others wishing to do special work in this field will arrange their courses with the Head of the Department. So far as possible the work will be adjusted to suit their special requirements.

German.

201-202. Beginner's German.—Grammar, translation, and composition. Bacon's *German Grammar* first term. Storm's *Immense*, Gerstäcker's *Germelshausen*, Seidel's *Der Lindenbaum* and Hillern's *Höher als die Kirche* second term. Required two hours for Sophomores in the Chemical and Juniors in the Dyeing courses. Professor HINKLE.

301-302. Beginner's German.—Alternate elective two hours with Military Science and Tactics for Juniors of the Agricultural courses. Both terms. Professor HINKLE.

311-312. Introductory Scientific German.—Reading, translation, and discussions. Special attention given to the grammatical peculiarities of scientific German and to the acquisition of a vocabulary of scientific terms. Wright's *German Science Reader*, Wallentin's *Grundzüge der Naturlehre*, Du Bois-Reymond's *Vorträge*, and Lassarcohn's *Die Chemie in Täglichen Leben*. Required of Juniors in the Chemical Course and Seniors in the Dyeing course. Elective for Seniors of the Agricultural courses. Both terms, three hours. Professor HINKLE.

421-422. Advanced Scientific German.—An extensive course in scientific literature with especial reference to Chemical German. Designed to meet the needs of the Seniors in Chemistry. Phillip's *Chemical German*. Helmholtz's *Populüre Vorträge*. Other authors will be read according to the needs of the students. Senior elective. Open to graduates. Both terms, three hours. Professor HINKLE.

NOTE.—Graduate students electing this course will arrange for additional outside work.

Spanish.

301-302, 401-402. Beginner's Spanish.—Grammar, composition, translation, and conversation. DeVitis' *Spanish Grammar* the first term. Ramsey's *Elementary Spanish Reader* the second term. Required of all Seniors in the Reserve Officers' Training Corps. Alternate elective with Military Science and Tactics for Juniors of the Engineering courses. Both terms, two hours. Professor HINKLE.

411-412. Intermediate Spanish.—A continuation of *Beginner's Spanish*. Designed primarily to develop rapid reading and conver-

sation. A number of easy Spanish stories are read. Some attention is given to composition and letter writing. Open to students who have had one year's work in the language. Elective for Seniors of the Engineering courses. Both terms, three hours. Professor HINKLE.

French.

431-432. Elementary French.—A review of the fundamental points of French Grammar the first term with work in introductory scientific French the second term. Giese's *Graded French Method.* Bowen's *First Scientific French Reader.* Senior elective. Both terms, three hours. Professor HINKLE.

NOTE.—This course will be given only on special petition of those desiring to elect the work.

POULTRY HUSBANDRY.

Four-Year Courses.

301. General Course.—This will be divided as follows: Four weeks will be devoted to a discussion of the various phases of the poultry industry and to an elementary study of breeds and breeding. Four weeks will be occupied with a study of the principles of ventilation, sanitation, and poultry-house construction. Four weeks are assigned to the elementary study of parasites and diseases of fowls. Six weeks will be devoted to the anatomy of the digestive tract and the physiology of digestion and to a study of the principles of feeding. Work in the poultry laboratory and at the poultry plant will be a part of this course, and will be an application of the principles taught. This course is for all regular students who are taking poultry for the first time. *Poultry Culture, Sanitation, and Hygiene* will be used as text. Three periods, first term, Junior year. Fee, $1. Doctor KAUPP, Mr. WHITE, Mr. IVEY.

312. Poultry Production.—The time in this course will be assigned as follows: four weeks to a study of balancing rations and feeding; four weeks to commercial plant construction and plant management; four weeks to the study of market grades of eggs and practical market methods; six weeks to (1) the study of market grades of poultry and the proper methods of dressing, handling, grading, refrigerating, packing and shipping same; (2) a study of the methods of saving feathers, grading, storing, packing, curing and shipping same; (3) a study of the methods of collecting, preserving and handling the poultry manure. Three periods, Junior year, second term. Fee, $1. Doctor KAUPP, Mr. WHITE, Mr. IVEY.

402. Specialized Marketing.—First, a six-weeks detailed study of grading, handling, preserving, refrigerating, storing, packing, and shipping eggs. This will be followed by a detailed study of at least three large markets and of ten North Carolina markets, noting fluctuations in market prices and the changes in the feed markets for the same periods. Six weeks will be devoted to finishing, sticking, picking, trussing, scoring, grading, refrigerating, shaping, packing, and shipping dressed poultry. A study of the market grades in detail and the fluctuations of the market prices, together with a study of the fluctuations of the prices of feeds, will be given for the same length of time. This will include the cost of production. Six weeks are devoted to live fowls, finishing, grading, handling, shipping, and a similar study of the live poultry markets as above. Actual shipping experience will be given. Three periods, Senior year, second term. Fee, $1. Doctor KAUPP, Mr. IVEY.

311. Breeding and Judging.—This is a detailed study of the origin of each breed, of the types and varieties, and of mating birds for the best results. Students taking the poultry course will have the opportunity to mate a pen of birds of any of the twenty breeds on the College and Station plant and care for them for a year and note the results in the progeny. To aid in this study there are colored plates, also cards mounted with typical feathers from all breeds. A study of the twenty breeds on the College and Station farm. *The American Standard of Perfection* will be used as a text. Three periods a week, first term, Junior year. Doctor KAUPP, Mr. IVEY.

401. Anatomy and Physiology.—A complete course in the anatomy and physiology of the domestic fowl will be given. This includes a study of the bony structure, muscles, ligaments and tendons, digestive structure, genito-urinary apparatus, the circulatory system, the nerves, and the special senses. Complete dissections will be made. This course prepares the student for the detailed study of diseases. Three periods a week, first term, Senior year. Fee, $1. Doctor KAUPP.

412. Diseases and Poultry Pathology.—In this course the time will be divided as follows: Four weeks to a detailed study of medical parasitology, giving the habits of the parasites affecting the domestic fowls, effects upon their host, and methods of their eradication; six weeks to noncontagious diseases and their treatment; eight weeks to contagious diseases, prevention or control, and treatment. Laboratory work will be given to accompany each division. Museum specimens as well as autopsies and clinical cases from the research laboratory will be used. *Diseases of Poultry and Their Treatment* will be used as a text. Three periods a week, second term, Senior year. Doctor KAUPP.

422. Incubation, Brooding, and Flock Management.—This course will be divided as follows: Four weeks to the running of an incubator. Each student operates his own incubator. Eight weeks to lectures and practice work in operating a brooder. Each student operates his own brooder, taking the chicks he hatches in the incubator. Six weeks to broiler feeding and caponizing and capon production work. During the entire course the student has charge of a plant flock, caring for the birds and summing up at the end of the month the various details of the accounting. The student also has the opportunity of setting a hen and caring for her brood. Fee, $2. Three periods a week, second term, Senior year. Mr. P. S. WHITE.

Courses for Graduates.

Students entering graduate work in Poultry Science should have a thorough training in the fundamental principles of the subject. The following graduate courses are offered for the year 1917-1918:

501-502. Animal Nutrition.—This course, given by the Animal Industry Division is open to advanced students in Poultry Science work. In this course there will be a study of recent scientific publications on the chemistry and physiology of nutrition of animals and the chemical and physiological changes and processes involved in the activities of animal life. The student will be expected to follow out courses in assigned reading, hold conferences with the instructor, and submit regular reports on the progress of his studies.

511-512. Investigational Work.—The Poultry Science Department has many investigational projects under way. The graduate student will be expected to select one of the subjects below and devote half of his time to assisting in carrying the investigation forward: (*a*) The effects of various rations on egg production; (*b*) The effects of various rations upon body development of poultry; (*c*) The methods of feeding, handling, and control of chick mortality; (*d*) The effects of feeds upon the quality of the eggs; (*e*) The effcts of feeds upon the quality of flesh of table fowls; (*f*) The effects of cotton-seed meal upon poultry breeding stock, egg production, development of young, and upon constitutional vigor; (*g*) The relative value of various animal proteins for feeding fowls; (*h*) Mendelian studies; (*i*) Laboratory work in Poultry Pathology, Anatomy, or Physiology. One selection may be made from the Animal Industry Division subjects.

Short Courses.

11. Diseases of Poultry, and Sanitation.—A practical short course in the study of external and internal parasites of poultry and prac-

tice exercises in dealing with such infested birds and premises. Non-contagious and contagious diseases, their causes, symptoms, and treatment. Practice exercises in how to vaccinate birds against chicken-pox. How to prevent and how to eradicate a contagious disease among fowls. Practice exercises in the preparation of disinfectant sprays and in the use of the same. The specimens in the Poultry Pathology and Anatomical Laboratory will be used in these studies. Three periods a week, first term. Dr. KAUPP.

21. Incubation and Brooding.—Both natural and artificial incubation and brooding will be taught. In natural incubation the student will be taught how to properly construct the nest box and make the nest. How to care for the sitting hen and what and when to feed her. How to properly construct the combination sitting and brooding coop and how to handle the brooding hen and her brood. How to feed the chicks. How to protect the flock from the hawks and other enemies, as rats and minks. In artificial incubation and brooding there will be taught the construction of the incubator and brooder and how to operate both. The student will operate a machine or set a hen and care for the brood. Three periods a week, first term. Mr. WHITE.

31. Breeds and Judging.—Classes, breeds, and varieties of the domestic fowls will be taught in this course. The twenty breeds kept on the Poultry Plant will be used in the practical lessons given. The principles of judging, preparation of birds for the show room, and show room rules will be taught. Three periods a week, first term. Dr. KAUPP, Mr. IVEY.

12. Poultry-house Construction and Feeding.—In this course there will be taught practical lessons in ventilation and poultry-house construction. The poultry plant contains many different types of houses and the demonstration laboratory contains both models and poultry-house equipment. Practice exercise in actually doing work will be given each week. A study of feeds and how to mix them, and how to feed for the best results will be taken up. The student will have exercises in mixing feeds, and feeding the plant flocks. Three periods a week, second term. Mr. IVEY.

22. Selection and Breeding of Poultry.—In this course there will be taught the proper methods of selecting and mating birds for the best results. The proper mating for the production of eggs, broilers, capons, and for general purposes. How to properly mate the birds to preserve in the flock the proper feather color. The selection for constitutional vigor and for longevity. How to handle the breeding flock and the care of the eggs for sitting purposes. The

student will have the care of a farm flock. Three periods a week, scond term. Mr. IVEY.

82. Marketing Farm Poultry.—In this course there will be studied the different kinds of containers for shipping eggs and dressed as well as live poultry. These object-lessons will be given in the demonstration laboratory and in actual practice from the Poultry Plant. A candling room is provided in which the student will candle and grade eggs. Different grades of eggs and their comparative market values will be studied. The markets of three large cities and of fourteen North Carolina towns will be studied. Picking and feeding laboratories are provided in which the student will be given lessons in feeding birds for market and in properly sticking, picking, and packing birds. The principles of the coöperative community circles will be given consideration. Three periods a week, second term. Dr. KAUPP, Mr. IVEY.

SOILS.

Four-Year Courses.

301-302. Soils.—Attention is given to the forces that decompose and disintegrate rock and to the influence of these forces and of the various kinds of rock on the resulting soil. The physical characters, such as water-holding capacity, capillarity, effect of mulches, temperature and weight, and the modification of these characters by tillage, cropping, and all operations of practical soil management, are discussed and exemplified in the classroom, laboratory, and field. Some attention is given to the classification of soils in the United States, and especially in North Carolina. The physical, chemical, and bacteriological soil conditions are discussed in relation to each other and to their effects on soil fertility. Systems of maintaining the permanent productiveness of soils are studied. Three periods throughout the year. Required of all Juniors, except Veterinary Division. Deposit, $3. Prerequisites, Chemistry 101-102, 111-112, and Electrical Engineering 231-232. Professor SHERWIN and Mr. STAFFORD.

401. Farm Drainage.—This includes both principles and practice of drainage. The student becomes familiar with the use of various drainage instruments and implements, as the course involves considerable field work in laying out systems of under-drains. Different methods of leveling and determining grade are discussed and practiced.

Determination of size of tile needed, depth and method of laying, influence of depth of tile and distance apart of drains on withdrawal of water from the soil, and all of these as influenced by texture and character of the soil, are considered. Drainage by

means of open ditches and surface drainage by means of terraces will also be given attention. Three periods a week, first term. Required of Seniors in Agronomy, Horticultural and Normal divisions. Prerequisite, Soils 301-302. Professor SHERWIN and Mr. STAFFORD.

402. Fertilizers.—Fertilizing as a factor in soil management and economical crop production. Sources, composition, availability, and value of various commercial and farm fertilizers. Comparative value of the elements of plant food in different carriers as shown by their productive capacity. Three periods, second term. Required of Seniors in Agronomy, Horticultural, and Normal divisions. Prerequisite, Soils 301-302. Professor SHERWIN.

411-412. Advanced Soils.—In this course the student will be guided in the study of any line of Soils work he may choose, along either practical or scientific lines. Laboratory and field work will be given. Considerable reference will be made to Experiment Station literature with the aim of acquainting the student with the literature on the subject, and with the methods of investigation used. This course will be of special help to men who are to engage in Farm-Life School work and Demonstration work, as well as to those primarily interested in Soils. Three periods a week throughout the year. Elective for Seniors. Prerequisite, Soils 301-302. Professor SHERWIN.

Short Courses.

11. Soil Geology and Soil Physics.—A study of the soil as affected and determined by its source and method of formation; texture and humus as they affect the physical and other properties; conservation and control of soil moisture. Professor SHERWIN and Mr. STAFFORD.

12. Fertilizers and Manures.—Studies in the composition, sources, and efficiency of various fertilizing materials; original and residual effects on the soil and on each other. Studies in the value and economical use of stable and green manures. Professor SHERWIN and Mr. STAFFORD.

22. Physiography.—A study of the natural agencies affecting the earth's surface, soil, water, and temperature, and their effect upon plants and animals. Three periods, second term. Required in One-Year Course in Agriculture. Mr. STAFFORD.

TEXTILE INDUSTRY.

101-102, 201-202, 301-302, 401-402. Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: Classifying the plant, its growth, varieties, ginning, baling and marketing the raw staple. Cotton at the mill;

selecting and mixing. Openers and lappers; cards, sliver lap machines; ribbon lap machines; combers, railway-heads; drawing-frames, slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts, speed of parts, production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity, text-books: Taggart's *Cotton Spinning*. Required of Freshmen, Sophomores, Juniors, and Seniors. Mr. DICK.

111-112, 211-212, 311-312, 411-412. Weaving.—Lectures and practice in warp preparation, operating and fixing looms, cloth-finishing machinery. Warp preparation; pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing: Steam cylinder slasher; hot-air slasher; construction of slasher, creel, cylinder, immersion roll, squeeze rolls, drying fan, separator rolls, winding yarn on beam, cone drive, slow motion, measuring and cut marking motion. Sizing: Construction of size kettle; size mixing and boiling; division of sizing ingredients; value of ingredients; sizing recipes for light, medium, and heavy sizing. Loom-mounting: Reeds and harnesses; drawing in and putting warps in loom. Looms: hand looms and power looms; construction of plain loom; principal movements in weaving; let-off and take-up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms, construction and advantages. Drop box looms: Chain building for box looms; changing boxes to have easy running looms; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain and multiplier-chain building; arrangement of colors in boxes to give easy-running loom. Ball and shoe-pick motion. Construction and fixing of head motion. Dobby, single and double index; construction and fixing of dobby; extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard: Single and double lift; construction and tie-up. Weave-room calculations, speed and production calculations, relative speed of looms, counts of cotton harness. Finishing: Inspection of cloth; singeing and brushing; calendering, tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: Nelson's *Weaving, Plain and Fancy*. Required of Freshmen, Sophomores, Juniors, and Seniors in the Four-Year Course. Professor NELSON, Mr. STEED.

221-222, 321-322, 421-422. Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: Plain, twill, satin. Ornamentation of plain weaves. Wave designs, pointed twills, diamond effects. Plain and fancy basket weaves, warp and filling rib weaves. Broken twills, curved twills, corkscrew twills, entwining twills. Granite weaves, satin shading. Combination of weaves; figured weaving on plain ground. Satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno, honeycomb weaves. Bedford cords and combination with other weaves. Wave designs, pointed twills, diamond effects. Plain and fancy piques. Double plain, figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse, leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading the patterns. Card cutting and lacing. Required of Sophomores, Juniors, and Seniors. Professor NELSON, Assistant Professor HALSTEAD, Mr. STEED.

232, 332, 431-432. Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of Sophomores, Juniors, and Seniors. Professor NELSON, Assistant Professor HALSTEAD, Mr. STEED.

441-442. Mill Accounting and Cost Finding.—The general fundamental principles of the various systems of cost finding as applicable to the different classes of manufactured products are carefully explained, as well as questions of commissions, discounts, deprecia-

tion, inventories, distribution of expenses, etc. As a clear understanding of accounting is necessary for intelligent cost finding, the method of keeping accounts is studied in detail. The general idea is to impress on the student the relative cost of production for any class of manufactured product and to show how the different processes of manufacturing influence cost. One period, first and second terms. Required of Seniors. Assistant Professor HALSTEAD.

Dyeing.

351-352, 451-452. Dyeing.—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers, and the action of acids, alkalis, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing, such as the boiling out and bleaching of cotton, and the chemical reactions involving each step; the adaptability of water for bleaching and dyeing, followed by the theories of dyeing; substantive dyestuffs and their application to cotton; after-treatment of direct dyestuffs, including diazotising and developing and the topping with basic dyestuffs; the application to cotton of basic dyestuffs, acid dyestuffs, mordant dyestuffs, including a study of the various mordants and their fixation with metallic salts; dyeing with sulphur dyestuffs, indanthrenes, indigo, natural and artificial, aniline black, turkey red, and the insoluble azo colors developed on the fiber; the methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers; the scouring and bleaching of wool; the carbonization and chlorination of wool; the application of basic, acid, chromo, eosin, and direct colors to wool; dyeing wool with logwood, fustic, and other natural dyewoods; methods of the making and dyeing of artificial silk; the boiling off, bleaching and dyeing of natural silk; study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods; the use of the various kinds of machines used in bleaching and dyeing; the dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions; the science of color-mixing; color-matching on textiles; the use of the tintometer and colorimeter; calico printing, including the various methods of preparing the various pastes, thickening agents, mordants, and assistants used in printing; quantitative analysis of mixed yarns, and fabrics composed of cotton, wool, and silk; the testing of dyestuffs for their shade, tinctorial power, and leveling properties, comparative dye trials to determine

money value; testing for mixtures; the reactions of acids, alkalis, and reducing agents on several samples taken from the different classes of dyestuffs.

The course of lectures, as outlined above, will include the consideration of many difficult problems that arise in the dye-house, with especial reference to the dyeing, mercerizing, and finishing of cotton yarns and pieces. Required of Juniors and Seniors in Textile Industry. Assistant Professor HALSTEAD.

361-362, 461-462. Dyeing Laboratory.—A series of experiments is performed which covers all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dyehouse. Special stress is put on the matching of colors and the dyeing of sulphur and indanthrene dyestuffs. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a pattern book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth and yarn in the dye-house, as well as prints samples on the laboratory printing machine. This work will be supplemented by visits to the mills in the city of Raleigh which do dyeing. Required of Juniors and Seniors in Textile Industry. Assistant Professor HALSTEAD.

Short Courses.

11-12. Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning, baling, and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers; cards; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-book: Taggart's *Cotton Spinning*. Required of first- and second-year students. Mr. DICK.

21-22. Weaving.—Lectures on construction of plain, twill, sateen, gingham, pick and pick looms are given; also on construction of dobbies and jacquards.

Lectures begin with the construction of plain loom, first taking up the principal movements in weaving, then the various secondary

or auxiliary movements, and the relation and timing of one movement to another. Additional motions and parts required to be added to a plain loom in order to weave twill and sateen cloths. Magazine looms; construction and advantages. Drop box looms; construction of the various motions; arranging colors in boxes; methods of building box chains. Dobby: construction of single and double index; setting, and starting up dobby on loom; fixing dobby. Pick and pick looms: construction of loom; construction of head motion; building box chains to have easy-running loom. Jacquard: single and double lift; construction and tie-up. Weave-room calculations for speed and production; counts of reed and cotton harness. Finishing cotton fabrics. Necessary equipment for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: Nelson's *Weaving, Plain and Fancy*. Required of first- and second-year students. Professor NELSON, Mr. STEED.

31-32. Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves; plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave design; pointed twills; diamond effects. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp. Cloths ornamented with extra filling. Combination of plain and fancy weaves. Practical application of weaves to fabrics. Advanced designs. Required of first- and second-year students. Professor NELSON, Assistant Professor HALSTEAD, Mr. STEED.

42. Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per

inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of first- and second-year students. Professor NELSON, Assistant Professor HALSTEAD, Mr. STEED.

51-52. Dyeing.—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers, and the action of acids, alkalis, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing, such as the boiling out and bleaching of cotton, and the chemical reactions involving each step; the adaptability of water for bleaching and dyeing, followed by the theories of dyeing; substantive dyestuffs and their application to cotton; after-treatment of direct dyestuffs, including diazotising and developing and the topping with basic dyestuffs; the application to cotton of basic dyestuffs, acid dyestuffs, mordant dyestuffs, including a study of the various mordants and their fixation with metallic salts; dyeing with sulphur dyestuffs, indanthrenes, indigo, natural and artificial, aniline black, turkey red, and the insoluble azo colors developed on the fiber; the methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers; the scouring and bleaching of wool; the carbonization and chlorination of wool; the application of basic, acid, chromo, eosin, and direct colors to wool; dyeing wool with logwood, fustic, and other natural dyewoods; methods of the making and dyeing of artificial silk; the boiling off, bleaching and dyeing of natural silk; study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods; the use of the various kinds of machines used in bleaching and dyeing; the dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions; the science of color-mixing; color-matching on textiles; the use of the tintometer and colorimeter; calico printing, including the various methods of preparing the various pastes, thickening agents, mordants, and assistants used in printing; quantitative analysis of mixed yarns, and fabrics composed of cotton, wool, and silk; the testing of dyestuffs for their shade, tinctorial power, and leveling properties; comparative dye trials to determine money value; testing for mixtures; the reactions of acids, alkalis, and reducing agents on several samples taken from the different classes of dyestuffs.

The course of lectures, as outlined above, will include the consideration of many difficult problems that arise in the dye-house, with especial reference to the dyeing, mercerizing, and finishing of cotton yarns and pieces. Assistant Professor HALSTEAD.

VETERINARY SCIENCE.

Agricultural students wishing to pursue a veterinary course will be given opportunity during their Junior and Senior years to elect subjects required in the Freshman and Sophomore years of such a course. This arrangement will permit one to complete two four-year courses in six years time. With the close correlation between agriculture, especially along live-stock lines, and veterinary medicine, this makes a most satisfactory arrangement.

201-202. Comparative Physiology.—This course, which combines elementary anatomy and physiology both of man and of domestic animals, is especially designed to teach the student the structures, uses, and phenomena of the human mechanism; and as these are common and analogous to those of domestic animals, attention will be given to a comparison of the fundamentals of all systems in each class. The subject of anatomy will be taught by use of mounted skeletons of man, horse, cow, and hog; by dissection of small animals; and from collections of fresh specimens of the various organs and prepared material in the laboratory. This will be followed by a comparative study of the functions of the various systems and organs of the body, such as the skeleton, muscles, nerves, digestion, reproduction, etc. The subject will be covered by text-book, lecture, recitation, demonstrations, and laboratory exercises. Three periods, first term; two periods, second term. Required of Sophomores. Fee, $1. Doctor ALEXANDER, and Mr. STOTESBURY.

301. Anatomy and Physiology of Domestic Animals.—No one will be qualified to make a comprehensive study of livestock or be able to closely differentiate between normal and abnormal structures and functions of the various parts of the animal body unless he is familiar with the fundamentals of anatomy and physiology. Having had an insight into the subject previously in course 201-202, the student now goes more into detail. The subject-matter is given by the use of text-book, supplemented by lecture, and illustrated by charts, models, skeletons, sketches, and dissections. Special attention will be given to the systems and organs of digestion, reproduction, locomotion, respiration, and circulation. Three periods, first term. Required of Juniors in Animal Husbandry Division. Professor ROBERTS and Doctor ALEXANDER.

302. Hygiene, Sanitation, and Diseases of Animals.—Preventive medicine is the goal of the physician, the veterinarian, and the sanitarian. In order to be a livestock sanitarian the animal husbandman must, therefore, have a rather comprehensive knowledge of hygiene and sanitation. Considerable time will be devoted to a study of the causes of disease and the means of avoiding them through hygienic and sanitary measures. Three periods, first term; two periods, second term. Required of Sophomores. Fee, $1. Doctor ALEXANDER, and Mr. STOTESBURY.

401. Veterinary Science: Advanced Physiology.—Appreciating the value of many of the interesting phenomena in physiology, opportunity is given to consider those especially applicable for the animal husbandman and the teacher. Three periods, first or second term. Elective for Seniors in Animal Husbandry, Poultry, and Normal divisions. Professor ROBERTS and Doctor ALEXANDER.

402. Veterinary Science: Infectious Diseases.—This course, while correlating with the Junior work and Senior physiology, will not require these courses as prerequisites. Attention will be given to those infectious diseases that are common in the South, and especially those that occur in both men and animals. Three periods, first or second term. Elective for Seniors in Animal Husbandry and Normal divisions. Professor ROBERTS and Doctor ALEXANDER.

311-312. Histology.—A microscopical study of the tissues of the body, treating of the cell as the unit of structure, and of its functions; also of tissues, their classification, and their relation to the structure of organs. From dissections, clinics and proximity to slaughterhouse, abundance of histological material of various animals is obtainable. Three periods. Required of Juniors in Veterinary Division. Fee, $1. Doctor ALEXANDER.

321-322. Veterinary Anatomy.—This subject will deal with the study of the skeleton, including bones and joints, and of the muscles. A complete dissection of the muscles of the horse will be made. Three periods. Required of Juniors in the Veterinary Division. Fee, $2. Professor ROBERTS.

332. Materia Medica.—This study of the drugs used in comparative medicine will treat of their classification, composition, physiological actions, and doses. Three periods, second term. Required of Juniors in Veterinary Division. Professor ROBERTS.

411-412. Veterinary Anatomy.—A continuation of Course 321-322. A study of the digestive, respiratory, circulatory, urinary, reproductive, and nervous systems will be made, with dissections of each in the horse. Three periods. Required of Seniors in Veterinary Division. Fee, $2. Professor ROBERTS.

421-422. Veterinary Physiology.—A comparative study of the bodily functions of the various domestics animals is made, with special reference to digestion, respiration, circulation, reproduction, and secretion. Three periods. Required of Seniors in Veterinary Division. Doctor ALEXANDER.

431-432. Experimental Physiology.—Appreciating the value of many of the interesting phenomena in physiology recently discovered, opportunity is here given to consider those specially applicable to the animal husbandman, the teacher, and the research student. The course will cover investigations dealing with various phases of reproduction and milk secretion; of internal secretions; and of those phenomena of the circulation resulting from infections, pregnancy, etc., such as hemolysis, bacteriolysis, and agglutination. First or second term. Elective for Seniors. Professor ROBERTS and Doctor ALEXANDER.

441. Materia Medica and Pharmacy.—Course 332, as described above, will be continued. The Pharmacy Course will include prescription writing and laboratory work in the preparation, compounding, and preserving of medicines. Three periods, first term. Fee, $1. Required of Seniors in Veterinary Division. Professor ROBERTS and Doctor ALEXANDER.

442. Diagnosis and Clinics.—Diagnosis is taught for the purpose of studying the methods of examining animals to detect disease in them and to determine the location, character, and cause for same. The subject will be discussed largely from a clinical standpoint, but the autopsy, lesions, and laboratory means of diagnosis will likewise be considered. Clinics will be held regularly at a veterinary hospital and practical demonstrations of diagnosis will be made. Three periods, second term. Required of Seniors in Veterinary Division. Professor ROBERTS and Doctor KOONCE.

451-452. General Pathology.—As contrasted with special or systematic pathology, this course will treat of general causes of disease, congenital, postnatal, infectious, and noninfectious; of morbid and reactive tissue processes, congestion, inflammation, fever, immunity, etc.; of progressive tissue changes, regeneration, tumors, etc.; of regressive tissue changes, degeneration, necrosis, death, etc. A large number of specimens of diseased organs and tissues already present in the museum, and opportunity for collecting others from clinics and abattoir, insure plenty of material to demonstrate various macroscopical and microscopical tissue changes. Two periods. Required of Seniors in Veterinary Division. Fee, $1. Doctor ALEXANDER.

11. Physiology and Hygiene.—The principles of physiology and hygiene are essential to the rational feeding and care of the human

body, as well as those of animals. Lectures, recitations, and demonstrations will be used in covering this subject in an elementary way. Three periods, first term. Doctor ALEXANDER.

ZOOLOGY AND ENTOMOLOGY.

Four-Year Courses.

101-102. Elementary Zoology.—An elementary study of all forms of animals, with special reference to the more important economic groups, is given by text-book, library, laboratory and field work, with supplementary lectures. This course is designed to give the student a general knowledge of the animal kingdom, and to lay the foundation for the special work which follows. Three periods, first and second terms. Required of Freshmen. Prerequisite for all other courses in the Department. Fee, $2. Professor METCALF, Mr. SPENCER, Mr. UNDERHILL.

202. Zoology.—This is a course in the study of the cell. Cell division, maturation, the morphology of the spermatozoon and the egg, fertilization, and cleavage are studied in detail. The student is required to collect and prepare his own material as far as practicable. Two periods, second term. Required of Sophomores. Fee, $2. Professor METCALF, Mr. SPENCER, Mr. UNDERHILL.

401. Vertebrate Zoology.—This course will cover the comparative embryology of the principal groups of vertebrates, together with a discussion of the comparative anatomy of the vertebrates. Three periods, first term. Required of Seniors in Veterinary Division. Elective in Poultry Division. Fee, $2. Professor METCALF.

411-412. Zoology, Elective.—A course designed especially for students who wish to review the fundamental principles of Zoology, either as a basis for teaching or for investigational work. Two or three periods, first and second terms. Elective in Vocational Education Division. Professor METCALF.

301. Elementary Entomology.—The elements of insect anatomy, classification, and development as a foundation for economic entomology is covered by text-book, lectures, and laboratory work. Three periods, first term. Required of Juniors in Horticultural Division. Fee, $1. Professor METCALF, Mr. SPENCER.

402. Elementary Economic Entomology.—Injurious insects of field and truck crops, garden, orchard, barn and household are studied from the standpoint of their life histories and control. Text-book, laboratory, and field work. Three periods, second term. Required of Seniors in Agronomy and Vocational Education divisions. Fee, $1. Professor METCALF, Mr. SPENCER, Mr. UNDERHILL.

422. Economic Entomology.—The insect enemies of domestic animals, grains and forage crops are studied from the standpoint of structure, development, and control. Lecture, laboratory, and field work. Three periods, second term. Required of Seniors in Animal Husbandry Division. Fee, $1. Professor METCALF, Mr. SPENCER, Mr. UNDERHILL.

432. Horticultural Entomology.—Systematic study of the injurious insects of orchard, shade, and ornamental plants, together with a study of the insect enemies of the principal truck and garden crops from the standpoint of their life histories and control. Three periods, second term. Required of Seniors in Horticultural Division. Fee, $1. Professor METCALF.

501-502. Graduate Zoology.—This course is designed to fit the student for research or teaching in either Zoology or Entomology. The student may elect from the following groups: (1) Invertebrate Morphology, (2) Comparative Anatomy, (3) Vertebrate Embryology, (4) Invertebrate Embryology, (5) Ecology, (6) Animal Micrology, (7) Cytology, (8) Systematic Entomology, (9) Medical and Veterinary Entomology, (10) Parasitology, (11) Economic Entomology of fruit trees, shade trees, greenhouse, corn, cotton, or tobacco. Four or eight periods. Professor METCALF.

Short Course.

12. Entomology.—This is a short course in which the beneficial and injurious insects are discussed in their relations to the farm. The various insecticides and methods of spraying are also included. Three periods, second term. Professor METCALF, Mr. UNDERHILL.

SUMMER SCHOOL.

PRELIMINARY ANNOUNCEMENT.

During the summer of 1917, by authority of the Board of Trustees, the North Carolina State College of Agriculture and Engineering will give to the teachers of the State the opportunity of using, for six weeks, its magnificent plant, the value of which is in excess of one million dollars.

On two previous occasions this College had a summer school. The first session was during the summer of 1903 and under the presidency of Dr. George T. Winston. The total attendance during that session was 338, representing 9 States and 57 counties in North Carolina. The teachers in attendance came from 167 rural schools, 66 city graded schools, and 39 academic and high schools.

The second session was during the summer of 1904. There was an enrollment of 840 teachers. This enrollment was, at that time, the second largest in the South. It had never been exceeded by any summer school in North Carolina before that time, and has been exceeded since only a single time by one summer school.

The courses have been arranged to cover the subjects taught in the primary, grammar, and high schools from grade 1 to grade 11. They will, therefore, be adapted to teachers and to officials connected with any department of work in these schools.

Professional courses in education, etc., will be given, and there will also be cultural subjects of more advanced grade.

These courses will also give an opportunity for better preparation to those who contemplate entering this or some other college.

The School will afford a splendid opportunity to secure or renew a Teacher's Certificate; to increase efficiency as a teacher; to prepare for leadership in the new education for agriculture and other industries; to receive inspiration from association with fellow teachers; and to enjoy a sojourn at the State's Capital and Educational Center.

The Y. M. C. A. Building will be the social center of the School. This building contains a reading room, several reception rooms, a bowling alley, a gymnasium, and a swimming pool. The chaperon in charge of this building will be Mrs. J. A. Beam of Woodsdale, N. C.

The 1911 and South dormitories will be assigned to ladies exclusively. Chaperons have been engaged for each of these build-

ings, among them being Mr. and Mrs. H. H. McKeown, Mocksville; Mrs. E. D. Miller, West Raleigh; Miss Eliza Parker, Chadbourn; Mrs. Leak Peace, Hester; Miss Zoe Porter, Roanoke Rapids; Mr. and Mrs. R. E. Ranson, Southport, and Mrs. Wingate Underhill, Louisburg.

Personally conducted excursions each Saturday to the many points of interest in Raleigh and its environs will be a feature of the School. The lectures, entertainments, and vesper services at the School will be attractive.

There will be a reception by the Woman's Club and other entertainments in the city of Raleigh.

Reduced rates will be given upon the railroads.

In addition to the College library, students of the School will have access to the Raney Library and to the State Library.

The College infirmary, in charge of the hospital matron, will be conducted for the Summer School. The College physician will make daily visits to those who may be sick in the infirmary.

The Employment Bureau will, without charge, assist principals to secure teachers who may be registered in the School and assist teachers who may be registered in the School to learn of positions which are open.

The expenses for the entire session will be as follows:

Tuition	$ 6.50
Room rent, two in room	5.00
Medical fee	.75
Gynasium fee	.50
Library fee	.25
Board	18.75
	$31.75

Many of the homes in Raleigh will supply board and lodging. A list of the names will be furnished in the catalogue.

A catalogue of the School will be supplied upon request to

W. A. WITHERS, DIRECTOR,
WEST RALEIGH.

DEPARTMENTS OF INSTRUCTION.

Agriculture.

Professors T. E. BROWNE, B. F. KAUPP, Z. P. METCALF, C. L. NEWMAN, J. P. PILLSBURY, and Assistant Professor D. G. SULLINS, State College of Agriculture and Engineering; Director C. B. WILLIAMS, North Carolina Experiment Station; Mr. J. L. RANDALL, of the United States Bureau of Education.

I. Agriculture for Grammar Grades. Mr. WILLIAMS.
II. Agriculture for High School Grades. Messrs. NEWMAN, PILLSBURY.
III. Dairying. Mr. SULLINS.
IV. Poultry. Mr. KAUPP.
V. Gardening. Mr. RANDALL.
VI. Agricultural Education. Mr. RANDALL.
VII. Rural Problems. Mr. BROWNE.
VIII. Nature Study. Mr. METCALF.
IX. Conference of Agricultural Teachers and Workers. Mr. NEWMAN, *Chairman*, Mr. T. E. BROWNE, Coöperating.

Drawing and Manual Training.

Mrs. RUTH HUNTINGTON MOORE, of Peace Institute; Assistant Professor L. L. VAUGHAN, State College of Agriculture and Engineering; Miss MAY HILL DAVIS, State School for the Blind.

I. Primary Drawing. Mrs. MOORE.
II. Mechanical Drawing. Mr. VAUGHAN.
III. Basketry. Miss DAVIS.
IV. Carpentry. Mr. VAUGHAN.

Economics.

(*See also Home Economics.*)

Professor W. R. CAMP, State College of Agriculture and Engineering.

I. Markets and Credits. Mr. CAMP.

Education.

(*See also Agriculture, Drawing, English, Geography, History, Home Economics, Language, Music, School Law, Writing.*)

Superintendent A. T. ALLEN, Salisbury Graded Schools; Superintendent F. M. HARPER, Raleigh Township Schools; Superintendent

D. F. GILES, Wake County Schools; Professor J. H. HIGHSMITH, Wake Forest College; Miss DAPHNE CARRAWAY, Rural Supervisor, Wake County; Mrs. PEARL CROSS GREEN, Supervisor Raleigh Schools; Miss ETHEL TERRELL, Asheville Schools; Mrs. ROBERT E. RANSON, President North Carolina Story Tellers' League; Mr. C. H. MACDONALD, Supervisor Raleigh Playgrounds; Mrs. C. L. MANN, formerly Director Expression Department, St. Mary's School; Miss ALICE D. PRATT, Supervisor of Schools, McDowell County; Miss ELIZABETH KELLY, Supervisor of Schools, Johnston County.

I. Primary Reading. Miss TERRELL.
II. Primary Language. Miss TERRELL.
III. City School Administration. Mr. ALLEN.
IV. Teaching of Reading, Grammar Grades. Mr. ALLEN.
V. Teaching of History, Grammar Grades. Mr. ALLEN.
VI. Methods of Teaching Latin. Mr. HARPER.
VII. Primary Number Work. Miss CARRAWAY.
VIII. Primary Methods. Miss CARRAWAY.
IX. Practical Elocution. Mrs. MANN.
X. The Rural School and the Community. Mr. GILES.
XI. Psychology. Mr. HIGHSMITH.
XII. Principles of Teaching. Mr. HIGHSMITH.
XIII. Educational Psychology. Mr. HIGHSMITH.
XIV. Class-room Management. Mr. GILES.
XV. Sunday School Pedagogy. Mr. HIGHSMITH.
XVI. Story Telling, Primary Grades. Mrs. RANSON.
XVII. Story Telling, Grammar Grades. Mrs. RANSON.
XVIII. Play Grounds. Mr. MACDONALD.
XIX. Swimming Pool. Mr. MACDONALD.
XX. Gymnasium. Mr. MACDONALD.
XXI. Practice School, Second and Third Grades. Miss PRATT.
XXII. Practice School, Fourth and Fifth Grades. Mrs. GREEN.
XXIII. Community Organization. Miss KELLY.

English.

Dr. THOMAS P. HARRISON, Dean and Professor of English, State College of Agriculture and Engineering; Dr. CLIFFORD L. HORNADAY, Trinity College.

I. Grammar. Mr. HORNADAY.
II. High School English. Mr. HARRISON.
III. Literature. Mr. HARRISON.

Geography and Geology.

Associate Professor L. F. WILLIAMS, State College of Agriculture and Engineering; Superintendent R. E. SENTELLE, Lumberton Graded Schools.

I. Geography, Grammar Grades. Mr. SENTELLE.
II. Geology. Mr. WILLIAMS.

History.

Miss CATHERINE F. ALBERTSON, Principal Elizabeth City High School; Miss GLADYS H. BECKWITH, Miami (Fla.) Graded Schools.

I. North Carolina History. Miss ALBERTSON.
II. American History. Miss BECKWITH.
III. English History. Miss BECKWITH.

Home Economics.

Mrs. KATE BREW VAUGHN, Lecturer and Author; Miss BEULAH CLARK HATCH, of Simmons College, Boston; Dr. J. K. PLUMMER, of the Chemistry Staff of the North Carolina Experiment Station; Mrs. JANE S. MCKIMMON, State Home Demonstration Agent.

I. Teaching Course. Mrs. VAUGHN.
II. Housekeepers' Course. Mrs. VAUGHN.
III. Teaching Course. Miss HATCH.
IV. Household Chemistry. Mr. PLUMMER.
V. Home Food Conservation. Mrs. MCKIMMON.

Language.

Superintendent FRANK M. HARPER, Raleigh Township Schools; Miss NANNIE C. DINWIDDIE, Fairmont Seminary, Washington.

I. Latin. Mr. HARPER.
II. Latin: Methods of Teaching. Mr. HARPER.
III. French: Elementary. Miss DINWIDDIE.
IV. French: Teaching. Miss DINWIDDIE.
V. German. Mr. HORNADAY.

Mathematics.

Professor T. C. AMICK, Elon College; Superintendent R. E. SENTELLE, Lumberton Graded Schools.

I. Arithemetic, Grammar Grades. Mr. SENTELLE.
II. Algebra, Beginners. Mr. AMICK.
III. Algebra, High School. Mr. AMICK.
IV. Algebra, Advanced. Mr. AMICK.
V. Geometry. Mr. AMICK.

Music.

Mr. R. BLINN OWEN, Dean of Music, St. Mary's School; Miss MARTHA A. DOWD, Director of Music, St. Mary's School.

I. Public School Music, Primary Grade. Mr. OWEN.
II. Public School Music, Intermediate Grade. Mr. OWEN.
III. Normal Piano Training. Miss DOWD.

NOTE.—Arrangement will be made for advanced private lessons in voice upon request.

Physiology and Hygiene.

I. Lectures by Drs. RANKIN, COOPER, MCBRAYER, GORDON, WASHBURN, CROUCH, SHORE, and Mr. BOOKER, of the State Board of Health.

II. Red Cross. First Aid.

Rural Sociology.

Dr. CLARENCE POE, Editor Progressive Farmer; Mr. W. C. CROSBY, Executive Secretary, Bureau of Community Service.

I. Rural Sociology. Mr. POE and Mr. CROSBY.

School Law.

Superintendent R. E. RANSON, Brunswick County Schools.

I. School Law. MR. RANSON.

Science.

(*See also Agriculture, Geography and Geology, Physiology and Hygiene.*)

Dr. W. S. RANKIN, Secretary of the State Board of Health; Professor W. H. BROWNE and Z. P. METCALF and Associate Professor L. F. WILLIAMS, State College of Agriculture and Engineering; Dr. J. K. PLUMMER, of the Chemistry Staff, North Carolina Experiment Station.

I. General Science. Mr. BROWNE.
II. Nature Study. MR. METCALF.
III. Physics, Introductory. Mr. BROWNE.
IV. Chemistry, Introductory. Mr. WILLIAMS.
V. Chemistry, Household. MR. PLUMMER.
VI. Geology, Introductory. MR. WILLIAMS.
VII. Physiology and Hygiene. Dr. RANKIN.
VIII. Elementary Botany. Mr. WOLF.

Writing.

Mr. JACK LONDON, of the A. N PALMER Co., New York; Mrs. PEARL CROSS GREEN, Raleigh Public Schools.

I. Palmer Method. Mr. LONDON and Mrs. GREEN.

ONE-WEEK GRADUATE COURSE IN VETERINARY MEDICINE.

January 9-14, 1918.

Open to graduate veterinarians only. Alterations in the following outline of subjects may be made to suit the wishes of those attending. The subject-matter in each case will be condensed so as to cover the entire field during the week.

Animal Husbandry—Judging, Feeding, and Breeding.—This course is given by the Animal Husbandry Division. The Livestock Judging will embrace the points to be considered in determining the fitness of animals for specific purposes. The Stock Feeding instruction will cover the various feeds available, their composition, and the methods of compounding balanced rations. The Animal Breeding lectures will discuss the selection, the laws of breeding, and the management of breeding animals.

Dairying.—This course is offered by the Dairy Division. The equipment necessary for a dairy, the methods of conducting a dairy business, and the composition of milk will be the subjects of study. Laboratory demonstrations will be given to illustrate methods of testing and standardizing milk and cream, also the scoring of butter.

Parasites and Parasitic Diseases.—Three or more lectures will be given on this subject, taking up the more important internal and external parasites, using for the purpose of demonstration one of the largest private collections of parasites in this country. Symptoms of parasitism, methods of recognition of the parasites, lesions produced, and means of eradication will be thoroughly discussed. Professor KAUPP.

Common Diseases of Poultry.—Three or more lectures will be given on this subject, taking up the more troublesome diseases, both parasitic and bacterial, making actual demonstrations from the poultry and pathology research laboratory, run jointly by the College and the Station. Professor KAUPP.

Meat and Milk Inspection.—The subject will be covered in the discussion of an outline indicating what inspection for Southern towns should consist of. The work will be demonstrated by visits to the municipally owned abattoir, the city market, and some of the better dairies about Raleigh. Doctor KOONCE.

Anatomy and Dissection.—Condensed outlines of the different anatomical systems will be given, such as of skeleton, including joints,

and muscular, nervous, digestive, circulatory, respiratory, urinary, and genital systems. Abundance of well-injected equine subjects will be available for dissection of all parts, but particular attention will be given those areas involved in special surgery. Professor ROBERTS.

Veterinary Physiology.—The physiology of digestion, nutrition, and reproduction has made much advancement in the past five years. It is, therefore, essential that we understand the latest and the most authenticated scientific findings. Lectures will be given summarizing the essentials of these subjects. Laboratory methods, also, will be used to demonstrate the actions of the digestive fluids, and prepared specimens shown to illustrate, as far as possible, the phenomena of reproduction. The remaining time will then be given to a discussion, in a practical manner, of the respiratory and the circulatory systems. Doctor ALEXANDER.

Clinical Diagnosis and Clinics.—The subject-matter will be given in the form of a synopsis of the essential factors concerned in determining the alterations in each of the anatomical systems and regions of the animal body. Demonstrations will be made in the conduct of clinics at the veterinary hospital and by various laboratory and field methods of diagnosis. It is expected to have opportunity to show typical reactions from use of intra-dermal and ophthalmic tuberculin. Doctors ROBERTS, KOONCE, ALEXANDER, KAUPP.

Open Discussions on Surgery, Practice, Meat and Milk Inspection, etc. Leaders of each chosen by those attending. Stated periods will be appointed for each of the above subjects on which round-table discussions will be held of the veterinarian's everyday problems.

FOUR WEEKS TEXTILE COURSE.

This course is designed to meet the needs of mill men who are engaged in practical mill work and who desire an opportunity of learning the theoretical and practical operations of some other department in the mill or of perfecting themselves in their own department.

RULES FOR ADVANCED DEGREES.

Two degrees are conferred: The Engineering Degree to non-resident graduates of the engineering courses, and Master of Science to resident students pursuing graduate work.

ENGINEERING DEGREES.

1. The degree of Civil Engineer, Mechanical Engineer, or Electrical Engineer may be conferred upon graduates of the several engineering departments of the College not sooner than three years after graduation.

2. Each candidate for an engineering degree must file his application for enrollment not later than October 5th.

3. He must file with his application a statement of the work he has done since graduation and the title of the thesis which he will present.

4. The record of the work and the subject of the thesis must be approved by the Faculty's standing committee on graduate students before the applicant will be enrolled as a candidate for a degree.

5. No work done as a teacher shall be credited towards this degree.

6. The completed thesis must be submitted in approved form not later than May 1. Reports, designs, or drawings made in the regular course of his employment will not be accepted.

7. A candidate must submit with his thesis tangible records of the work he has done and upon which his application for the degree is based, such records to consist of complete drawings, detailed drawings, photographs, records of tests, or other such matter as will show the character of the work done and indicate the degree of responsibility that has been placed upon him.

8. If the record of the work done be approved and the thesis accepted by the Faculty, the candidate, upon notification, must present himself for examination not later than the Saturday preceding the annual commencement. The examination shall consist of oral questions on the subject-matter of the thesis and on the work done by the candidate since graduation.

MASTER OF SCIENCE.

The degree of Master of Science will be conferred on graduate students who fulfil the following requirements:

1. The candidate must have received the Bachelor's degree from this College or another institution having an equivalent course of study.

2. Not less than two years must intervene between the conferring of the Bachelor's degree and the Master's degree, unless the candidate has devoted his time exclusively to graduate study.

3. A course of study consisting of one major and two minors, aggregating sixteen periods, must be pursued during residence at the College, each period representing not less than 100 hours of actual work.

4. The major subject, covering eight periods, shall be strictly graduate work and selected in that department in which the Bachelor's degree was taken.

5. The two minor subjects, covering four periods each, shall be chosen from departments allied to the department in which the major subject is chosen. The work of a minor subject shall be of a grade not lower than that of the Junior year in those departments.

6. Work which has been done previous to receiving the Bachelor's degree or which has been accepted as credit towards any degree received shall not be accepted for credit towards the Master's degree at this College.

7. The major and minor subjects must be completed satisfactorily by May 1st preceding the conferring of the degree, at which time also must be presented in its complete form a satisfactory thesis, the theme of which must have been approved by the 5th day of October previous thereto.

8. The candidate must pass a satisfactory oral examination upon his thesis, major and minor subjects, before an examining committee composed of the professors in charge of the major and minor subjects, one or more members of the Committee upon Graduate Studies, and one or more other members of the Faculty, said examining committee to be appointed by the Faculty upon the nomination of the Committee upon Graduate Studies.

9. In case the applicant be employed by the College, Experiment Station, or State Department of Agriculture, he shall not be allowed to receive during any year credit for more than eight periods, to be distributed as follows: both minors, the major, or a minor and one-half the major. In this connection a year will extend from Commencement day to Commencement day.

10. No work done as a teacher shall be credited as work towards the degree.

11. At least eight periods must be devoted to work in the laboratory, field, greenhouse, dairy, or barn.

12. The thesis must involve some original work. References to literature should as far as possible be to original sources, and all citations should follow the rules prescribed for the *Journal of Agricultural Research.*

13. Credit will not be allowed during any year unless the candidate shall have filed with the Registrar an approved course of study by October 5th of that year or a previous year.

14. Candidates for advanced degrees must register by October 5th of each year for which they wish to receive credit.

FORM OF THESIS.

The thesis must be presented on unruled white paper, 8⅛ by 11 inches in size, twenty-pound Persian bond or the equivalent. A suitable title page, printed or typewritten, must be prepared. The thesis must be neatly typewritten, properly paged, leaving a margin of 1½ inches on the left for binding, the writing to be on one side of the page only. All drawings or diagrams must be neatly and carefully prepared, and where the size of paper necessary is larger than that of the page it must be of such size as conveniently to fold in with the thesis.

The thesis shall become the property of the College and will be placed on file.

PUBLICATION OF THESIS.

Thesis for advanced degrees or extracts therefrom may be published only under the supervision of the Committee Upon Graduate Studies, which committee will decide upon the place of publication and matter to be published. In connection with the publication there is to appear the following statement, or words to that effect: "Extracts from the thesis submitted to the Faculty of the North Carolina State College of Agriculture and Engineering in partial fulfilment of the requimements for the degree of ....." Acknowledgment may be made in the body of the thesis for assistance rendered or the article may appear as a joint publication with some member of the Faculty should the facts justify the same.

DEGREES CONFERRED IN 1916

BACHELOR OF SCIENCE.

In Agriculture.

Jere Wilson Bason.
Rodney Law Boylin.
Ralph Brooks.
George Cleveland Buck.
Clete Walton Clark.
Sherman Grady Crater.
John Alexander Farrior.
Zebulon Clifton Gardner.
Kenneth Lee Greenfield.
Robert Williams Hamilton, Jr.
Ralph Hinton Hodges.
Victor Allison Johnston.
Paul Hanner Kime.
James Walter McLeod.
John Franklin Neely, Jr.
David Benjamin Nooe.
Reid Allison Page.
Jack Addison Purefoy.
Parker Royall Rand.
Hugh Calvin Rea.
Ray Miller Ritchie.
John Paul Robertson.
Henry Fred Rush.
John Henry Speas.
Alfred Tennyson Taylor.
Grover William Underhill.
Jacob Osborne Ware.
Harry Graves Wharton.
Peter McKellar Williams, Jr.
James Harvey Withers, Jr.

In Chemistry.

Milton Lee Correll.
Leander Brownlow Johnson.
Jeffrey Franklin Stanback, Jr.

BACHELOR OF ENGINEERING.

In Civil Engineering.

Charles Vernon Baker.
Marvin Eddleman Beatty.
Clay Dwight Brittain.
Louis Gorham Cherry.
Sidney Mott Credle.
John Alexander Frazier.
Paul Noble Howard.
Sidney Earle Jennette.
John Daniel Miller.
John Bailey Pridgen.
Wallace Whitfield Riddick.
Philip Austin Roberts.
William Haywood Rogers, Jr.
Lindley Murray Rowe.
Augustine Joseph Russo.
Clement Oscar Seifert.
Karl Sloan.
Reuben L. Tatum.
George Henderson Webb.

In Electrical Engineering.

Fred Allen Baker.
John Samuel Bennett.
James Shepherd Bonner.
Claudius LeRoy Carlton.
Robert Vernon Davis.
Matthew Maury Fontaine.
Amzi Nealy Goodson.
Leonard Orr Henry.
Edgar Allen Hester.
Thomas Hall Holmes, Jr.
John LeBon Jenkins.
Rex Livingston Kelly.
William Pendleton Kennedy.
Thomas Lee Millwee.
Charles Alfred Moore.
FrankWilson Procter.
Zeb Blaine Robinson.
Paul Elwood Snead.
Wilbur Burnette Sumner.
John Franklin Williams.

In Mechanical Engineering.

Claude Shuford Abernethy.
Thomas Westmore Brooks.
Jay Victor Champion.
John Calhoun Collier, Jr.
William Shaw Corbitt.
William Stephen Haywood.
Dean Roney Holt.
Sherrod Ervin Menzies.
Henry Rankin.
Lewis Banks Ray.
Bascom Pierce Smith.

In Textile Industry.

Oliver Stanhope Anthony.
Woodford Armstrong Kennedy.
Robert Opie Lindsay.
Joseph Henry Mason.
Thomas Clayton Pegram.
Nathan Stowe Sharp.
Hermon Elton Winston.

ADVANCED DEGREES

MASTER OF SCIENCE.

In Agriculture.

Everett Hanson Cooper.
Richard Oliver Cromwell.
John Isaac Handley.
Claude Jacques Hayden.
Harvey Langill Joslyn.

MECHANICAL ENGINEER.

Herman Burke Briggs.

TEXTILE ENGINEER.

Walter Clyburn Taylor.

CIVIL ENGINEER.

John Jackson Wells.

CATALOGUE OF STUDENTS.

GRADUATE STUDENTS.

Name.	*Postoffice.*	*Course.*
Bascum Otto Austin, B.E.,	Charlotte,	E. E.
Charles Edward Bell, B.S.,	Raleigh,	Chem.
Enos Clarkson Blair, B.S.,	Raleigh,	Agr.
Alan Thurman Bowler, B.E.,	Raleigh,	Mod. Lang.
Frank Everett Carruth, A.B.,	Raleigh,	Chem.
Everett Hanson Cooper, B.S.,	West Raleigh,	Agr.
Richard Oliver Cromwell, M.S.,	West Raleigh,	Chem.
Charles Webb Davis, A.B.,	Beaufort,	C. E.
John Hubbard Hall, Jr., B.S.,	West Raleigh,	Agr.
Vernon Ray Herman, B.S.,	West Raleigh,	Agr.
Fielding Ficklen Jeter, A.M.,	West Raleigh,	C. E.
Leander Brownlow Johnson, B.S.,	West Raleigh,	Chem.
Victor Allison Johnston, B.S.,	West Raleigh,	Agr.
Paul Hanner Kime, B.S.,	West Raleigh,	Agr.
Robert Vernon Knight, B.S.,	Raleigh,	Agr.
Samuel George Lehman, B.S.,	West Raleigh,	Agr.
Rowland Willis Leiby, B.S.,	Raleigh,	Agr.
Dan Minor McCarty,	Enterprise, Miss.	Chem.
William Daniel Martin, B.E.,	West Raleigh,	M. E.
James Richard Mullen, B.S.,	West Raleigh,	Chem.
Archie Knight Robertson, B.S.,	West Raleigh,	Agr.
James Blaine Scarborough, A.M.,	West Raleigh,	C. E.
Clement Oscar Seifert, B.E.,	Weldon,	C. E.
John Asa Simms, B.S., (Agr.),	Emelle, Ala.,	Agr.
Hubert Zeigler Smith, A.B.,	West Raleigh,	Chem.
Paul Elwood Snead, B.E.,	West Raleigh,	E. E.
Herbert Spencer, B.S.,	West Raleigh,	Agr.
Talmage Holt Stafford, B.S.,	West Raleigh,	Agr.
Ernest Elwood Stanford, B.S.,	West Raleigh,	Agr.
Benjamin Percy Tillery, B.S.,	Scotland Neck,	C. E.
Grover William Underhill, B.S.,	West Raleigh,	Agr.
Jacob Osborne Ware, B.S.,	West Raleigh,	Agr.
Buxton White, B.S.,	West Raleigh,	Agr.
Frederick Carl Wiggins, B.S.,	Raleigh,	Chem.
PeterMcKellarWilliams,Jr.,B.S.,	Fayetteville,	Agr.
James Fuller Yates, Jr., B.S.,	Guilford,	E. E.

SENIOR CLASS.

Name.	*Postoffice.*	*Course.*
JOHN WELSFORD ARTZ,	Old Fort,	Agr.
JOHN WILLIAM AVERA,	Smithfield, R. 1,	Agr.
JOHN ROBIN BAUCOM,	Raleigh, R. 2,	Agr.
TYSON YATES BLANTON,	Mooresboro,	Agr.
BARRETT WOODWARD BOULWARE,	Black Mountain,	E. E.
ZEB BOYCE BRADFORD,	Huntersville,	Tex.
NOAH BURFOOT, JR.,	Elizabeth City,	Tex.
ALMON HILL CARTER,	Wallace,	Agr.
AMBROSE SCHENCK CLINE,	Lincolnton,	Agr.
JAMES WESLEY COOPER,	Henderson,	Tex.
GEORGE CHANDLER COX,	Cullowhee,	E. E.
FRANCIS EDWIN COXE,	Red Springs,	E. E.
WILLIAM PRESSLEY DAVIS,	Stovall,	C. E.
ALBERT GEORGE DAY,	Trenton, S. C.,	E. E.
WILLIAM CARTER DODSON,	Greensboro,	Tex.
MYNAR CECIL DONNELL,	Greensboro, R. 4,	Agr.
WILLIAM HENRY ELLIOT,	Thornwall,	Agr.
FREDERICK CARLTON GARDNER,	Rocky Mount,	C. E.
JOHN LEROY GREGSON, JR.,	Elizabeth City,	C. E.
FRANK JOSHUA HAIGHT,	Balsam,	E. E.
CARL RUSH HARRIS,	Mount Gilead,	Tex.
JOHN FLEMING HARRIS,	Mapleville,	M. E.
ADOLPH THEODORE HARTMANN,	Charlotte,	C. E.,
HENRY WADSWORTH HAYWARD,	Mount Gilead,	M. E.
JOHN WADE HENDRICKS,	Cana, R. 2,	Agr.
BRUCE DUNSTON HODGES,	Washington,	C. E.
WILLIAM HERBERT HODGIN,	Jamestown,	Tex.
EDISON PARKER HOLMES,	Marion,	E. E.
EDWARD HOLLAND HOLTON,	Winston-Salem,	Agr.
ROBERT MULLEN HOOPER,	Beaufort,	E. E.
WILLIAM RANSOM HOOTS,	Jennings,	Agr.
FRANK WILLIAM HOWARD,	Bridgeport, Conn.,	C. E.
JOHN ELI IVEY,	Norwood,	Agr.
PAUL WORTHY JOHNSON,	Raeford,	Agr.
WALTER MYATT JOHNSON,	Chalybeate Springs,	E. E.
CARL JAMES KIRBY,	Baywood, Va., R. 1,	Agr.
JOSEPH LEE, JR.,	Landrum, S. C.,	Agr.
HENRY ALBERT LILLY,	Mount Gilead,	Agr.
JAMES ROBERT MCARTHUR,	Greenville, R. 6,	Agr.
JAMES EDGAR MACDOUGALL,	Amesbury, Mass.,	Tex.
ROBERT WISSNER MCGEACHY,	Raleigh,	C. E.

Name.	*Postoffice.*	*Course.*
JACOB WYATT MCNAIRY,	Lincolnton,	E. E.
FRANK COBLE MCNEILL,	Cameron,	C. E.
ELBERT MCPHAUL,	Red Springs,	Agr.
MARK STRUVE MARTENET,	Baltimore, Md.,	Agr.
WILLIAM EMERY MATTHEWS,	Maxton, R. 4,	C. E.
MORRELL BATTLE MAYNARD,	Kerr,	M. E.
TODD BOWMAN MEISENHEIMER,	Charlotte,	Tex.
GORDON KENNEDY MIDDLETON,	Warsaw,	Agr.
EWING STEPHENSON MILLSAPS,	Statesville,	Agr.
EDWARD MOSEBY MURRAY,	Charlotte,	Tex.
ZACHARIAH ENNIS MURRELL, JR.,	Wilmington,	Agr.
JULIAN HAWLEY POOLE,	Jackson Springs,	Agr.
WALTER ROSCOE RADFORD,	Cane River,	Agr.
DAVID MILLER REA,	Matthews,	C. E.
VICTOR ARTHUR RICE,	Southport,	Agr.
HORACE BASCOMB ROBERTSON,	Asheville,	Tex.
JAMES HENRY ROGERS,	Hurdle Mills,	Agr.
JAMES MALCOLMSON RUMPLE,	Davidson,	M. E.
CHARLES REID RUSSELL,	Denton,	C. E.
DAVID MORTON SAINT SING,	Wise,	M. E.
DAVID FLOYD SASSER,	Goldsboro,	M. E.
WILLIAM KERR SCOTT,	Haw River, R. 1,	Agr.
THOMAS PARK SIMMONS,	Asheville,	C. E.
JOHN ALPHEUS STALLINGS,	Durham, R. 6,	C. E.
CHARLES WHITSON STANFORD, JR.,	Teer, R. 1,	Agr.
REUBEN BENNETT STOTESBURY,	Swan Quarter,	Agr.
MICHAEL ALFRED STOUGH,	Cornelius,	Tex.
LOUIS JOSEPH SWINK,	Fentress, Va., R. 2,	Tex.
GURDON LUCIUS TARBOX,	Georgetown, S. C.	M. E.
LOUIS DALE THRASH,	Asheville, R. 3,	Agr.
ERNEST CRAIG TURNER, JR.,	Mebane,	Agr.
NAPOLEON BONAPARTE TYLER,	Rich Square,	Agr.
NATHANIEL WARREN WELDON,	Norlina, R. 1,	Agr.
DRUID EMMET WHEELER,	Asheville,	Tex.
GEORGE WHITSON,	Swannanoa,	E. E.
JOHN FRANCIS WILLIAMS, JR.,	Charlotte,	Chem.
ROY LEE WILLIAMSON,	Raleigh,	C. E.
LOUIS ERNEST WOOTEN,	Fountain,	C. E.
YARO ZENISHEK,	Raleigh,	M. E.

JUNIOR CLASS.

Name.	*Postoffice.*	*Course.*
EDWARD ANDREW ADAMS, JR.,	Raleigh,	M. E.
BONVA CLOSSON ALLEN,	Clayton, R. 2,	M. E.
WILBURN CLEGG AUSTIN,	Indian Trail,	M. E.
GEORGE GANZER AVANT,	Wilmington,	E. E.
LEON WAVERLY BAILEY,	Smithfield,	E. E.
BRUCE CRAYTON BAKER,	Fairmont,	Tex.
GEORGE GARLAND BAKER,	Washington,	M. E.
JAMES MONROE BARNHARDT,	Harrisburg, R. 2,	Agr.
THOMAS AMBROSE BELK,	Mount Holly,	Agr.
FREDERICK NEIL BELL,	Concord,	E. E.
JAY LANG BENBOW,	Oak Ridge,	Agr.
WILMER ZADOCK BETTS,	Raleigh,	C. E.
GEORGE BENJAMIN BLUM,	Reidsville, R. 2,	Agr.
EBENEZER ERSKINE BOYCE,	Gastonia,	Tex.
ARMISTEAD JERMAN BOYD,	Warrenton,	Tex.
BRYCE BENJAMIN BROWN,	Greenville,	E. E.
MARSH HUTZLER CHEDESTER,	Asheville,	E. E.
HARPER NICHOLSON CHERRY,	Hendersonville,	Agr.
GILES ASHTON CLUTE,	Clinton,	Tex.
ROBERT BRICE COCHRAN,	West End,	E. E.
JAMES KIRK COGGIN,	New London, R. 2,	Agr.
DAVID STANTON COLTRANE,	Jamestown,	Agr.
WILLIAM THOMAS COMBS,	Leaksville,	C. E.
CHARLES KEARNEY COOKE, JR.,	Louisburg,	M. E.
RUSSELL ALEXANDER CROWELL,	Acton,	Agr.
WILLIE ANDERSON DAVIS,	Lucama,	Agr.
PAUL WRIGHT DELANEY,	Matthews, R. 27,	M. E.
MOSES MOORE DEW,	Wilson,	Agr.
WILLIAM SERGEANT DIXON, JR.,	Leasburg,	M. E.
FREDERICK EMMETT DUCEY,	Portsmouth, Va.,	Agr.
ALVAH DUNHAM,	White Oak, R. 1,	Agr.
JULIAN CARROLL DUNLAP, JR.,	Norwood,	Agr.
JAMES DAVIDSON EBORN, JR.,	Bath,	Agr.
THOMAS BENJAMIN ELLIOTT,	Sanford, R. 3,	Agr.
PAUL BRANDON FLEMING,	Cleveland,	E. E.
LANDON CABELL FLOURNOY,	Charlotte,	E. E.
DANIEL ROBERT STEELE FRAZIER, JR.,	Kings Creek,	C. E.
EDWIN WOOD FULLER,	Raeford,	Tex.
EARLY BAXTER GARRETT,	Burlington, R. 7,	Agr.
BENJAMIN DUKE GLENN,	Greensboro,	Tex.
HARRY PERCY GRIER, JR.,	Statesville,	C. E.

Name.	*Postoffice.*	*Course.*
THOMAS WHEELER HANCOCK, JR.,	Winston-Salem,	Agr.
ABRAM EDGAR HARSHAW,	Murphy, R. 2,	M. E.
JOHN RUBY HAUSER,	North Wilkseboro,	E. E.
JOHN MOORE GRAY HICKS,	Wilmington,	Agr.
JOHN JACOB JACKSON,	Kinston, R. 4,	Tex.
SHOBER KÖRNER JACKSON,	High Point, R. 2,	Agr.
MURRAY GIBSON JAMES,	Springer,	Agr.
CARY JEFFRESS,	Fletcher, R. 1,	M. E.
WILLIAM COOKE JONES,	Raleigh,	M. E.
NOBLE LEWIS JORDAN,	Hendersonville, R. 3,	M. E.
LYMAN KISER,	Reepsville,	Agr.
JAMES THOMAS LARKINS, JR.,	Garland,	C. E.
FRANK LEE LASSITER,	Wagram, R. 1,	M. E.
WILLIAM DANIEL LEE,	Asheville,	Agr.
WILLIAM EDWARD LEEPER,	Belmont,	C. E.
ELBERT FRANCIS LEWIS,	Greensboro,	C. E.
ROBERT LINGLE LEWIS,	Gastonia, R. 2,	C. E.
ZEB ARCH MCCALL,	Elrod,	Agr.
NEILL ALEXANDER MCEACHERN,	St. Pauls,	Agr.
THOMAS JACKSON MARTIN, JR.,	Pelham,	M. E.
PEYTON HOWARD MASSEY,	Zebulon, R. 2,	Agr.
ELBERT MAXWELL,	Seven Springs,	E. E.
GRATZ BROWN MILLSAPS,	Statesville,	E. E.
EUGENE JAMES MOORE,	Winston-Salem,	Agr.
JOHN ANDREW NORTHCOTT, JR.,	Winton,	E. E.
HENRY BLOUNT OSBORNE,	Clyde,	Agr.
WALTER LEAK PARSONS, JR.,	Rockingham,	Tex.
ROBERT JAMES PEARSALL,	Dunn,	E. E.
HERBERT FLAVIUS PFAFF,	Tobaccoville,	Agr.
JUNIUS BISHOP POWELL,	Roxobel,	Chem.
WILLIAM WEYMAN PRICE,	Raleigh,	Agr.
FRANK HITCH PRITCHARD,	Swansboro,	E. E.
WILFRED HERNDON ROBBINS,	Raleigh,	Agr.
JOHN COLE ROSE,	Conway,	Agr.
WILLIAMSON MARCELLUS RUSS,	Raleigh,	Agr.
DANIEL RUSSELL SAWYER,	Wilmington,	Agr.
CHARLES BASIL SKIPPER, JR.,	Lumberton,	Tex.
GRAHAM MUNROE SLOAN,	Black Mountain,	Tex.
ALLEN ERNEST SMITH,	Hope Mills, R. 2,	Agr.
BEN BRYAN STOCKARD,	Greensboro,	E. E.
JAMES JEFFRIES SYKES,	Charlotte,	E. E.
LESLIE LANCASTER TAYLOR,	Rutherfordton,	Tex.

Name.	*Postoffice.*	*Course.*
BEN TEMPLE,	Danville, Va.,	Agr.
GEORGE BOSTON TROXLER,	Brown Summit,	Agr.
SUADE GOWER WALKER,	Rutherfordton, R. 4,	Agr.
GEORGE SPENCER WARREN,	Wilson,	Agr.
SYLVESTER HASSELL WARREN,	Hurdle Mills, R. 2,	Agr.
HENRY CARPENTER WARWICK,	Slab Fork, W. Va.,	C. E.
JAMES THADDEUS WEATHERLY,	Greensboro, R. 1,	Agr.
PERCY STANLEY WHITE,	Greensboro,	Agr.

SOPHOMORE CLASS.

JOSEPH GRESHOM ALLSBROOK,	Allsbrook, S. C.,	Agr.
WADE VANCE BAISE,	Pelham, R. 1,	C. E.
GABRIEL FRANCIS BARBREY,	Clinton,	C. E.
SAMUEL OTTO BAUERSFELD, JR.,	Hamlet,	Agr.
JAMES CYRUS BLACK, JR.,	Harrisburg,	Chem.
HALBERT JOHNSTON BLUE,	Aberdeen,	Agr.
GLENN LYON BOBBITT,	Henderson,	M. E.
JOHN HENRY WILLIAM BONITZ,	Wilmington,	C. E.
ROBERT EDWARD BRACKETT,	Nealsville,	Agr.
CLARENCE ANDERSON BRAME,	Kenly,	Agr.
WILLIAM EDWARD BRATTEN,	Princess Anne, Va.,	Agr.
DALLAS MARION BUCHANAN,	Oxford,	Agr.
GEORGE EDWARD BUSH,	Granite Falls,	Tex.
HENRY BURDETT CHAPIN,	Aurora,	Agr.
JOHN FREDERICK CLARK,	Greensboro, R. 3,	Agr.
GEORGE LATTA CLEMENT,	Asheville,	Agr.
JAMES HAROLD CLICK,	Elkin,	Agr.
WILLIAM HENRY CLINARD, JR.,	Winston-Salem,	Tex.
ROBERT STUART COLLINS,	Catharine Lake,	E. E.
CLIFFORD CANNON COOKE,	Graham,	C. E.
CECIL EDWARDS COOKE,	Graham,	Agr.
JOHN RICHARD CORNWELL,	Lincolnton, R. 1,	Agr.
WILLIAM HOWARD CORPENING,	Worry,	Agr.
JONATHAN EVANS COURTNEY,	Fayetteville,	Agr.
GEORGE CLINGMAN CRAWFORD,	Sugar Hill,	Agr.
WILLIAM ROY CUTHBERTSON,	Candler, R. 2,	E. E.
THOMAS MARVIN DENSON,	High Point,	C. E.
HUGH WOODY DIXON,	Elkin,	Agr.
LEROY DOCK,	Balsam,	Agr.
HAROLD STUART DREW,	Union, S. C.,	Chem.
JOHN DIXON EDWARDS,	Snow Hill,	Agr.
CHARLES JACKSON FETNER,	Hamlet,	M. E.

Name.	*Postoffice.*	*Course.*
JOHN GATLING,	Raleigh,	E. E.
CARL JACK GOLDSTON,	Goldston,	C. E.
HOWARD HENLEY GORDON,	Raleigh,	Agr.
THURMAN MORRIS GREGORY,	Shiloh,	C. E.
JAMIE GRIGGS,	Wadesboro, R. 2,	M. E.
DENNIS HENRY HALL, JR.,	High Point,	Agr.
LEVIS WILSON HANDLEY,	Raleigh,	Agr.
WILLIAM GUY HARGETT,	Comfort, R. 2,	Agr.
DAVID PAGE HARRIS,	Arden,	Agr.
JAMES SHOFFNER HATHCOCK,	Norwood,	Agr.
HARRY LEE HERMAN,	Conover, R. 1,	Agr.
MARVIN BROWN HODGES,	Washington, R. 1,	Agr.
RAYMOND BRIGHT HOOKER,	Snow Hill, R. 3,	Agr.
HILTON HUDNELL,	Washington,	Agr.
ARTHUR LEE HUMPHREY,	Wilmington,	E. E.
EUGENE CARL JERNIGAN,	Benson,	Agr.
FRED DUNCAN JEROME,	Kenly,	C. E.
JOHN ALFRED JOHNSTON, JR.,	Weldon,	Agr.
WILLIAM DANIEL JOHNSTON,	Washington,	E. E.
FRED WARD JONES,	Grimesland,	M. E.
WILLIAM NATHANIEL HENRY JONES,	Raleigh, R. 1,	Agr.
ROBERT PEARSON KELLY,	Cleveland,	M. E.
CHARLES DICKERSON KIRKPATRICK,	Charlotte, R. 2,	Agr.
ZACH. TAYLOR KOONCE, JR.,	Comfort,	Agr.
HARRY VANN LATHAM,	Belhaven, R. 1,	Agr.
JOEL BREVARD LAWRENCE,	Statesville, R. 5,	Agr.
JAMES GILMORE LEONARD,	Lexington, R. 1,	E. E.
WILLIE ERNEST LEONARD,	Lexington, R. 3,	Agr.
PAUL HEDRICK LONG,	Thomasville, R. 3,	E. E.
PAUL THOMAS LONG,	Jackson,	Agr.
ALEXANDER BRYAN MCCORMICK,	Rowland,	Agr.
RALPH MCDONALD,	Raleigh,	Tex.
HARRY GALLAND MCGINN,	Charlotte, R. 3,	Tex.
HAL LYNDON MCKEE,	Sylva,	E. E.
CARY STAMEY MCLEOD,	McBee, S. C.,	Agr.
ALLAN CHARLES MARTIN,	Winston-Salem,	Tex.
MELVILLE LEE MATTHEWS,	Henderson,	E. E.
BURTON FORREST MITCHELL,	Shelby,	Tex.
THEODORE PAGE MORRIS,	Gastonia,	Agr.
FRANK CARNEY MORROW,	Teer, R. 1,	Agr.
PAUL SHEPHERD OLIVER,	Marietta, R. 1,	Agr.
GEORGE MASON PARKER,	Woodland,	C. E.

Name.	*Postoffice.*	*Course.*
FRANK EDWARD PARROTT,	Creedmoor, R. 1,	Agr.
CHARLES FULLER PHILLIPS,	Thomasville, R. 4,	Agr.
ZEB. VANCE POTTER,	Vandemere,	Tex.
PALMER WILLIAM PRESSLEY,	Seffner, Fla.,	E. E.
WILLIAM HENRY RAGAN, JR.,	High Point,	Chem.
LAWRENCE SAMUEL RANKIN,	Gastonia,	Agr.
JAMES LATHAN REA,	Matthews, R. 27,	Agr.
GEORGE RANDOLPH ROBINSON,	Rocky Mount,	E. E.
BERNICE UMSTEAD ROSE,	Conway,	Agr.
HARRY TATUM ROWLAND,	Middleburg,	Tex.
MARION POLK SANFORD,	Stem,	Agr.
GALES WEBB SCROGGS,	Statesville, R. 2,	C. E.
WALTER DUPRE SHIELDS,	Scotland Neck,	Tex.
WALTER LEITH SHUPING,	Morganton,	E. E.
JAMES GRAY STOKES,	Burgaw,	Agr.
VERNON SUITT,	Durham, R. 4,	E. E.
JACOB NEELY SUMMERELL,	China Grove, R. 2,	Tex.
ROGER VERNON TERRY,	Danville, Va.,	E. E.
JOSEPH BENTON TURLEY,	Clayton,	Agr.
WARNER MINNIEWEATHER VERNON,	Raleigh,	Agr.
JEW IRVIN WAGONER,	Gibsonville, R. 1,	Agr.
EARL DEWITT WALDIN,	Miami, Fla.,	E. E.
JOHN WALTER WALKER,	Raeford,	Agr.
SAMUEL STANHOPE WALKER,	Martinsville, Va.,	Tex.
ROBERT PHIFER WATSON,	Salisbury, R. 4,	Tex.
HERBERT CARLYLE WEATHERS,	Raleigh,	M. E.
EARL PARKS WELCH,	Charlotte, R. 7,	Agr.
THOMAS MCALISTER WHITE,	Ramseur,	E. E.
B. CUNDIFF WILLIAMS,	Manassas, Va.,	Agr.
CHARLES BARKLEY WOOLLEY,	Salisbury,	Agr.
WILLIAM THOMAS WRAY,	Wilson,	Tex.
SAMUEL KING WRIGHT,	Ruffin,	Tex.
THOMAS GRADY YOUNG,	Micaville,	E. E.

FRESHMAN CLASS.

EDWARD HERNDON ALEXANDER,	Charlotte,	Tex.
NORMAN ALEXANDER,	Liberty,	Agr.
WILLIAM GASTON ALLEN,	Neuse, R. 1,	C. E.
WALTER EDGAR ALLISON,	Waynesville, R. 2,	Agr.
LINDSEY OTIS ARMSTRONG,	Goldsboro,	Agr.
FURMAN REID AUMAN,	Seagrove, R. 1,	E. E.
PERCY OWEN BARBER,	Goldston,	C. E.

Name.	*Postoffice.*	*Course.*
HERMAN SUTTON BARBREY,	Calypso,	Agr.
JAMES HENRY BAUGHAM,	Washington,	Agr.
ALAN CLARK BAUM,	Poplar Branch,	M. E.
HOWARD LELAND BAXTER,	Moyock, R. 1,	Agr.
WALTER ROBERT BAYNES,	Hurdle Mills,	Agr.
MILTON ERWIN BELAND,	Wilson,	E. E.
ALEXANDER STEWART BETHUNE,	Clinton,	Tex.
FRED MILLER BIGHAM,	Charlotte, R. 4,	C. E.
ROBERT LAWSON BLACK,	Harrisburg,	Tex.
ROBERT FAUST BLAGG,	Burlington,	M. E.
HALBERT JOHNSTON BLUE,	Aberdeen,	Agr.
HENRY MCCOY BLUE,	Aberdeen,	Agr.
BOLIVAR LITTLEJOHN BRADLEY,	Burlington,	E. E.
COYTE CORNELIUS BRIDGES,	Catawba,	E. E.
HARVEY PRESTEN BROWER,	Staley, R. 1,	Agr.
JAMES EDWARD BROWN,	Greensboro,	Agr.
JAMES VAN BROWN,	Arden,	M. E.
OWENS HAND BROWNE,	West Raleigh,	Chem.
HENRY BLOUNT BRYAN,	Oxford,	E. E.
WILLIAM CAREY BUNCH,	Edenton,	Agr.
CHARLES ORMOND BUTLER,	Wilmington,	M. E.
EDWARD FAISON BUTLER,	Elliott,	Agr.
PERCY LISTLE CANADY,	Wilmington,	Tex.
BENJAMIN SIMMONS CARTWRIGHT,	Fairfield,	Agr.
OBED CASTELLOE,	Aulander,	Agr.
JOHN SUMMERELL CHAMBERLAIN,	West Raleigh,	Agr.
TACITO DE PAICA CHAVES,	Para, Brazil,	Agr.
WILLIAM CLAYBORNE CHEEK,	Wallburg,	E. E.
WILLIAM JENNINGS BRYAN CLAY,	Fletcher, R. 2,	M. E.
FRANKLIN DEWEY CLINE,	Asheville,	M. E.
EDGAR EXUM COBB,	Fremont,	Tex.
JOHN DAVIDSON COCKEY,	Raleigh,	Agr.
CLIFTON POPE COLEMAN,	Chappells, S. C.,	Agr.
WILLIAM BRYAN COLLINS,	Edwards X Roads,	E. E.
PAUL BERTICE CONE,	Middlesex, R. 2,	Agr.
CHARLES GILLINGHAM CONGER,	Edenton,	E. E.
ROE PLYLER CONNOLLY,	Winston-Salem,	C. E.
JOSEPH DAVID COOPER,	Dobson,	Agr.
SAMUEL ALLEN COOPER,	Graham, R. 2,	Agr.
ROY COX,	Asheboro,	Tex.
WILLIAM LEROY CRESS,	Salisbury, R. 2,	Agr.
HORACE DOWNS CROCKFORD,	Charlotte, R. 5,	Agr.

Name.	*Postoffice.*	*Course.*
JOHN CROSLAND,	Rockingham, R. 1,	Agr.
JOEL HENRY DAVIS,	Harlowe,	Agr.
JOSEPH GADDY DEBERRY,	Mount Gilead, R. 2,	M. E.
ERNEST THOMPSON DELLINGER,	Charlotte,	Agr.
WILLIAM ALLEN DOBSON,	Statesville, R. 5,	Agr.
ROBERT HOBSON DUKE,	Durham,	E. E.
CHARLES LUCAS DUNCAN,	Raleigh,	Tex.
PLATO DURHAM,	Gastonia,	Chem.
JENNINGS BRYAN EDWARDS,	Lincolnton,	Agr.
LAWRENCE ZOLLIE EGERTON,	Louisburg,	Tex.
JOHN FRANKLIN ERVIN,	Catawba,	E. E.
OVERTON LEWIS ERWIN,	Brevard,	Tex.
RANDAL BENNET ETHERIDGE,	Manteo,	Agr.
HOWARD LEE EVANS,	Lexington, R. 3,	Agr.
CLAUDE HAMILTON FLIPPIN,	Pilot Mountain,	E. E.
EDWARD YORK FLOYD,	Hester, R. 1,	Agr.
EDWARD HUGH FORDHAM,	Greensboro,	Agr.
ARTHUR CRAWFORD FOSTER,	West Raleigh,	Agr.
PHILLIP DEWEY FUNDERBURK,	Lancaster, S. C., R. 7,	Chem.
WALTER EUGENE FURR,	Concord,	Tex.
HOYT L. GALE	Clinton,	C. E
AVERY FALLS GARRISON,	Belmont,	Tex.
ALBERT SIDNEY GAY,	Jackson,	C. E.
JOHN BELL GILL, JR.,	Statesville, R. 1,	C. E.
MARSHALL EVERETT GLASSCOCK,	Mocksville, R. 5,	Agr.
JULIAN AUSTIN GLAZENER,	Calvert,	Agr.
GEORGE SIDNEY GRAEBER,	Concord,	Agr.
LONNIE THOMPSON GRAHAM,	Jackson Springs, R. 1,	Agr.
HENRY CARAL GREENE,	Blowing Rock,	Tex.
GEORGE MAXWELL GREENFIELD,	Kernersville,	Chem.
JAMES PENDLETON GRIZZARD,	Rosemary,	M. E.
RICHARD NESTUS GURLEY,	Goldsboro,	Tex.
JOHN GREENE HALL, JR.,	Oxford,	C. E.
ADAM HUGH HARRIS,	Oriental, R. 1,	Agr.
FRED BRYAN HARTON,	Rutherfordton, R. 3,	Agr.
ALFRED MARTIN HAYNES,	Raleigh,	M. E.
THOMAS JULIAN HECKSTALL,	Windsor,	Agr.
LELAND COOPER HEINS,	Raeford,	E. E.
CHARLES FRANKLYN HENDRICK,	Asheville,	E. E.
OSCAR PORTER HILBURN,	Council, R. 2,	Agr.
HENRY SELBY HILL,	New Bern,	C. E.
SAMUEL PHILLIP HINES,	Kinston,	Agr.

Name.	*Postoffice.*	*Course.*
ROBERT CLIFF HINKLE,	Lexington,	Tex.
EDWARD GIBBON HOBBS,	Clinton,	Agr.
WILBUR BREESLEN HODGES,	Brownsville, S. C.,	Agr.
RAY AUGUSTUS HOLSHOUSER,	Concord,	Tex.
SOLOMON LINN HOMEWOOD,	Burlington, R. 1,	Agr.
HARRY ELEY HOOD,	Waxhaw, R. 3,	Tex.
PERCY VICTOR HOOPER,	Elizabeth City,	M. E.
EDWIN TURLINGTON HOWARD,	Salemburg,	Agr.
WILLIAM FRANK HUMBERT,	Polkton, R. 2,	E. E.
HENRY JACKSON HUNT, JR.,	Raleigh,	C. E.
JOHN BLAKE HUNTER,	Greensboro, R. 2,	E. E.
JOHN DAVID HUNTER,	Charlotte,	Tex.
JAMES SYLVANUS HUNTER,	Gastonia,	M. E.
CHRISTOPHER THOMAS HUTCHINS,	Portsmouth, Va.,	M. E.
EDWARD EVERETT INSCOE,	Castalia, R. 1,	M. E.
ASHLEY JACKSON,	Wilmington,	E. E.
ARTHUR SPROOL JENNETTE,	New Bern,	E. E.
NATHAN MURRAY JOHNSON,	Laurinburg,	C. E.
ASBURY CROUSE JONES,	Advance, R. 3,	Agr.
DAVID LOY JONES,	Alexis,	M. E.
PRESCOTT MILTON JONES,	Wake Forest, R. 3,	Agr.
LUTHER JACKSON JORDAN,	Elm City, R. 4,	E. E.
DANIEL PROCTOR KEMP,	Wakefield,	M. E.
HENRY HEISTAND KOLBE,	Washington, D. C.,	M. E.
LOUIS MILLS LATTIMORE,	Shelby,	E. E.
WILLIAM CAREY LEE,	Dunn,	C. E.
CHARLIE RILEY LEONARD,	Lexington, R. 3,	Agr.
CHARLES WILLIAM LEWIS,	Greensboro,	E. E.
JAMES FURMAN LEWIS,	Fairmont,	Tex.
EUGENE WYATT LLOYD,	Raleigh,	C. E.
WILLIAM CAREY LLOYD,	Chapel Hill, R. 3,	Tex.
FORREST BAINIE LONG,	Charlotte, R. 3,	Tex.
ROBERT CHAMBERLAYNE LYNE,	Richmond, Va.,	M. E.
JAMES ELMA MCCALLUM,	Rowland,	Agr.
HAMMOND SPRINGS MCCOY,	Huntersville, R. 20,	Tex.
HOMER ALISON MCGINN,	Charlotte,	Tex.
EARLE DANIEL MCLEAN,	Gastonia,	Agr.
THOMAS MCMILLAN,	Rocky Mount,	E. E.
ANDREW WILLIS MCMURRAY, JR.,	Shelby,	Tex.
ADRIAN BANNERMAN MCRAE,	Elrod,	Agr.
BENJAMIN WOODMAN MANIER,	Jacksonville, Fla.,	M. E.
HARVEY BLOUNT MANN,	Lake Landing,	Agr.

Name.	*Postoffice.*	*Course.*
JAMES MARTIN,	Pelham, R. 2,	Chem.
HOWELL FOSTER MASSEY,	New York, N. Y.,	M. E.
EDWARD NEWTON MEEKINS,	Manteo,	Agr.
DUNCAN THOMAS MEMORY,	Whiteville,	M. E.
JOHN MCDOWELL MICHAL, JR.,	Woodrow,	M. E.
ALLEN LINDSAY MIDYETTE,	Fairfield,	C. E.
JOHN DANIEL MILLER,	Newton, R. 4,	Agr.
WADE HAMPTON MILLER,	New London, R. 1,	Agr.
GRAHAM MONROE,	Council, R, 2,	Agr.
JOHN THADDEUS MONROE,	Council, R. 2,	Agr.
FRANK PIERCE MONTGOMERY,	Wilmington,	M. E.
WILLIAM KELLY MOORE,	Roxboro, R. 1,	Agr.
EMMETT BROWN MORROW,	Mount Ulla, R. 2,	Agr.
ROBERT JAMES MURPHY,	Greensboro,	Agr.
WILLIAM CAREY MURRELL,	Wilmington,	E. E.
ALLEN DANIEL NANCE,	Troy,	M. E.
LESLIE DAVIS NELSON,	Atlantic,	C. E.
HENRY BELK NEWELL,	Charlotte,	E. E.
WILLIAM CLIFTON NEWELL,	Newell,	C. E.
TYCHO NORRIS NISSEN,	Winston-Salem,	M. E.
THOMAS LEITCH NIVEN,	Morven, R. 1,	Agr.
JAMES MILTON OGBURN,	Smithfield, R. 1,	Agr.
HARVEY MACK O'QUINN,	Lillington, R. 3,	M. E.
DAVID ADOLPHUS JAMES ORRELL,	Rocky Mount,	E. E.
DWIGHT HENDRICKS OSBORNE,	Greensboro, R. 3,	Agr.
PERRY LENNON PAGE,	Clarkton, R. 2,	Agr.
CHARLES BENJAMIN PARK, JR.,	West Raleigh,	Agr.
CLARENCE LEALAND PASOUR,	Dallas,	Agr.
OSMOND CONRAD PATE,	Greensboro,	E. E.
LACY LEE PATTERSON,	Raleigh,	Tex.
JAMES MURCHISON PEDEN,	Wilkesboro,	E. E.
NATHANIEL DUNN PEIRSON,	Enfield,	C. E.
AVERY PHIPPS,	Greensboro, R. 2,	Agr.
HERMAN NEWTON PICKETT,	Greensboro,	M. E.
ROSS DUNFORD PILLSBURY,	West Raleigh,	C. E.
VERNON GEORGE PLEASANTS, JR.,	Rowland,	E. E.
EDWIN THEODORE PORTER,	Georgetown,	M. E.
MARSHALL LEROY PORTER,	Charlotte, R. 2,	E. E.
JAMES ROBERT POWELL,	Clinton, R. 2,	Agr.
GEORGE EVERARD PRIVOTT,	Edenton,	Agr.
WILLIE WOODSON PUGH,	Cedar Creek,	M. E.
EDDIE LEE QUILLIN,	Spencer,	E. E.

Name.	*Postoffice.*	*Course.*
DILLARD CHARLES RAGAN,	High Point,	Tex.
OLIVER RAMSAUR,	Kings Mountain,	E. E.
ZEB MILTON REA,	Matthews, R. 27,	Agr.
CALEB EDWARD RHODES,	Dallas,	E. E.
OSCAR LAFAYETTE RHODES,	Warsaw,	Tex.
FRED SMITH RHYNE,	Gastonia,	Agr.
WILLIAM THOMAS RICE,	Wilson,	Agr.
CLARENCE WATKINS RIGDON,	New Bern,	M. E.
JOHN HOLLIS RIPPLE,	Lexington,	Tex.
WILLIAM LOUIS ROACH,	Durham,	C. E.
THOMAS KESLER ROBERTS,	Red Springs,	C. E.
RALPH REED ROBERTSON,	Portsmouth, Va.,	E. E.
JAMES B. RODGERS,	Waynesville,	E. E.
WALTER HUBERT ROGERS,	Hurdle Mills, R. 2,	M. E.
HORACE RALPH ROYSTER,	Shelby,	Tex.
ELBERT HUGH SANDERSON,	Warsaw, R. 2,	Tex.
CECIL VANN SAUNDERS,	Lilesville,	E. E.
WILLIAM BUNTING SAUNDERS,	Lilesville,	M. E.
FELIX ANDREW SCROGGS,	Morganton,	E. E.
CHARLES ANTHONY SHEFFIELD,	Randleman, R. 2,	Agr.
WILLIAM BLOUNT SHEPARD,	Edenton,	Agr.
JAMES GRIFFIN SHIELDS,	Scotland Neck,	Agr.
FRANK PIERCE SHORE,	East Bend, R. 2,	E. E.
ADRAIN LEE SIGMON,	Hickory, R. 3,	Agr.
EUGENE BRADLEY SIMONS,	Statesville,	Tex.
JOEL ALEXANDRIA SMITHWICK,	Manson, R. 2,	Agr.
JOSEPH SETH SPIVEY, JR.,	Hertford, R. 3,	C. E.
WILLIAM NOAH SPRUILL,	Creswell, R. 1,	C. E.
ROBERT PINKNEY STACEY,	Ruffin,	E. E.
FRED JENNINGS STANBACK,	Mount Gilead,	Tex.
JOSHUA JOYNER STANTON,	Stantonsburg, R. 1,	Agr.
ISAIAH QUINCY STEIGELMAN,	Rocky Mount,	E. E.
JOHN GUY STEWART,	Jackson Springs,	Agr.
ROBERT MCINTOSH STIKELEATHER,	Taylorsville, R. 2,	M. E.
HUGH MARTIN STOFFREGEN,	Fredericksburg, Va.,	C. E.
FRANK BELLAMY STRAUSS,	Bolton, R. 1,	Agr.
DONALD SHAW STUBBS,	Laurinburg, R. 2,	Agr.
DENNIS HOWARD SUTTON,	Columbia, R. 2,	Agr.
ROY CLIFTON SUTTON,	Windsor,	C. E.
WILLIAM WHITMEL SWAIN, JR.,	Henderson,	Agr.
FRANK RALPH SWINDELL,	Belhaven,	E. E.
VINCENT WRIGHT TABB,	Portsmouth, Va.,	E. E.

Name.	*Postoffice.*	*Course.*
ROSCOE DEWITT TEACHEY,	Wallace, R. 2,	Agr.
OTTIS WINGFIELD THRIFT,	High Point, R. 2,	M. E.
GEORGE WILLIAM TIENCKEN,	Wilmington,	E. E.
CLARENCE RUFUS TILLEY,	Bahama, R. 1,	Agr.
MARION FRANCIS TRICE,	Hendersonville,	Chem.
FLOYD DAVIS TURNAGE,	Fountain, R. 1,	Agr.
JOHN GRAVES VANN,	Winton,	C. E.
CHARLES ERNEST VAN BROCKLIN,	Syracuse, N. Y.,	C. E.
ALEXANDER HOLLOWAY VEAZEY,	Lyons, R. 1,	Agr.
AUBREY BRYANT WADDELL,	Louisburg,	Tex.
WILLIAM DANIEL WAGNER,	Tarboro,	M. E.
GEORGE ANDY WAGONER,	Gibsonville, R. 1,	Agr.
FRANK BENNETT WALL,	Morven, R. 2,	M. E.
SETH THOMAS WALTON,	Jacksonville, R. 3,	Agr.
JAMES SLOAN WARE,	Kings Mountain, R.4,	Agr.
WILLARD JABEZ WARREN,	Durham, R. 7,	Agr.
CLARENCE WESTBROOK WARRICK,	Goldsboro, R. 4,	Agr.
JOHN LELAND WATSON,	Maxton, R. 4,	Agr.
ROBERT EARLE WATSON,	Swan Quarter,	Chem.
WILLIAM BURKE WEATHERLY,	Gorman,	Agr.
JOHN BUXTON WEAVER,	Rich Square,	C. E.
EDWARD RUDOLPH WEEKS,	Southport,	M. E.
JACOB WEISS,	Live Oak, Fla.,	C. E.
EDWARD LEE WELCH,	Bushnell,	E. E.
THOMAS HOLT WHARTON,	Raleigh,	Tex.
JAMES ASHBY WHARTON,	Greensboro,	Agr.
WILLIAM TOXEY WHITAKER,	Raleigh,	Tex.
ALBERT LINWOOD WHITE, JR.,	Hampton, Va.,	M. E.
CHARLES WHARTON WHITE,	Raleigh,	Agr.
MANLY HERRING WHITE,	Colerain,	M. E.
ROBERT CLINTON WHITLEY,	N. Wilkesboro, R. 2,	Agr.
MELVIN VADEN WILKERSON,	Kenly, R. 3,	Agr.
FRED LEE WILSON,	Charlotte,	C. E.
WYMAN GRENOBLE WILSON,	Burnsville,	C. E.
ALCUIN DUCLOS WOLFF,	Winston-Salem,	E. E.
JOSEPH ALLEN WOOTEN,	Fountain, R. 2,	Tex.
MONZON WORSHAM,	Cornelius,	Agr.
DANIEL BARNES WORTH,	Raleigh, R. 2,	M. E.

TWO-YEAR COURSES.

First Year.

Name.	*Postoffice.*	*Course.*
Ralph Arnal Abernathy,	Elmwood, R. 1,	M. A.
George William Baker,	High Point, R. 1,	Agr.
Clyde R. Beavers,	Siler City, R. 3,	M. A.
James Spencer Blackwell,	Ruffin, R. 1,	M. A.
Otto Heath Boettcher,	Elizabeth City,	M. A.
Floyd Jackson Boling,	Siler City,	M. A.
Fitzhugh Lee Bonner,	Aurora, R. 2,	M. A.
Hurd Grier Bradford,	Huntersville, R. 21,	Agr.
Braxton Townsend Branch,	Lumberton,	M. A.
Charlie Maynard Bush,	Tyner,	M. A.
Herbert Roscoe Cavenaugh,	Wallace,	Tex.
Harry Peck Clarke,	Brevard, R. 1,	M. A.
Robert Andrew Coughenour,	Scotland Neck,	M. A.
Isham Roland Faison,	Faison,	Agr.
Eugene Bryan Forrest,	Francisco, R. 1,	Agr.
Charles Benjamin Fulghum,	Selma, R. 3,	M. A.
Lawrence Van Valkenburg Gatling,	Raleigh,	M. A.
Claude Hennery Gay,	Youngsville, R. 2,	M. A.
William Kenneth Gill,	Weaverville,	Agr.
Evans Sanford Hand,	Chadbourn,	M. A.
Dervey Harden,	Windsor, R. 2,	Agr.
Frank Haywood,	Mount Gilead,	M. A.
Max Thomas Heins,	Raeford,	Tex.
Raymond Hillyer,	Jacksonville, Fla.,	M. A.
Clifford Vernon Howard,	Salemburg, R. 1,	Agr.
George Henry Hutaff, Jr.,	Wilmington,	M. A.
William Wright Johnson,	Cardenas,	Agr.
Henry Wood Johnston,	Cardenas,	Agr.
John Leroy Kaneer,	Statesville,	Tex.
George Granby Kinlock,	Skyland,	Agr.
Raymond Rose Knight,	Moncure, R. 2,	Agr.
Oliver Dockery Landis,	Raleigh,	Tex.
Jennings Anderson Loven,	Linville,	M. A.
Henry Alexander McCauley,	Burlington, R. 3,	M. A.
George DeCalb McGill,	Kings Mtn., R. 4,	M. A.
Malcom Ferguson McNeill,	Laurel Hill, R. 1,	M. A.
George Jackson Moore, Jr.,	Atkinson, R. 1,	M. A.
Isaac Emerson Murray,	Durham,	M. A.
Oscar Lindsay Owens,	Elizabeth City,	M. A.

Name.	*Postoffice.*	*Course.*
WILLIAM THOROUGHGOOD PATE, JR.,	Gibson,	Agr.
SAMUEL CARSON RANKIN,	Fayetteville,	M. A.
RUSSELL AUBREY SAVAGE,	Spud,	Agr.
CARL LEE SIMMONS,	Brim, R. 1,	Agr.
DUNCAN L. SMITH,	St. Paul's, R. 3,	Agr.
WILLIAM SPELLER SMITH,	Merry Hill, R. 2,	M. A.
JOHN SMALL SPENCER,	Swan Quarter,	M. A.
HENRY MARION STANLEY,	Forsyth,	M. A.
HERBERT GLENNIE TARBOX,	Georgetown, S. C.,	M. A.
HARRELL THOMAS,	Williamston,	M. A.
JAMES ROBERT TOMLINSON,	Troy,	Tex.
JOHN HOWARD WILLIAMS,	Wilson,	Tex.
WILLIAM FITZGERALD WORSHAM,	Ruffin,	M. A.

Second Year.

JOHN LEMON BAILEY, JR.,	Elm City,	Agr.
HERMAN MARMADUKE BLAKE,	Chadbourn,	M. E.
ALGERNON LEE HUBBARD,	Fayetteville,	M. A.
Fred Hampton Leonard,	High Point,	M. A.
WILLIAM ARTHUR LEWIS,	Biscoe,	Agr.
WILLIAM EARLE PICKETT,	Efland, R. 1,	M. A.
ROBERT BENJAMIN WHELESS,	Louisburg, R. 1,	Agr.
JOSEPH HESTER WHITAKER,	Franklinton,	M. A.
ADAM JACKSON WHITLEY, JR.,	Smithfield, R. 1,	Agr.
WILLIAM REID WILSON,	Stovall, R. 1,	M. A.

SPECIAL.

RODRIGO MARTINS DE CAMARGO,	Sao Paulo, Brazil,	Chem.

ONE-YEAR COURSE IN AGRICULTURE.

Name.	*Postoffice.*
LOYD CURTIS BAUM,	Poplar Branch.
HENRY HARDY BROOME, JR.,	Aurora, R. 1.
CHARLES HENRY BURNETT,	Wilmington, R. 2.
PETTWAY BOYD BURWELL,	Warrenton.
TOM WINFIELD BYRD,	Calypso.
JOHN CLIFTON DAUGHTRIDGE,	Rocky Mount, R. 6.
EARLIE BONSON ELDRIDGE,	State Road, R. 1.
ELLIS RAY HODGIN,	Roanoke.
ADASCO SEXTON HOLMES,	Creswell.
ROBERT WHITNEY ISLEY,	Burlington, R. 1.

Name.	*Postoffice.*
CLIFTON JAMES KNOWLES,	Wallace.
EDGAR MABE,	Sandy Ridge, R. 2.
JESSE LEROY MAY,	Morven.
SIDNEY EDMOND MOORE,	Kinston.
GUY JOHNS NORWOOD,	Raleigh.
GEORGE OREN OSBORNE,	Huntersville, R. 21.
LANCELOT POYNER,	Poplar Branch.
OWEN TATUM REDWINE,	State Road.
EDWARD FRED TAYLOR,	Kinston, R. 2.
JAMES BECK THOMPSON,	Goldsboro, R. 2.
WILLIAM RESDON TINGLE,	Arapahoe.
ERNEST LEROY TWINE,	Tyner, R. 2.

WORK COURSE—AGRICULTURE

First Year.

GILBERT THOMPSON ALEXANDER,	Charlotte.
CHRISTOPHER LECTON BRANTLEY,	Zebulon.
JESSE POLK BRYAN,	Marshall, R. 4.
PARKS MCNITT ELLIOTT,	Monroe, R. 4.
CHARLES BRYAN GRAHAM,	Sulphur Springs.
CLAUDE HENDERSON HAHN,	Newton, R. 5.
ROBERT MORRIS KIMZEY,	Horse Shoe, R. 1.
ARTHUR CLAUDE LUTZ,	Newton, R. 4.
JUDSON MASSIE,	Asheville.
ROY C. REDWINE,	State Road.
CLAUDE LYMAN SAUNDERS,	Rich Square, R. 1.
CHARLES CLARENCE WHITTINGTON,	Matthews, R. 18.

WINTER COURSES.

Agriculture.

ISAAC BRUCE BATEMAN,	Creswell, R. 2.
PALMER VADEN BOYD,	Alton, Va., R. 1.
HASSON BEECHER CHAMBLEE,	Spring Hope, R. 3.
GRADY COOPER,	Dobson.
ALONZO LEONIDAS CUTHRELL,	Fairfield, R. 1.
CLARENCE EDWIN DUKE,	Henderson, R. 1.
LACY ROBERT FOGLEMAN,	Greensboro, R. 2.
SIMON MALONE GARDNER,	Macon, R. 3.
SAMUEL ARTHUR GOFORTH,	Kings Mountain, R. 2.
JEFFREY REED JONES,	High Point, R. 3.
JOHN WESLEY JONES,	High Point, R. 3.

Name.	*Postoffice.*
LEWIS ELMER JONES,	Trinity, R. 1.
EUGENE CARE KOONCE,	Trenton, R. 1.
IVEY NATHAN LYERLY,	Granite Quarry.
WILLIAM LEE MILES,	Altamahaw, R. 2.
ADRIAN WALLACE MOORE,	Southport.
JOHN LUNSFORD MOORE,	Timberlake, R. 1.
GEORGE HAMILTON PROFFIT,	Goshen.
BEVERLY JACKSON RHYNE,	Gastonia, R. 2.
OSSIE DURANE SHERMAN,	Timberlake, R. 1.
SAMUEL REUBEN SHORT,	Greensboro, R. 1.
ALBERT FREDERICK STAFFIN,	Bolivia, R. 1.
RICHARD MARCUS WHITAKER,	Battleboro, R. 2.
ROBERT MAY WOOD,	Enfield.
WADE LANCELOT WOODLEY,	Creswell, R. 2.

Graduate Veterinarians.

SAM ADELAIDE ALEXANDER,	Camden, S. C.
CLIFFORD COX,	Raleigh.
OSCAR HOOD GRAHAM,	Raleigh.
WAYNE ARINGTON HORNADAY,	Greensboro.
ERNEST M. MARTIN,	Albemarle.
JOHN HENRY MORSE,	Sumter, S. C.
JULIUS ISAAC NEAL,	Sanford.
JAMES W. PETTY,	Durham.
JESSE PAGE SPOON,	Burlington.
BRAXTON MILTON WESTON,	Swan Quarter.
ARCH COLUMBET YOW,	Henderson.

Cheese-Making.

DWIGHT M. EDMISTON,	Watauga Falls.
VANCE M. PRESNELL,	Vilas, R. 1.
IRA DONALD SHULL,	Valle Crucis.
ROBERT S. SWIFT,	Leander.

Textile.

AUGUSTUS LINCOLN ADAMS,	Taylorsville.
JAMES ABSOLAM ANDREWS,	Tuxedo.
PAUL WESLEY ALLRED,	Hickory.
ARTHUR COVINGTON ATKINSON,	Clayton.
WILLIAM JOHN AUSTIN,	Tuxedo.
CHARLES WILBERT BEAVER,	Concord.
WALTER EUGENE CRAWFORD,	Tuxedo.
CLARENCE CAVENESS CULBRETH,	Cumberland.

Name.	*Postoffice.*
HENRY CHARLES DUFFER,	Fayetteville.
HENRY EMERSON ERWIN,	Tuxedo.
JAMES ROBERTSON GRAHAM,	Charlotte.
JOHN MALLORY HACKNEY,	Durham.
NATHANIEL MACON,	Henderson.
REDDING FRANCIS PERRY,	Henderson.
JAMES ALEXANDER RILEY,	Raleigh.
JOHN ALFRED ROBINSON,	Lincolnton.
JAMES MONROE TALBERT,	Concord.
GIDEON VAUGHAN,	Denim.
GEORGE DEWEY WATTS,	Stony Point.
WILLIAM BRYANT WATTS,	Taylorsville.
JOE ANDREWS WEBSTER,	Denim.
MANLY RUFFIN WOODY,	Roxboro.

SUMMER TERM IN AGRICULTURE.

Name.	*Address.*	*Year.*
WILLIAM CRIPPEN BROWN,	Vanceboro,	First.
ARTHUR VANCE COLE,	Durham,	Third.
HENRY CLEVELAND CRAVER,	Lexington,	First.
MARCUS BAXTER DRY,	Cary,	Third.
WILLIAM CLIDE MCCOLL,	Roberdel,	Second.
JOHN EDGAR MCLEAN,	Gastonia,	First.
WALTER FURMAN MOBLEY,	Heath Springs, S. C.,	First.
HENRY AUGUSTUS NEAL,	Pembroke,	First.
HENRY FLETCHER PARDUE,	Boonville,	First.
VALLIN CONWAY RAY,	Raleigh,	First.
WILLIAM JUDSON SLOAN,	Polkton,	First.
JAMES ARTHUR STRAWN,	Marshville,	First.
GEORGE HENRY WEAVER,	Nebo,	First.
GEORGE THADDEUS WHITLEY,	Smithfield,	First.

SUMMER SCHOOL FOR DEMONSTRATION AGENTS.

August, 1916.

Name.	*Postoffice.*	*County.*
C. R. HUDSON,	Raleigh,	Wake.
T. E. BROWNE,	West Raleigh,	Wake.
A. K. ROBERTSON,	West Raleigh,	Wake.
E. S. MILLSAPS,	Statesville,	Iredell.
T. D. MCLEAN,	Aberdeen,	Moore.
R. W. FREEMAN,	Wilson,	Wilson.

Name.	*Postoffice.*	*County.*
J. P. KERR,	Haw River,	Alamance.
E. C. TURNER,	Mebane,	Alamance.
J. W. CAMERON,	Polkton,	Anson.
R. K. CRAVEN,	Abbottsburg,	Bladen.
J. F. LATHAM,	Surry,	Beaufort.
R. T. MELVIN,	Supply,	Brunswick.
E. D. WEAVER,	Weaverville,	Buncombe.
A. J. BLANKENSHIP,	Yanceyville,	Caswell.
H. H. B. MASK,	Newton,	Catawba.
R. L. EDWARDS,	Ore Hill,	Chatham.
J. D. FLETCHER,	Fayetteville,	Cumberland.
R. M. GIDNEY,	Shelby,	Cleveland.
G. M. GOFORTH,	Lenoir,	Caldwell.
R. D. GOODMAN,	Concord,	Cabarrus.
J. J. HENDREN,	Chadbourn,	Columbus.
J. W. SEARS,	Vanceboro,	Craven.
L. C. GILSTRAP,	Murphy,	Cherokee.
E. D. BOWDITCH,	Hayesville,	Clay.
M. R. MCGIRT,	Durham,	Durham.
J. B. STEELE,	Lexington,	Davidson.
D. J. MIDDLETON,	Warsaw,	Duplin.
ZENO MOORE,	Whitakers,	Edgecombe.
JOHN A. BOONE,	Franklinton,	Franklin.
BRUCE ANDERSON,	Winston-Salem,	Forsyth.
E. H. ANDERSON,	Greensboro,	Guilford.
B. P. FOLK,	Gastonia,	Gaston.
J. A. MORRIS,	Oxford,	Granville.
J. E. MEWBORN,	Snow Hill,	Greene.
T. L. BROWN,	Waynesville,	Haywood.
R. N. LOOPER,	Raeford,	Hoke.
N. B. STEVENS,	Scotland Neck,	Halifax.
J. A. PATTERSON,	Airlie,	Halifax.
W. H. TURLINGTON,	Duke,	Harnett.
E. L. PERKINS,	Hendersonville,	Henderson.
G. E. DULL,	Statesville,	Iredell.
W. C. BOONE,	Kinston,	Lenoir.
J. H. HENLEY,	Sanford,	Lee.
W. L. SMARR,	Lincolnton,	Lincoln.
M. A. BENNETT,	Jackson Springs,	Montgomery.
J. A. BOONE, JR.,	Aberdeen,	Moore.
R. C. BARRETT,	Carthage,	Moore.
J. R. SAMS,	Marshall,	Madison.

Name.	*Postoffice.*	*County.*
A. L. SILER,	Franklin,	Macon.
J. L. HOLLIDAY,	Williamston,	Martin.
R. W. GRAEBER,	Charlotte,	Mecklenburg.
W. R. BAILEY,	Marion,	McDowell.
J. P. HERRING,	Wilmington,	New Hanover.
E. P. JOSEY,	Nashville,	Nash.
P. C. WILLIAMS,	Chapel Hill,	Orange.
F. A. BROWN,	Roxboro,	Person.
G. H. HIGHSMITH,	Currie,	Pender.
B. T. FERGUSON,	Greenville,	Pitt.
G. W. FALLS,	Elizabeth City,	Pasquotank.
G. W. BYARS,	Hamlet,	Richmond.
L. E. BLANCHARD,	Lumberton,	Robeson.
W. B. CRUMPTON,	Salisbury,	Rowan.
I. H. FAUST,	Ashboro,	Randolph.
F. S. WALKER,	Reidsville,	Rockingham.
S. J. LENTZ,	Norwood,	Stanly.
W. P. HOLT,	Danbury,	Stokes.
J. A. TURLINGTON,	Salemburg,	Sampson.
MCDONALD DAVIS,	Clinton,	Sampson.
J. W. JOHNSON,	Mount Airy,	Surry.
T. J. W. BROOM,	Monroe,	Union.
S. R. BIVENS,	Henderson,	Vance.
F. B. NEWELL,	Warrenton,	Warren.
O. O. DUKES,	Wilson,	Wilson.
W. H. CHAMBLEE, JR.,	Zebulon,	Wake.
A. G. HENDREN,	Straw,	Wilkes.
J. C. DOBBINS,	Marler,	Yadkin.
F. E. PATTON,	Burnsville,	Yancey.

SUMMARY.

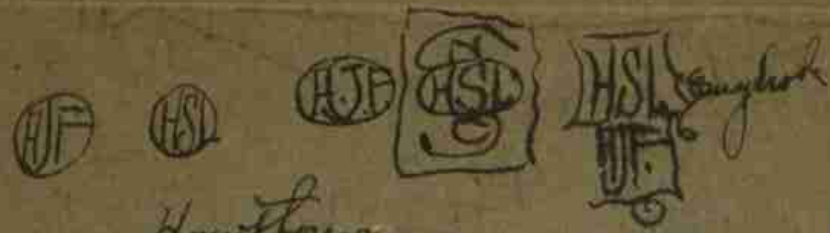
By Classes.

Graduate	36
Senior	80
Junior	90
Sophomore	105
Freshman	258
Short Courses:	
Agricultural, 2 years	18
Mechanic Arts, 2 years	38
Textile, 2 years	6
Agricultural, 1 year	22
Agricultural, work, 2 years	12
Graduate Veterinarian, 2 years	11
Agricultural, winter, 4 weeks	25
Textile, winter, 6 weeks	22
Cheese-making	4
Summer School	14
Special	1
Total	742

By Courses.

Agricultural, including short courses in Agriculture and Veterinary Science	355
Chemical	21
Civil Engineering	69
Mechanical Engineering, including Mechanic Arts	106
Electrical Engineering	89
Textile, including short courses	101
Special	1
Total	742
Summer School for Demonstration Agents	77

INDEX



Hawthorne
England Hillers L. J.