

SUSTAINABLE AGRICULTURE AND FOOD SYSTEMS (SAFS)

The sustainable agriculture and food systems (SAFS) program offers a flexible curriculum to students seeking integrated knowledge and experiences in modern agricultural and food systems to prepare for varied careers in these fields. It draws upon diverse course offerings across the College of Life Sciences and Agriculture and the Thompson School of Applied Sciences, as well as from other colleges at UNH.

Students in this program will obtain knowledge in a variety of topics including sustainable agricultural practices, the science and management of working landscapes, locally produced foods, value-added agricultural products, and the promotion of healthy eating through sustainable food production and food policies. SAFS graduates will be prepared to pursue careers in a wide range of fields including the production of food, fiber, and agricultural services; management and marketing of agricultural operations; management of working lands, landscapes and ecosystems; agriculture/food/nutrition/natural resources-related research; policy-making; and other current and emerging professions.

The program offers both a bachelor of science (B.S.) degree and a bachelor of arts (B.A.) degree. The B.A. degree offers more flexibility to take courses from a variety of disciplines or pursuing a dual degree, second major, or minor. The B.S. degree best serves those seeking a strong foundation in scientific and technical knowledge and/or who envision pursuing an advanced degree.

<http://colsa.unh.edu/anfs/safs>

Programs

- Sustainable Agriculture and Food Systems Major (B.A.) (<http://catalog.unh.edu/archives/2017-2018/undergraduate/life-sciences-agriculture/programs-study/sustainable-agriculture-food-systems/sustainable-agriculture-food-systems-major-ba>)
- Sustainable Agriculture and Food Systems Major (B.S.) (<http://catalog.unh.edu/archives/2017-2018/undergraduate/life-sciences-agriculture/programs-study/sustainable-agriculture-food-systems/sustainable-agriculture-food-systems-major-bs>)

Courses

Sustainable Agriculture and Food Systems (SAFS)

SAFS 405 - Sustainable Agriculture and Food Production

Credits: 4

Introduces systems involved in sustainable agriculture with an emphasis on ecological and organic food production. Scientific and biological principles relating to sustainable and organic food production, and the role of sustainable agriculture within our communities. Special fee.

Attributes: Environment, TechSociety(Disc); Technology GP 3T

SAFS 410 - A Taste of the Tropics

Credits: 4

This course will expose students to the exciting world of tropical agriculture and the ways that people in the tropics utilize a diverse array of food crops. Our lives as consumers in the developed world are touched by tropical products every single day. Whether it's the cinnamon in your tea, the vanilla in your cookies, the black pepper on your salad, or your cup of hot coffee, you likely consume tropical crops whether you know it or not. Ever stop to wonder where these items are from and how they are produced? We will examine agriculture and food culture throughout the tropical world's four principle areas: Latin America, Tropical Asia, Tropical Africa, and the South Pacific. Production systems ranging from large scale modern high input operations to home subsistence gardens are explored. Tropical crops are examined in five major groups: grains and legumes, starchy roots, exotic vegetables, tropical fruit, and herbs, spices, medicinal plants. Cultural uses of these crops throughout the tropical world are given special emphasis.

Attributes: World Cultures(Discovery); Foreign Culture GP 5

SAFS 415 - Introduction to Brewing Art and Science

Credits: 4

Introduction to the scientific foundations of beer brewing. Topics covered will include beer styles; ingredient sourcing; industrial production from nano to macro scale; current trends and topics; quality control; safety and sustainability.

SAFS 421 - Introductory Horticulture

Credits: 4

Introduces horticultural practices and principles affecting plant growth and development in garden, landscape, greenhouse, and farm settings. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course; Biological Science GP 3B

SAFS 502 - Agroecology

Credits: 4

This course introduces students to the discipline and practice of agroecology, with an emphasis on relevant ecological theory within the context of production agriculture. Students are exposed to key ecological principles from population, community, and ecosystem ecology and agronomy. Students learn about the history and consequences of modern industrial agricultural systems and the need for more sustainable management practices that consider ecological interactions.

SAFS 510 - Agriculture and Development in the Neotropics

Credits: 4

Course is designed as a three week immersion into tropical agriculture and Costa Rican ecology and culture. Agriculture plays a pivotal role in Costa Rica's history and in shaping current events. Production of horticultural and agronomic crops occurs on a variety of scales ranging from large export based systems, to mid-sized operations for domestic sales, and sustenance based home gardens. Examples of all systems are visited and discussions focus on their overall sustainability. Sustainability is a broad concept and requires consideration of socio-cultural, environmental, and economic factors. Agriculture and agricultural products infuse the culture as seen by large participation in farmers markets and appreciation for a wide variety of fruits and vegetables prepared in myriads of ways. An appreciation for nature also infuses the culture and is embodied by the country's extensive system of national parks and protected reserves along with the national philosophy of 'Pura Vida'. Special fee.

Attributes: World Cultures(Discovery); Foreign Culture GP 5

SAFS 515 - Technical Brewing

Credits: 4

Technical brewing will focus on learning skills needed in the brewing industry. This hands-on class will focus on sensory, the brewing process, quality control, safety, and sanitation in the brew house. Must be 21 to enroll in the course. Prereq: SAFS 415. Special fee.

SAFS 600 - Field Experience

Credits: 1-4

A supervised experience providing the opportunity to apply academic knowledge in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. May be repeated to a maximum of 8 credit hours. Permission required. Cr/F.

SAFS 601 - Fruit Crop Production

Credits: 4

This course explores the origin, distribution, botany, and cultural practices of fruit crops. Fruit crops represent an important component of both our dietary needs and many agricultural production systems. Emphasis is given to temperate fruit crops suitable for New England growing conditions. Other topics explored include integrating fruit crops into landscapes, organic and conventional cultural practices, and post-harvesting handling. Prereq: SAFS 421 or permission.

SAFS 632 - Urban Agriculture

Credits: 4

Urban agricultural systems play an important role in local food production. Production systems range from community gardens to completely controlled production environments. Urban farmers face unique challenges developing sustainable business models due to high land costs, waste management, post-harvest storage, and limited technical experience. This course provides a practical, hands-on understanding of urban agricultural production systems. Emphasis is placed on controlled environmental agriculture from an urban farmer's perspective through classroom discussion and production systems operation.

SAFS #642 - Team Experience in Agroecosystems Management (TEAM - Organic)

Credits: 4

TEAM - Organic is a 2-semester experiential course where students are actively engaged in the operation of the COLSA/NHAES Organic Dairy Research Farm. Building on principles of agro-ecology and sustainable agriculture, students explore and practice the environmental, economic, social and production strategies needed for organic food production. Organic dairy farming methods and best practices are presented and applied. The organic food chain is addressed along with marketing and value-added strategies for organic dairy products. Instruction permission. Two semesters of SAFS #642 are required.

SAFS 651 - Plant Pathology

Credits: 4

Nature, symptomatology, etiology, epidemiology, and control of important plant diseases. Prereq: BIOL 409, BIOL 411 and BIOL 412, or equivalent. Lab.

SAFS 679 - Food Production Field Experience I

Credits: 4

This is part one of a two course series to be taken during spring semester. Course provides students with hands-on experience in growing food and managing a small farm business. We will be growing fresh vegetables and some fruits for the UNH Dairy Bar. Lectures, readings, and hands-on activities during Part I focus on all aspects of production: propagation, crop establishment, irrigation, crop management, soil considerations, and pest and disease practices. Prereq: SAFS 405 or permission of instructor.

SAFS 680 - Food Production Field Experience II

Credits: 4

This is part of a two course series to be taken during fall semester. Course provides students with hands-on experience in growing food and managing a small farm business. We will be growing fresh vegetables and some fruits for the UNH Dairy Bar. Lectures, readings, and hands-on activities in part two focus on crop harvesting and maturity, post-harvest considerations, marketing, special event planning and execution, record keeping, and small farm business management. Prereq: SAFS 405, SAFS 679 or permission of instructor.

SAFS 689 - Greenhouse Management and Operation

Credits: 4

Course provides introduction to greenhouse construction, design, environmental control, and current trends in the industry. Fundamentals of starting a greenhouse business including safety and labor, marketing, and post-harvest considerations also covered. Efforts towards making the greenhouse industry more sustainable are explored alongside with certification options and procedures. Crops representative of current major New England crops are grown during lab. Students learn about crop selection and practices including IPM, irrigation, and fertility management. Prereq: SAFS 421 or permission of the instructor. Lab. Special fee. (Offered alternate years). Writing intensive.

Attributes: Writing Intensive Course

SAFS 729 - Agricultural Waste Management

Credits: 4

The management of agricultural wastes is crucial in the development of sustainable agricultural practices. This course covers principles of managing, handling, treating, and applying animal manures and organic byproducts from an agricultural system perspective. Topics include waste characterization, descriptions of systems and technology, utilization of wastes as resources (land application, composting electricity generation, fertilization, etc.), land application principles, preparations of waste management plans, and potential impacts to the environment. Prereq: SAFS 502 or permission of instructor.

SAFS #731 - Sustainable Landscape Design and Management

Credits: 4

Students examine principles and trends in sustainable sites development and apply knowledge of ecological and biological systems in the design and maintenance of residential and commercial landscapes. Understanding woody plant structure and function and plant responses to environmental factors and horticultural practices are included as an integral part of sustainable landscape establishment. Each student completes a sustainable landscape renovation plan that creates an attractive human habitat and provides ecosystem services such as biodiversity and wildlife habitat, soil and water quality protection, nutrient recycling and microclimate modification. Prereq: SAFS 421.

SAFS 733 - Advanced Topics in Sustainable Agriculture**Credits:** 4

In this writing-intensive, capstone course, SAFS juniors and seniors engage in critical, student-led discussion of instructor-chosen and student-selected works related to food systems sustainability across scales, local to global. With these discussions as context, students pursue individual, semester-long projects to practically address a specific issue of interest. The course aims to improve critical reading, writing, discussion, and presentation skills; build cohort cohesiveness; and challenge students' beliefs and working assumptions about agriculture and food systems sustainability. Pre- or Coreq: Must be SAFS junior or senior, or by permission. Writing intensive.

Attributes: Writing Intensive Course**SAFS 760 - Insect Pest Management****Credits:** 4

Students learn the principles of integrated pest management, as they apply to insects (and some other arthropods). Additionally, they learn to recognize the major orders of insects, and some insect families that are important as natural enemies of pests. Course incorporates a significant amount of writing, plus learning to search the scientific literature. Prereq: BIOL 411 and BIOL 412 or equivalent. Writing intensive.

Attributes: Writing Intensive Course**SAFS 795 - Investigations****Credits:** 1-4

With faculty guidance, students work on individual projects related to sustainable agriculture and food systems. Permission required. May be repeated to a maximum of 8 credit hours.

SAFS 795W - Investigations**Credits:** 1-4

With faculty guidance, students work on individual projects related to sustainable agriculture and food systems. Permission required. May be repeated to a maximum of 8 credit hours. Writing intensive.

Attributes: Writing Intensive Course**SAFS 799 - Honors Senior Thesis****Credits:** 1-4

Independent research requiring a written proposal, thesis, and presentation of research results to an audience of faculty and/or students. Intended for students completing SAFS Honors-in-Major requirements. Contact SAFS Program coordinator prior to senior year to arrange supervision and obtain permission. Two-semester sequence; students typically register for 5 credits over two semesters. IA grade (continuous course) given at end of first semester. Writing intensive.

Attributes: Writing Intensive Course**Faculty**

<http://colsa.unh.edu/faculty/all>