Sustainable Agriculture and Food Systems Major (B.S.)

https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/sustainable-agriculture-food-systems-major

Description

The Sustainable Agriculture and Food Systems B.S. provides students with a strong foundation in biological sciences and a broad base of knowledge and experiences with modern agriculture and food systems. Sustainable Agriculture and Food Systems is an interdisciplinary field comprising the social, physical, and life sciences and beyond. Agriculture is key to solving many of the major challenges facing the world, such as producing food to meet the needs of an ever-growing population while conserving land, water, and soil resources.

Our students get hands-on experience in applied coursework, and we encourage our students to conduct research alongside faculty. Our students become practitioners and entrepreneurs of agricultural and food businesses, researchers and policy-makers at state/federal agencies and non-profit organizations, laboratory technicians, and agricultural educators. Some go on to obtain advanced degrees in the agricultural sciences.

Requirements

Degree Requirements

Minimum Credit Requirement: 128 credits

Minimum Residency Requirement: 32 credits must be taken at UNH

Minimum GPA: 2.0 required for conferral*

Core Curriculum Required: Discovery & Writing Program Requirements

Foreign Language Requirement: No

All Major, Option and Elective Requirements as indicated.

*Major GPA requirements as indicated.

Major Requirements

The SAFS B.S. program structure includes FOUR major components: foundation courses, courses in a student-designed emphasis area, program elective courses, and a capstone. You must earn a minimum grade of C- in all courses required for the major.

Foundation courses include 36 credits, which satisfy 5 of the University Discovery requirements.

Student-Designed Emphasis courses include 20 credits that make up a cohesive emphasis or focus area. Courses may be selected from the List of Approved Program Electives, but do not need to be on that list. Each student will define their emphasis area in consultation with their advisor and submit it to the SAFS program committee for approval prior to the start of their 6th semester.

Program Elective courses include 16 credits, chosen from the List of Approved Program Elective courses.

A Capstone experience must take place during senior year. There are two capstone options: SAFS 733 Advanced Topics in Sustainable Agriculture or ANSC 750 Collaborative Farm Design and Development. Your capstone MAY NOT be counted towards elective or emphasis credits.

Of the Student-Designed Emphasis and Program Elective courses, at least 16 credits (not counting the capstone) must be earned at the 600-700 level.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 421</td>
<td>Introduction to Animal Science</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 411</td>
<td>Introductory Biology Molecular and Cellular</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 412</td>
<td>Introductory Biology Evolution, Biodiversity and Ecology</td>
<td>4</td>
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<tr>
<td>BIOL 528</td>
<td>Applied Biostatistics I</td>
<td>4</td>
</tr>
<tr>
<td>EREC 411</td>
<td>Environmental and Resource Economics Perspectives</td>
<td>4</td>
</tr>
<tr>
<td>or EREC 525</td>
<td>Statistical Methods and Applications</td>
<td></td>
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<tr>
<td>CHEM 403</td>
<td>General Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 411</td>
<td>Introductory Chemistry for Life Sciences</td>
<td></td>
</tr>
<tr>
<td>CHEM 404</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>or BMOC 501</td>
<td>Biological Chemistry</td>
<td></td>
</tr>
<tr>
<td>or BIOL 541W</td>
<td>Ecology</td>
<td></td>
</tr>
<tr>
<td>NR 501</td>
<td>Studio Soils</td>
<td>4</td>
</tr>
<tr>
<td>SAFS 405</td>
<td>Sustainable Agriculture and Food Production</td>
<td>4</td>
</tr>
<tr>
<td>SAFS 421</td>
<td>Introductory Horticulture</td>
<td>4</td>
</tr>
<tr>
<td>SAFS 502</td>
<td>Agroecology</td>
<td>4</td>
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<tr>
<td>SAFS 620</td>
<td>Food Systems &amp; Community Resilience</td>
<td>4</td>
</tr>
<tr>
<td>Student-Designed Emphasis Area</td>
<td>20</td>
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</tbody>
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At least 20 credits, proposed using the emphasis area declaration form (see your advisor) at least 1 year prior to planned graduation date.

Program Electives 16

Select 16 credits from the approved electives list

Senior Capstone Experience

Select one from the following:

ANSC 750 Collaborative Farm Design and Development 4

or SAFS 733 Advanced Topics in Sustainable Agriculture 4

Total Credits 88

1 Some courses (e.g. genetics, microbiology) require CHEM 403 General Chemistry I and CHEM 404 General Chemistry II as a prerequisite. If you intend to take these courses, you should take CHEM 403 General Chemistry I rather than CHEM 411 Introductory Chemistry for Life Sciences.

Approved Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAS 421</td>
<td>Large Animal Behavior and Handling Techniques</td>
<td>2</td>
</tr>
<tr>
<td>AAS 423</td>
<td>Dairy Selection</td>
<td>2</td>
</tr>
<tr>
<td>AAS 425</td>
<td>Introduction to Dairy Herd Management</td>
<td>4</td>
</tr>
<tr>
<td>AAS 432</td>
<td>Introduction to Forage and Grassland Management</td>
<td>3</td>
</tr>
<tr>
<td>AAS 434</td>
<td>Equipment and Facilities Management</td>
<td>3</td>
</tr>
<tr>
<td>AAS 439</td>
<td>Fundamentals of Animal Health</td>
<td>2</td>
</tr>
<tr>
<td>ANSC 546</td>
<td>Animal Business Applications</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 548</td>
<td>Agricultural Business Management</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 600</td>
<td>Field Experience</td>
<td>1-4</td>
</tr>
<tr>
<td>ANSC 602</td>
<td>Animal Rights and Societal Issues</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 603</td>
<td>Introduction to Livestock Management</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 605</td>
<td>Poultry Production and Health Management</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 609</td>
<td>Principles of Animal Nutrition</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 612</td>
<td>Genetics of Animals</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 625</td>
<td>Animal Diseases</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 650</td>
<td>Dairy Industry Travel Course</td>
<td>1</td>
</tr>
</tbody>
</table>
2  Sustainable Agriculture and Food Systems Major (B.S.)

ANSC 690  Livestock and Wildlife in Namibia: Challenges, Opportunities and Geography  4
ANSC 698  Cooperative for Real Education in Agricultural Management (CREAM)  4
ANSC 701  Physiology of Reproduction  4
ANSC 708  Ruminal Nutritional Physiology  3
ANSC 710  Dairy Nutrition  4
ANSC 715  Physiology of Lactation  4
ANSC 724  Reproductive Management and Artificial Insemination  4
ANSC 727  Advanced Dairy Management I  4
ANSC 728  Advanced Dairy Management II  4
ANSC 750  Collaborative Farm Design and Development  4
ANSC 795  Investigations  1-4
BIOL 409  Green Life: Introducing the Botanical Sciences  0 or 4
BIOL 510  Mushrooms, Molds, and Mildews: Introduction to the Fungal Kingdom  4
BIOL 541W  Ecology  0 or 4
BIOL 566  Systematic Botany  4
BIOL 701  Plant Physiology  4
BIOL 704  Plant-Microbe Interactions  3
BIOL 709  Plant Stress Physiology  3
BIOL 720  Plant-Animal Interactions  4
BIOL 752  New England Mushrooms: a Field and Lab Exploration  4
BMIS 503  General Microbiology  3
BMIS 504  General Microbiology Laboratory  2
CEP 415  Community Development Perspectives  4
CHHE 410  Energy and Environment  4
COG 401  Introduction to Ecogastronomy  4
EREC 681  Agribusiness Economics and Management  4
EREC 680  Agricultural and Food Policy  4
FORT 564  Arboriculture  3
FORT 576  Forest Products and Wood Science  4
FORT 577  Forest Harvesting Systems  4
FORT 579  Wildland Fire Ecology and Management  4
GEN 604  Principles of Genetics  0 or 4
GEN 772  Evolutionary Genetics of Plants  4
GEN 774  Techniques in Plant Genetic Engineering and Biotechnology  4
GEOS 670  Climate and Society  4
HMKT 570  International Food and Culture  4
MGT 520  Topics in Management  4
MKTG 530  Survey of Marketing  4
NR 425  Field dendrology  4
NR 435  Contemporary Conservation Issues and Environmental Awareness  4
NR 504  Freshwater Resources  4
NR 506  Forest Entomology  4
NR 527  Forest Ecology  4
NR 602  Natural Resources and Environmental Policy  4
NR 643  Economics of Forestry  4
NR 650  Principles of Conservation Biology  4
NR 706  Soil Ecology  4
NR 729  Silviculture  4
NR 749  Forest Inventory and Modeling  4
NR 760  Geographic Information Systems in Natural Resources  4
NR 761  Environmental Soil Chemistry  4
NR 765  Community Ecology  4
NR 782  Forest Health in a Changing World  4
NR 785  Systems Thinking for Sustainable Solutions  4
NUTR 400  Nutrition in Health and Well Being  4
NUTR 405  Food and Society  4
NUTR 550  Food Science: Principle and Practice  4
NUTR 600  Field Experience in Nutrition  1-4
NUTR 720  Community Nutrition  4
NUTR 730  From Seed to Sea: Examining Sustainable Food Systems  4
NUTR 795  Investigations  1-4
RMP 724  Research, Evaluation, and Data-Driven Decisions  4
SAFS 410  A Taste of the Tropics  4
SAFS 415  Introduction to Brewing Art and Science  4
SAFS 510  Agriculture and Development in the Neotropics  4
SAFS 515  Technical Brewing  4

SAFS 517  Advanced Aspects of Brewing  4
SAFS #600  Field Experience  0
SAFS 601  Fruit Crop Production  4
SAFS 632  Urban Agriculture  4
SAFS 651  Plant Pathology  4
SAFS 670  Systems Thinking: Land Use Capability and Sustainability in Aotearoa New Zealand  4
SAFS 671  Agroecology and Sustainable Land Management in Aotearoa New Zealand  4
SAFS 672  Pathways to Sustainable Agriculture and Food Systems in Aotearoa New Zealand  4
SAFS 673  Agricultural Production and Business Practice in Aotearoa New Zealand  4
SAFS 679  Food Production Field Experience I  4
SAFS 680  Food Production Field Experience II  4
SAFS 689  Greenhouse Management and Operation  4
SAFS 733  Advanced Topics in Sustainable Agriculture  4
SAFS 760  Insect Pest Management  4
SAFS 795  Investigations  1-4
SAFS 799  Honors Senior Thesis  1-4
MFSB 772  Fisheries Biology Conservation and Management  4
ZOOL 555  Introduction to Entomology  4
ZOOL 610  Principles of Aquaculture  4

University Requirements

In addition to meeting the SAFS major requirements, students must satisfy all University requirements including those that pertain to the minimum number of credits, grade-point average, writing-intensive courses, and the Discovery Program.

Student Learning Outcomes

- Students will demonstrate a working understanding of the interdisciplinary nature of agriculture and food systems and the basic principles underpinning sustainability including: economic viability, environmental stewardship, social responsibility, and the trade-offs between competing metrics of sustainability.
- Students will demonstrate in-depth knowledge, critical thinking and analysis, and effective written communication in a self-declared area of emphasis within the program.
- Students will gain an applied understanding of agriculture and food system sustainability by engaging in an experiential education opportunity.
- Students will be able to independently interpret, evaluate, and engage with research in the agricultural sciences, including its biological, physical, social, and/or economic aspects.