

Sustainable Agriculture Minor

Guidelines for Undergraduate Students

**UNIVERSITY OF MINNESOTA
COLLEGE OF AGRICULTURAL, FOOD AND ENVIRONMENTAL SCIENCES**

Agriculture that will sustain humankind for generations to come requires practices and policies that balance profitability with concern for the environment and the well-being of farming families and rural communities. We must prepare professionals to develop and promote such practices and policies. This requires that students understand the interdependencies of food production systems. The primary goal of the Sustainable Agriculture Minor at the University of Minnesota provides courses and experiences that build such an understanding.

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Minnesota Institute for Sustainable Agriculture

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Program Office

For further information, contact the Director of Graduate Studies or visit the Program Office for the graduate minor in Sustainable Agriculture Systems (415 Hayes Hall). This handbook and additional literature pertaining to the graduate minor are available at the Program Office.

Mailing addresses:

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Sustainable Agriculture Undergraduate Minor
411 Borlaug Hall
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The Admission Process

To enroll in the minor, complete an Intent to Enroll form. This can be obtained from the Registrar's Office, 130 Coffey Hall. A faculty person who will serve as the student's minor advisor must approve the program of study and sign the enrollment form. It is the student's responsibility to identify an advisor; any faculty person may serve as the minor advisor. Students may want to consider the faculty person's areas of interest and expertise when making this choice.



Curriculum

Agricultural systems are complex and dynamic. In recent years, questions have been raised regarding the sustainability of energy and resource intensive agriculture systems. While all agriculturally oriented majors of the College of Agricultural, Food, and Environmental Science (COAFES) consider issues of sustainability in agriculture, the Sustainable Agriculture minor provides a concentration of courses giving students greater understanding of scientific, technological, and socio-economic factors affecting the viability of agriculture. Students examine ecological features of agriculture and work through decision-making case studies involving integrated management of specific agricultural systems. The minor provides a degree of flexibility and individuality through several elective options. Students should develop their course of study in consultation with an advisor in one of the COAFES major programs. This minor allows students to study sustainability of agricultural food systems from an integrated perspective including coursework, practical experience and community reflection.

**Sustainable
Agriculture seeks
to balance three
long term goals:
Quality of life,
Environment and
Economics.**



Minor Requirements

Students are required to complete 8-10 credits of required courses and a minimum of 9 credits of foundational coursework, for a total of at least 17 credits. One class from each of the foundational clusters—Land and Public Policy, Agriculture / Environment and Natural Resources, and Citizens / Science and Society is required.



Core Courses (Required for Undergraduates)

AGRO 4888 Issues in Sustainable Agriculture (2 cr)

Agroecology, sustainable practices, production economics, environmental quality, holistic resource management, healthy food/water, rural communities. Meet sustainable agriculture advocates, including farmers, faculty, and representatives of non-profit sustainable agriculture organizations.

ANSC 3203 or Agro 3203. Environment, Global Food Production, and the Citizen (3 cr)

Ecological and ethical concerns of food production systems in global agriculture—past, present, future. Examines underlying ethical positions about how agro-ecosystems should be configured. Decision cases, discussions, videos, other media.

XXXX4096 Professional Experience Program: Internship (1-3 cr)

Professional experience in your field's firms or government agencies attained through supervised practical experience; evaluative reports and consultations with faculty advisers and employers.

AGRO 4660 Senior Capstone: Leadership, Decision Making and Problem Solving (2 cr)

Professional leadership and decision making from ethical, technical, societal and personal reflection perspectives. Linked to undergraduate internship and other experiential learning opportunities. Problems, decision-centered cases, interviews.



Foundational Clusters

Select one course from each of the following clusters. Other courses may be substituted with the approval of the minor adviser and coordinator.



Land and Public Policy Courses

AGRO 4103 or APEC 4103 or FSCN 4103. World Food Problems (3 cr)

Multi-disciplinary look at problems of and possible solutions for food production, storage, and utilization in developing countries. Presentations and discussions introduce conflicting views on population, use of technology, and ethical and cultural values held in various parts of the world.

APEC 3041. Economic Development of U.S. Agriculture (3 cr)

Economic, political, social, and technical forces that have shaped the development of U.S. agriculture; the role of agricultural development in national economic development in the United States with implications for developing countries.

GEOG 3361. Land Use, Landscapes and the Law (3 cr)

Landscapes are political statements. They reflect how individuals, organizations, and governments have exercised the legal rights that they possess to produce goods and provide services.

PA 5002. Introduction to Policy Analysis (1.5 cr)

Process of public policy analysis from problem structuring to communication of findings. Commonly used analytical methods. Alternative models of analytical problem resolution.

RHET 1315. The Land in American Experience (3 cr)

Land in America as idea and as actual space. History of cultural values and the meanings land holds for us. Contrasting views of land, especially those of certain Native American peoples. Rise of the conservation movement and the urbanization of U.S. space.



Agriculture / Environment and Natural Resources Courses

AGRI 3001. Pests and Crop Protection. (3 cr)

Introduction to biology/identification of insects, weeds, and diseases that affect agricultural crops. Management of these organisms based on principles of integrated pest management.

AGRO 1103. Crops, Environment, and Society. (4 cr)

Plants that supply food, fiber, beverages, and medicine to humans. Plant identification, plant physiology, plant breeding/biotechnology, plant ecology, crop culture/management.



Agriculture / Environment and Natural Resources continued

AGRO 5999. Agroecosystems Analysis (Summer Field Course) (3 cr)

This is a field-based "immersion" course that introduces students to the concept of the agroecosystem and their analysis with an underlying emphasis on sustainability. Students visit a number of farms of various types in Minnesota, Iowa and Nebraska, as well as other historic and cultural sites of significance to this region. There is considerable time for discussions with the farmers and students prepare oral and written analyses based on their observations and conclusions.

ANSC 1101. Introductory Animal Science (4 cr)

Fundamental concepts of animal breeding, physiology, nutrition, and management as they apply to the production of beef, dairy, horses, poultry, sheep, swine, and other livestock.

GEOG 3355. Environmental Quality (3 cr)

The quality of the human environment depends on 1) how humans make decisions about how to act, 2) how they act, and 3) how they evaluate both. In the United States, this process is best described as "disjointed incrementalism" in which governments, organizations, and individuals play distinct and important roles.

HORT 4072. Growing Plants Organically: What it Means to Be Green (3 cr)

Science and ethics of organic cultivation. What is meant by "green" from a legal, scientific, and ethical perspective? Explore original literature on an organic practice, prepare a written report, and lead a class discussion.

NRES 3021. Managing Vegetation Across Ecosystems (3 cr)

Application of ecological concepts such as succession/competition to ecosystems under management. Wetlands, riparian zones, urban interfaces, agriculture, agroforestry. Northern/boreal conifer, hardwood forests, grasslands (prairie). Emphasizes management objectives, methods, impacts. Evaluating practices for sustainability. Integrating social issues. Regional (Great Lakes area), national, and global case studies.

SOIL 1125. The Soil Resource (4 cr)

Basic physical, chemical, and biological properties of soil. Soil genesis classification and principles of soil fertility. Soil survey information used to make a land-use plan. WWW used for lab.

SOIL 2125. Basic Soil Science (4 cr)

Basic physical, chemical, and biological properties of soil. Soil genesis classification, principles of soil fertility. Use of soil survey information to make a land-use plan. WWW used for lab preparation information.

SOIL 3221. Soil Conservation and Water Quality Impacts (3 cr)

Historical causes/consequences of accelerated soil erosion. Wind/water erosion. Soil conservation techniques. Strategies to optimize soil conservation. Consideration of economic, political, and sociological influences on soil conservation planning.



Citizen / Science and Society Courses

AGET 5212. Safety and Health Issues in Agricultural Work (3 cr)

Safety/health issues in food production, processing and horticultural work environments using public health, injury control, and health promotion frameworks: regulation, engineering, education. Traumatic injury, occupational illness, ergonomics, pesticide health effects, biotechnology, air contaminants.

GEOG 3371. Introduction to Urban Geography (3 cr)

Character, distribution, development of cities in present-day world. Internal/external locational relationships.

PLPA 1001. Microbes, Plants, and People: The Social and Economic Impact of Plant Disease (3 cr)

The positive and negative effects of microorganisms on plants and their ultimate effects on human history, economics, and society.

RHET 3371. Technology, Self, and Society (3 cr)

Cultural history of American technology. Social values that technology represents in shifts from handicraft to mass production/consumption to modern transportation, communication, and bioengineering. Ethical issues involved in themes of power, work, identity, and our relation to nature. How technology conditions our way of thinking.

SCAG 1501. Biotechnology, People and the Environment (3 cr)

Basic concepts in genetic engineering as a foundation for studying the impact of biotechnology on agriculture, medicine, industry, and the environment. Controversial aspects of biotechnology related to public policy issues are discussed.

SOC 3451. Urban Community (3 cr)

Social, economic, and political organization of the urban community focusing on racial inequality/segregation, urban enclaves, social reproduction, and civic participation of elites and residents. Cross-national comparisons, including United States, Europe, and East Asia.



Internship Program

We strongly encourage students to participate in an internship as a way of acquiring first-hand knowledge of sustainable agriculture. At present the undergraduate internship experiences are coordinated by the Program Coordinator for the Graduate Minor in Sustainable Agriculture Systems. For further information regarding internships, contact the Program Coordinator.

The internship program was conceived to encourage and facilitate experiential learning. Internships provide students with the opportunity to work with diverse issues related to the long-term viability of agriculture. The program also aims to help students develop decision-making skills that will be useful in future employment, and to broaden the student's familiarity with organizations that provide employment opportunities related to sustainable agriculture.

The goals of the internship program are to provide opportunities for students to:

- increase their understanding of the goals and concepts of sustainable agriculture and become aware of issues affecting the sustainability of food production,
- become familiar with decision making approaches used by individuals and organizations,
- interact with members of the agricultural community and form working relationships with some of these individuals or groups,
- perform work on a farm, or within an organization, public agency, or agriculture-related business, that will contribute to the development of sustainable food systems.

The internship is an eight- to ten-week supervised off-campus experience. During the internship, students will work to complete specific objectives that are agreed upon by the student, the internship host, and the Program Coordinator.



Internship Opportunities

Through the internship, students can gain experience with alternative farming systems, producer and community education, community development, alternative marketing, or policy making and implementation. To gain a broad understanding of agriculture, we encourage students to undertake internships that will provide experiences and exposure to issues they are unlikely to acquire through their own course work. Hosts are asked to provide interns with opportunities to engage in representative activities, to allow interns to observe decision-making activities on an individual or group level, and to consider the intern as a valuable contributor to their endeavors.

Experiential learning is an important aspect of the minor in Sustainable Agriculture Systems at the University of Minnesota.

An internship in sustainable agriculture involves work that is directly related to agriculture in which environmental, social, and economic impacts of agricultural practices or policies are considered.



Internship Opportunities continued

Internships can be arranged with farmers, grassroots organizations, public agencies, or agricultural businesses. The list of potential intern hosts currently includes local farmers using sustainable farming practices, grassroots organizations such as Land Stewardship Project, Sustainable Farming Association of Minnesota, Minnesota Food Association, nonprofit organizations such as The Nature Conservancy Minnesota Chapter, and Sierra Club, and state agencies such as the Minnesota Department of Agriculture, the University of Minnesota Extension Service, and the Agricultural Utilization Research Institute. Internships may be arranged through organizations other than those mentioned here.

Arranging an Internship

Internships can be conducted at any time of the year. Factors such as the student's course work and the availability of internships of interest to the student will determine the timing. A starting place for locating an internship host is the notebook labeled Graduate Internships in Sustainable Agriculture. A copy of this notebook can be found in the office of the Minnesota Institute for Sustainable Agriculture (MISA, 413 Hayes Hall) and on the MISA web page. Follow the link to Student programs and Internship Opportunities. The notebook provides a brief description of potential internship hosts, a general description of the types of work an intern will do with each host, and the name and phone number of the contact person. The student should contact this person to find out more about specific internship projects that are available. In addition to this initial conversation, hosts may request an interview or resume from prospective interns.

After identifying an intern host and defining a project with that host, the student should prepare a proposal for their internship project (see Internship Proposal Guidelines). The student will present and discuss the proposal during a meeting between the student, the intern host, and the Program Coordinator. During this meeting, specific work responsibilities, educational objectives, and details such as hours of work, products required by the host, and wages (if provided) will be discussed and agreed upon. Students should regard internships as contract projects that are unique and negotiated. By signing the Proposal Cover Sheet and submitting the proposal, the student agrees to the described conditions of the internship. If it is not possible to hold this meeting, the student should submit the proposal to the Program Coordinator and subsequently discuss any recommended changes with the intern host. Upon completion of the internship, students are required to submit a one-page abstract about their experience to the Program Coordinator.



Internship Opportunities continued

Academic Credit

Credit for the internship should be registered for through the student's home department in the Professional Experience Program XXXX 4096 Professional Experience Program: Internship. Examples of internship courses offering credit includes, but is not limited to:

- AFEE 4096 Agricultural, Food and Environmental Education
- AGRO 4096 Agronomy
- ANSC 4096 Animal Science
- APEC 4096 Applied Economics
- ENT 4096 Entomology
- ES 4096 Environmental Science
- FSCN 4096 Food Science and Nutrition
- HORT 4096 Horticulture
- PLPA 4096 Plant Pathology

Documentation of the internship can be tailored to meet PEP requirements and course credit then is obtained through the major.

Funding

In many instances, the host does not provide a stipend, although living accommodations are frequently provided by the host in the case of on-farm internships. Students may apply to the program office for a scholarship when a stipend is not offered by the intern host. Scholarships of up to \$2500 are available on a competitive basis. If financial assistance is required by the student, a Request for Funding Form should be submitted with the Internship Proposal. This form can be obtained from the Program Coordinator. A student accepting a scholarship must fulfill the following requirements:

- U of M student status
- Internship proposal
- Internship journal
- Written documentation of internship
- Post internship oral presentation

Details of these requirements depend upon the individual internship and will be discussed with the Program Coordinator upon acceptance of scholarship.



Internship Learning Agreement Proposal Guidelines

After you have identified the internship project on which you'll be working with, you should prepare a two- to four-page proposal. Present a draft of your proposal when you meet with your intern host and the Program Coordinator to discuss and agree upon the activities of the internship. Please use the headings and subheadings given below when preparing your proposal. After making any changes recommended by your intern host or the Program Coordinator, you should submit a copy of your proposal to the Program Coordinator. Include typed copies of the following forms with your proposal: Proposal Cover Sheet, Request for Funding (if applying for funds), and Proof of Health Insurance Coverage. These forms are available from the Program Coordinator.

Please use the headings and subheadings given below when preparing your proposal. Include typed copies of the following forms with your proposal: Proposal Cover Sheet, Request for Funding, and Proof of Health Insurance Coverage. These forms are included in this handbook and downloadable versions are on the minor web site. Additional copies are available in 413 Hayes Hall.






Components of the Proposal

1. Project Overview

Provide a brief description of the intern host's operation and activities. Next, describe how your internship activities fit into the work conducted by your intern host.

2. Educational Intent

-  Goals - List two or three learning goals that you have for your internship (the goals should be fairly broad in scope).
-  Objectives - List one or two objectives for each goal.
-  Strategies/Work Responsibilities - List the strategies you intend to use to accomplish your objectives. These should relate directly to the work you will be performing for your internship. Describe any final product that your intern host expects upon completion of the internship.

3. Work Specifications

Give the beginning and ending dates of the internship, and work schedule (days/hours). Describe any benefits, such as a stipend, living accommodations, travel expenses, etc., that the intern host will provide. Describe any other special conditions that the intern host has requested.

4. Academic Requirements

Describe the work you will complete in XXXX 4096 Professional Experience Program: Internship. State the number of credits for which you will register (1 to 3). See Academic Credit for further details.



Procedures for Completing an Internship* Worksheet

Completion Date	Activity	Elaboration
	Apply for enrollment in the minor program. This includes asking a faculty member to serve as your minor advisor.	Obtain application materials from: Registrar's Office, 130 Coffey Hall
	Meet with the minor advisor to discuss coursework. The minor advisor must approve the program of study and sign the enrollment form.	Submit completed application materials to: Registrar's Office, 130 Coffey Hall.
	Consult information on potential internships. You are not limited to searching the notebooks listing internship opportunities; through your own networking you may find a suitable internship.	Notebook of internship opportunities is located in 413 Hayes Hall (MISA Office) or on the MISA web site www.misa.umn.edu . Follow the links to student programs and internship opportunities.
	Contact potential host organizations for information on internship projects.	
	Choose the host organization. Send application materials or interview with the host if required.	
	Prepare a draft of the internship proposal.	Proposal guidelines are included in this publication.
	Meet with a representative of the host organization and the Program Coordinator. Include the proposal Cover Sheet, Request for Funding, and Proof of Health Insurance Coverage Forms.**.	
	INTERNSHIP EXPERIENCE	
	Arrange a debriefing interview with the Program Coordinator after completing the on-site experience. At this time, submit a one-page abstract of your experience.	
	For those receiving a scholarship or funds for expenses; Complete the documentation required and confirm with the Program Coordinator that all requirements have been fulfilled.	

* At this time, the internship is an optional activity for students enrolled in the undergraduate minor in Sustainable Agriculture.

** The Proposal Cover Sheet, Request for Funding, and Proof of Health Insurance Coverage Forms can be obtained from the Program Coordinator (Hayes Hall 413) or on the MISA website: www.misa.umn.edu follow the links to student programs and internship forms.

Sustainable Agriculture Undergraduate Minor Intent to Enroll

Please return to:
Campus Address— 413 Hayes Hall

Mailing Address— Sustainable Agriculture Minor
411 Borlaug Hall, University of Minnesota, 1991 Buford Circle, St. Paul, MN 55108

Student's Name: _____

Address: _____

City, State, Zip: _____ Phone: _____

E-mail address: _____

Student ID#: _____

Degree Pursuing: _____ Major: _____

Major Advisor: _____ Dept: _____

Minor Advisor: _____ Dept: _____

Anticipated date for completing degree: _____

Signature: _____ Date: _____

Sustainable Agriculture Undergraduate Minor Request for Funding

Please return to:
Campus Address— 413 Hayes Hall

Mailing Address— Sustainable Agriculture Minor
411 Borlaug Hall, University of Minnesota, 1991 Buford Circle, St. Paul, MN 55108

Funding from the Sustainable Agriculture Systems minor program is available in the form of a fellowship for the period of the internship or as funds that may be used to cover expenses incurred as part of the internship.

Students may apply to the minor program for financial assistance of up to \$2500. This option will be provided only if program funding permits.

Students may apply for a fellowship from the minor program when a research or teaching stipend is not available during the period of the internship, or a stipend is not offered by the intern host. Alternatively, students may request funding that can be used to cover expenses such as travel, including food and lodging, postage, photocopying, or supplies.

A Request for Funding Form should be submitted at the time the Internship Proposal is submitted.

Please indicate below the type and amount of funding you are requesting; choose only one option.

___ I am requesting a Fellowship Period for which Fellowship is requested (start/end dates): _____	Amount of funds
--	-----------------

OR

___ I am requesting financial assistance for Expenses My budgeted expenses are: <ul style="list-style-type: none"> • Travel-list destinations, purpose of travel, number of trips, and mileage • Lodging/Meals-list purpose of travel, destinations and other relevant information • Supplies • Other-list other items or services needed and cost per item <div style="text-align: right; margin-top: 10px;">TOTAL</div>	Amount of funds
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Student's Name: _____ Signature: _____ Date: _____

Sustainable Agriculture Undergraduate Minor Proposal Cover Sheet Internship in Sustainable Agriculture

Please return to:
Campus Address— 413 Hayes Hall

Mailing Address— Sustainable Agriculture Minor
411 Borlaug Hall, University of Minnesota, 1991 Buford Circle, St. Paul, MN 55108

Student's Name: _____

Address: _____

City, State, Zip code: _____

E-mail address: _____ Phone: _____

Social Security #: _____

Student ID #: _____

Minor Advisor: _____

Intern Host: _____

Address: _____

City, State, Zip code: _____

Email address: _____ Phone: _____

Supervisor: _____

Start/Finish Dates: _____

Student Signature: _____ Date: _____

Intern Host Signature: _____ Date: _____

Approved: _____ Date: _____

Sustainable Agriculture Undergraduate Minor Proof of Student Health Insurance Coverage

Please return to:
Campus Address— 413 Hayes Hall

Mailing Address— Sustainable Agriculture Minor
411 Borlaug Hall, University of Minnesota, 1991 Buford Circle, St. Paul, MN 55108

To insure that students enrolled in the graduate minor in Sustainable Agriculture Systems have adequate medical coverage during the period they are conducting internships, verification of health insurance is required. Health insurance purchased through the University of Minnesota or a comparable plan should provide coverage in the case of accidental injury to the individual.

This form must be completed by the student and returned to the Program Coordinator for the Sustainable Agriculture Systems minor before initiating on-site activities of the internship.

I verify that _____ (name of student), _____ (social security number),
is covered by the following health insurance:

Name of insurance provider: _____

Policy number: _____

Dates of coverage: _____

Signature of student: _____ Date: _____



Mailing Address:
411 Borlaug Hall
University of Minnesota
St. Paul, MN 55108
Phone: 612-625-8235
Email: misamail@umn.edu

Or Stop By Our Office:
415 Hayes Hall, St. Paul Campus

MISA's purpose is to bring together the agricultural community and the University community in a cooperative effort to develop and promote sustainable agriculture in Minnesota and beyond.

MISA's goals are to:

- Increase the University's response to the needs of the sustainable agriculture community and increase practitioner's influence on the university.
- Promote sustainable agriculture thinking within the University so that the concepts permeate teaching, research and extension.
- Work with rural communities in discovering and implementing the values of sustainability.

**Check out the MISA Web site at
www.misa.umn.edu for the latest:**

- **Calendar of Events**
- **Announcements**
- **Publications**
- **Resources**
- **Sustainable Agriculture Newsletter**
- **And More!**

**Be a part of the Sustainable Agriculture
Community at the University of Minnesota**

Join the Sustainable Agriculture Listserv by going to the MISA web site www.misa.umn.edu and following the Email Discussion Group Link! The Listserv will keep you up to date on all the happenings in the sustainable agriculture community.

Attend our weekly What's Up in Sustainable Agriculture (WUSA) seminar series. WUSA is a group of students, staff, and faculty that meets bi-weekly for a brown bag lunch to talk about sustainable agriculture with other professionals in the field. The meetings are very informal. If you are interested, feel free to bring your lunch and stop by any of our meetings (Wednesdays 12 -1 PM, 306 Borlaug Hall or check the Calendar on the MISA web site for the Schedule). Video recordings of many of the WUSA seminars are available . Contact the MISA office, 612-625-8235 or misamail@umn.edu, to request a copy of a seminar video or to be added to the WUSA email list.