NATURAL RESOURCES MANAGEMENT CONCENTRATION

Sophomore Year
First Semester
4 - FNR 2040 Soil Information Systems or
4 - PES 2020 Soils
2 - FOR 2050 Dendrology
3 - FOR 2210 Forest Biology
3 - WFB 3000 Wildlife Biology
3 - Arts and Humanities (Literature) Requirement
15

Second Semester
3 - ENR 3020 Natural Resources Measurements
3 - FOR 2060 Forest Ecology
3 - WFB 3500 Principles of Fish and Wildlife Biol.
3 - Arts and Humanities (Nurs.Lit.) Requirement
3 - Social Science Requirement
15

Junior Year
First Semester
3 - AGRB 2020 Agricultural Economics or
3 - ECON 2110 Principles of Microeconomics
4 - BIOL 3200 Field Botany or
3 - BIOL 4060 Intro. Plant Taxonomy and
1 - BIOL 4070 Plant Taxonomy Lab.
3 - ENR 4290 Environmental Law and Policy
3 - Minor Requirement
3 - Elective
16

Second Semester
3 - AGRB 3570 Natural Resources Economics
3 - GEOL 1010 Physical Geology
1 - GEOL 1030 Physical Geology Lab.
3 - WFB (BIOL) 3130 Conservation Biology
6 - Minor Requirement
16

Senior Year
First Semester
3 - FOR (ENR) 4160 Forest Policy and Admin.
3 - FOR (ENR) 4340 GIS for Natural Resources
3 - Internship, Creative Inquiry or Directed Research Requirement
3 - Minor Requirement
3 - Elective
15

Second Semester
3 - ENGL 3140 Technical Writing
3 - ENR 4500 Conservation Issues
2 - FOR 4060 Forested Watershed Management
3 - WFB 4620 Wetland Wildlife Biology
3 - Minor Requirement
14

121 Total Semester Hours

FOOD SCIENCE AND HUMAN NUTRITION

Bachelor of Science

Food Science and Human Nutrition majors apply principles of basic and applied sciences to the design and manufacture of high quality, sustainable, convenient, safe and nutritious foods, in addition to identifying the relationship between nutrients and human health. The curriculum allows flexibility for concentrating in one of two areas:

In the Food Science and Technology Concentration, students choose to focus their program of study in one of three emphasis areas: (1) Food Packaging and Manufacturing Operations; (2) Sustainable Food, Nutrition and Health; or (3) Culinary Science. All three emphasis areas are approved by the Institute of Food Technologies (IFT), with the Culinary Science emphasis also being one of a few select national programs approved by the Research Chef’s Association as meeting the requirements for the title of Culinology™.

The food industry is a global effort that requires highly skilled individuals with strong science knowledge and technical skills. Our program not only prepares students in these areas, but also has a focus on engaging students in "real world" team-based research projects and understanding the creation and development of successful global food businesses. The program has hands-on food business entrepreneurship, study abroad and internship opportunities.

Opportunities for employment include a wide variety of career paths, such as new food product research and development, design of sustainable food systems, quality assurance management, analytical testing, operations management, food packaging applications, marketing, customer services and technical sales. Local, state and federal agencies also need graduates for positions in sustainability, food safety and regulatory positions.

In the Nutrition Concentration, students choose to focus their program of study in one of four emphasis areas: (1) Dietetics; (2) Basic and Behavioral Science; (3) Community Health and Wellness; or (4) Food Industry. The same course plan is followed the first two years with the junior and senior years varying according to the emphasis plan. Students normally choose the emphasis by the beginning of the spring semester of the sophomore year as so not to delay graduation. The Dietetics emphasis prepares students for an ACEND-accredited dietetic internship program to become a Registered Dietitian or Registered Dietitian Nutritionist (RD or RDN). The curriculum for the Nutrition concentration with a Dietetics emphasis is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) as a Didactic Program in Dietetics. The Basic and Behavioral Science emphasis prepares students for graduate study in nutrition and health professions. The Community Health and Wellness emphasis prepares students for careers in community nutrition interacting with healthy populations. The Food Industry emphasis allows students to pair nutrition and food science knowledge for job opportunities in food product development.

To become a RD or RDN, students must complete three main steps. Information on these steps is available at http://www.eatrightacend.org/ACEND/content.aspx?id=6442485467. Successful completion of Clemson University's B.S. in Food Science and Human Nutrition with a concentration in Nutrition and an emphasis in Dietetics fulfills only the first step of the three step process to become a RD or RDN. Students who select the Dietetics emphasis must complete a formal application process and meet specific criteria for acceptance into the emphasis. The demand for dietetic internship positions greatly exceeds the number of available positions. Due to the competitive nature of dietetic internship acceptance, minimum grade criteria in specific courses are required for Dietetics emphasis acceptance. Two application times for admission into the Dietetics emphasis are available, one at the beginning of the spring semester and one at the beginning of the fall semester. Acceptance and successful completion of the Dietetics emphasis curriculum will not guarantee acceptance into an ACEND-accredited dietetic internship, step two in the process of becoming a RD or RDN.

For Dietetics emphasis admission, students must meet the following requirements:

(1) Documented attendance at a dietetics program information session discussing the steps to become a RD/RDN; (2) Complete at least 60 credit hours by the end of the semester the student is applying; (3) Have a minimum GPA of 3.20; (4) Complete BIOL 1030 and BIOL 1050 (or BIOL 1100), BIOL 1040 and BIOL 1060 (or BIOL 1110), CH 1010, CH 1020, CH 2230, CH 2270, BIOL 2220, PSYC 2010 and ECON 2000 or ECON 2120 with a C or better; (5) Complete FDSC 1010, NUTR 2030 and NUTR 2160 with a B or better; and (6) Complete a Dietetics emphasis application form by the beginning of either spring semester or fall semester.

Students with a GPA of less than 3.20 GPA but greater than 3.00 are conditionally accepted with final acceptance based on posted semester grades. Students are allowed to apply up to two times. Once in the Dietetics emphasis, a student may complete the curriculum, but must maintain a minimum GPA of 2.00. To receive a signed Declaration ofIntent and/or Verification Statement, students must comply with the GPA, grade and other requirements indicated in the “Declaration of Intent and Verification Statement Policy.” A signed Verification Statement is required for admission to an ACEND-accredited dietetic internship program, but receipt of a Verification Statement does not guarantee acceptance into an ACEND-accredited dietetic internship program. See the FNPS Handbook for more details.

To receive a signed Declaration of Intent and/or Verification Statement, a student must meet the following academic and professional requirements:

1. Earn a minimum of a baccalaureate degree from a U.S. regionally accredited college/university; 2. Complete all the academic requirements of a dietetics education program accredited by ACEND; 3. Demonstrate an overall minimum GPA of 3.00 based on all completed college coursework; 4. Complete all DPD-required NUTR and FDSC courses with a B or better; 5. Complete all other DPD-required coursework with a C or better; and 6. Adhere to Clemson University’s Academic Integrity Policy and the Student Code of Conduct.

Internship (FNR 4900); Creative Inquiry (FNR 4700); Directed Research (FNR 4910); or Senior Honors Thesis (WFB 4630).
Combined Bachelor of Science/Master of Science Degree Program
The Department of Food, Nutrition and Packaging Sciences also offers an accelerated five-year combined bachelor’s/master’s program that allows students to count up to twelve hours of graduate credit toward both the BS degree in Food Science and Human Nutrition and the MS degree in Food, Nutrition and Culinary Sciences. Details are available from the Department of Food, Nutrition and Packaging Sciences or at www.clemson.edu/fnps.

FOOD SCIENCE AND TECHNOLOGY CONCENTRATION

Freshman Year

First Semester
3 - BIOL 1030 General Biology I and
1 - BIOL 1050 General Biology Lab. I or
5 - BIOL 1100 Principles of Biology I
4 - CH 1010 General Chemistry
3 - COMM 1500 Intro. to Human Comm. or
3 - COMM 2500 Public Speaking
1 - FDSC 1010 Intro. to Food Sci & Human Nutr
3 - MATH 1020 Business Calculus I or
4 - MATH 1060 Calculus of One Variable I
15-17

Second Semester
3 - BIOL 1040 General Biology II and
1 - BIOL 1060 General Biology Lab. II or
5 - BIOL 1110 Principles of Biology II
4 - CH 1020 General Chemistry
3 - ENGL 1030 Composition and Rhetoric
1 - FDSC 1020 Principles of Food and Nutrition Sciences
1 - FDSC 4500 Creative Inquiry
3 - PSYC 2010 Introduction to Psychology
16-17

Sophomore Year

First Semester
3 - CH 2010 Survey of Organic Chemistry and
1 - CH 2020 Survey of Organic Chemistry Lab. or
3 - CH 2230 Organic Chemistry and
1 - CH 2270 Organic Chemistry Lab.
3 - FDSC 3010 Food Regulations and Policy
1 - FDSC 4500 Creative Inquiry
3 - PHYS 1220 Physics with Calculus I and
1 - PHYS 1240 Physics Lab. I or
4 - PHYS 2000 Introductory Physics or
3 - PHYS 2070 General Physics I and
1 - PHYS 2090 General Physics I Lab.
3 - STAT 2300 Statistical Methods I
15

Second Semester
3 - BCHM 3050 Essential Elements of Biochem.
3 - FDSC 2140 Food Resources and Society
2 - FDSC 3040 Evaluation of Dairy Products
3 - FDSC 4090 Total Qual Mgt for Food & Pkg
1 - FDSC 4170 Seminar
1 - FDSC 4500 Creative Inquiry
3 - Social Science Requirement1,2
16

Junior Year

First Semester
3 - FDSC 4010 Food Chemistry I
1 - FDSC 4500 Creative Inquiry
4 - MICR 3050 General Microbiology
3 - NUTR 2030 Introduction to Principles of Human Nutrition
3-4 - Departmental Requirement1
3 - Arts and Humanities (Literature) Req.1
17-18

Second Semester
3 - FDSC 4020 Food Chemistry II
2 - FDSC 4030 Food Chemistry and Analysis
1 - FDSC 4500 Creative Inquiry
4 - MICR 4070 Food and Dairy Microbiology
3 - STAT 3300 Statistical Methods II
3 - Emphasis Area Requirement4
16

Senior Year

First Semester
3 - ENGL 3040 Business Writing or
3 - ENGL 3140 Technical Writing
3 - FDSC 4080 Food Process Engineering
4 - FDSC 4010 Food Chemistry I
1 - FDSC 4180 Seminar
1 - FDSC 4500 Creative Inquiry
6 - Emphasis Area Requirement4
15

Second Semester
4 - FDSC 4080 Food Process Engineering
4 - FDSC 4110 Food Product Development
1 - FDSC 4500 Creative Inquiry
3 - Arts and Humanities (Non-Lit) Req.1
3-4 - Emphasis Area Requirement4
15-16

125–130 Total Semester Hours
1See General Education Requirements. Three of these credits must also satisfy the Cross-Cultural Awareness General Education Requirement.
2For students undecided on concentration area, AGRB 2020, ECON 2110, or 2120 is recommended.
3AVS 4130, BIOL 2220, or FDSC 4300. BIOL 2220 is recommended for students interested in the Sustainable Food, Nutrition and Health Emphasis Area.
4Emphasis areas consist of 12 to 13 credit hours. See advisor and departmental handbook/website for more detailed information.

Culinary Science (Culinology™)—FDSC 2150/2151, 2160/2161, 3060 or 3070, and three sections of FDSC 4200 (International Cuisine, Ingredient and Flavor, Quality Certification). The following optional courses are required for Research Chef’s Association Culinology™ Designation: FDSC 2500 and 3500.

Food Packaging and Manufacturing—ACCT 2010 or 2020, and FDSC 4200 (Quality Certification), PKSC 4010, 4640/4641 Sustainable Food, Nutrition and Health—Students select four of the following: BIOL 2230/2231, FDSC 4200 (Quality Certification), HLT 2500, HORT 4560, NUTR 4510.

NUTRITION CONCENTRATION

Freshman Year

First Semester
3 - BIOL 1030 General Biology I and
1 - BIOL 1050 General Biology Lab. I or
5 - BIOL 1100 Principles of Biology I
4 - CH 1010 General Chemistry
3 - COMM 1500 Intro. to Human Comm. or
3 - COMM 2500 Public Speaking
1 - FDSC 1010 Introduction to Food Science and Human Nutrition
3 - MATH 1020 Business Calculus I or
4 - MATH 1060 Calculus of One Variable I
15

Second Semester
3 - BIOL 1040 General Biology II and
1 - BIOL 1060 General Biology Lab. II or
5 - BIOL 1110 Principles of Biology II
4 - CH 1020 General Chemistry
3 - ENGL 1030 Composition and Rhetoric
3 - PSYC 2010 Introduction to Psychology
1 - Elective
15-16

Sophomore Year

First Semester
4 - BIOL 2220 Human Anatomy and Physiology I
3 - CH 2230 Organic Chemistry
1 - CH 2270 Organic Chemistry Lab.
3 - ECON 2000 Economic Concepts or
3 - ECON 2120 Principles of Macroeconomics
3 - NUTR 2030 Introduction to Principles of Human Nutrition
2 - NUTR 2160 Evidence-Based Nutrition
16

Second Semester
3 - BIOL 3050 Essential Elements of Biochem.
4 - BIOL 2230 Human Anatomy and Physiology II
3 - MGT 2010 Principles of Management
3 - NUTR 2040 Nutrition Across the Life Cycle
3 - STAT 2300 Statistical Methods I
15

Junior Year

First Semester
3 - ACCT 2020 Managerial Accounting Concepts
1 - FDSC 4500 Creative Inquiry
4 - MICR 3050 General Microbiology
4 - NUTR 3020 Nutrition Assessment
3 - NUTR 4510 Human Nutrition & Metabolism I
15

Second Semester
3 - FDSC 2010 Introduction to Food
1 - FDSC 4500 Creative Inquiry
4 - MICR 4070 Food and Dairy Microbiology
3 - NUTR 3010 Food and Culture
3 - NUTR 4550 Human Nutrition & Metabolism II
1 - Emphasis Area Professional Development1
15
Senior Year
First Semester
3 - ENGL 3040 Business Writing or 3 - ENGL 3140 Technical Writing
3 - Arts and Humanities (Literature) Requirement
7 - Emphasis Area Requirement
2 - Elective
15

Second Semester
3 - NUTR 4260 Community Nutrition
3 - Arts and Humanities (Non-Lit.) Requirement
9 - Emphasis Area Requirement
1 - Elective
16

123–126 Total Semester Hours

FOREST RESOURCE MANAGEMENT
Bachelor of Science
The Forest Resource Management curriculum combines a broad education in the arts and sciences with applied forest sciences. This combination provides the necessary foundation for the scientific management of forest resources, products, and services.

Foresters are qualified for a broad spectrum of employment opportunities in the public and private sectors. They may be engaged as managers, administrators, or owners of forest lands or forest-based businesses; as technical specialists in the production of timber, usable water, wildlife, and aesthetic values, and in the recreational use of the forest; or as professionals in other areas where the conservation of natural resources is a concern. Foresters earning advanced degrees find employment in academic work and in research conducted by public and private agencies.

The curriculum, accredited by the Society of American Foresters, provides a strong program in the basic knowledge and skills required of a professional forester. Forest Resource Management majors will select a minor (see approved minors on page 58). The curriculum also provides the necessary prerequisites for graduate study.

For students interested in conservation biology, water, and natural resources, the Department of Forestry and Environmental Conservation also administers the Conservation Biology Concentration and the Natural Resources Management Concentration within the Environmental and Natural Resources degree program. See pages 48-50 for program details.

Freshman Year
First Semester
3 - BIOL 1030 General Biology I
1 - BIOL 1050 General Biology Lab. I
4 - CH 1010 General Chemistry
1 - ENR 1010 Intro. to Environ. and Natural Res. I
3 - MATH 1020 Business Calculus I
3 - Oral Communication Requirement
15

Second Semester
3 - BIOL 1040 General Biology II
1 - BIOL 1060 General Biology Lab. II
3 - ENGL 1030 Composition and Rhetoric
1 - FOR 1010 Introduction to Forestry
3 - STAT 2300 Statistical Methods I
4 - Departmental Science Requirement
15

Sophomore Year
First Semester
4 - FNR 2040 Soil Information Systems
2 - FOR 2050 Dendrology
3 - FOR 2210 Forest Ecology
3 - Arts and Humanities (Literature) Requirement
3 - Economics Requirement
15

Second Semester
3 - ENGL 3140 Technical Writing
3 - FOR 2060 Forestry Ecology
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Social Science Requirement
3 - Minor Requirement
15

Forestry Summer Camp
2 - FOR 2510 Forest Communities
1 - FOR 2520 Forest Operations
4 - FOR 2530 Forest Mensuration
1 - FOR 2540 Forest Products
8

Junior Year
First Semester
2 - FOR 3020 Forest Biometrics
3 - FOR 3040 Forest Resource Economics
3 - FNR 4340 GIS for Natural Resources
1 - Internship, Creative Inquiry or Directed Research Requirement
16

Second Semester
2 - FOR 3080 Remote Sensing in Forestry
3 - FOR 4080 Wood and Paper Products
3 - FOR 4180 Forest Resource Valuation
4 - FOR 4650 Silviculture
3 - Minor Requirement
1 - Internship, Creative Inquiry or Directed Research Requirement
16

Senior Year
First Semester
4 - FOR 4100 Harvesting Processes
3 - FOR (ENR) 4160 Forest Policy and Admin.
3 - FOR 4170 Forest Resource Mgmt. and Regulation
2 - FOR 4310 Recreation Resource Planning in Forest Management
3 - Minor Requirement
1 - Internship, Creative Inquiry or Directed Research Requirement
16

Second Semester
1 - FNR 4990 Natural Resources Seminar
2 - FOR 4060 Forested Watershed Management
3 - FOR 4150 Forest Wildlife Management
2 - FOR 4250 Forest Resource Management Plans
6 - Minor Requirement
14

130 Total Semester Hours

LAND SURVEYING EMPHASIS AREA
Freshman Year
First Semester
3 - BIOL 1030 General Biology I
1 - BIOL 1050 General Biology Lab. I
4 - CH 1010 General Chemistry
1 - ENR 1010 Intro. to Environ. and Natural Res. I
3 - MATH 1020 Business Calculus I
3 - Oral Communication Requirement
15

Second Semester
3 - BIOL 1040 General Biology II
1 - BIOL 1060 General Biology Lab. II
3 - ENGL 1030 Composition and Rhetoric
1 - FOR 1010 Introduction to Forestry
3 - STAT 2300 Statistical Methods I
4 - Departmental Science Requirement
15

Sophomore Year
First Semester
4 - FNR 2040 Soil Information Systems
2 - FOR 2050 Dendrology
3 - FOR 2210 Forest Ecology
3 - Arts and Humanities (Literature) Requirement
3 - Economics Requirement
15

LAND SURVEYING
EMPHASIS AREA
First Semester
3 - BIOL 1030 General Biology I
1 - BIOL 1050 General Biology Lab. I
4 - CH 1010 General Chemistry
1 - ENR 1010 Intro. to Environ. and Natural Res. I
3 - MATH 1020 Business Calculus I
3 - Oral Communication Requirement
15

Second Semester
3 - BIOL 1040 General Biology II
1 - BIOL 1060 General Biology Lab. II
3 - ENGL 1030 Composition and Rhetoric
1 - FOR 1010 Introduction to Forestry
3 - STAT 2300 Statistical Methods I
4 - Departmental Science Requirement
15

Sophomore Year
First Semester
4 - FNR 2040 Soil Information Systems
2 - FOR 2050 Dendrology
3 - FOR 2210 Forest Ecology
3 - Arts and Humanities (Literature) Requirement
3 - Economics Requirement
15