

SUSTAINABLE AGRICULTURE

Interdepartmental Graduate Major

The Sustainable Agriculture interdepartmental major is offered through faculty in 21 departments – Agricultural and Biosystems Engineering; Agricultural Education and Studies; Agronomy; Animal Science; Anthropology; Civil, Construction and Environmental Engineering; Community and Regional Planning; Ecology, Evolution and Organismal Biology; Economics; Entomology; Food Science and Human Nutrition; Horticulture; Industrial and Manufacturing Systems Engineering; Journalism and Mass Communication; Landscape Architecture; Mechanical Engineering; Natural Resource Ecology and Management; Plant Pathology; Political Science; Sociology; and Veterinary Diagnostic and Production Animal Medicine. Faculty in these departments cooperate to offer courses and direct research leading to M.S. and Ph.D. degrees with a major in Sustainable Agriculture.

The Sustainable Agriculture major is designed to balance depth in disciplinary knowledge and perspectives with broader, systems-level thinking. It integrates technical and social sciences through a sequence of team-taught interdisciplinary core courses emphasizing higher-order critical thinking skills and active, collaborative approaches to learning. Students learn agroecological principles, study social relations underlying sustainable farming and food systems, and gain experience with practical techniques of sustainable agriculture.

Applicants applying to the MS program must have a bachelor's degree in one of the life, social, or engineering sciences, or a bachelor's degree plus equivalent experience in these areas. Applicants applying to the PhD program must have a master's degree and either an undergraduate or master's degree in one of the majors in the College of Agriculture and Life Sciences or its equivalent.

Graduates of the program will be able to design and manage agricultural systems that increase food security, enhance human communities, and protect environmental quality. Graduates of the program are qualified to work in a variety of settings, including university research, education, extension, agribusiness, governmental and non-governmental organizations, and farming.

Information on application procedures (<https://susag.iastate.edu/admissions>), curriculum requirements (<https://susag.iastate.edu/academics>), and faculty research areas (<https://susag.iastate.edu/dir/faculty>) is available on the Sustainable Agriculture website (<https://susag.iastate.edu>).

Courses primarily for graduate students, open to qualified undergraduates:

SUSAG 509: Agroecosystems Analysis

(Cross-listed with AGRON, SOC). (3-4) Cr. 4. F.

Prereq: Senior or above classification

Experiential, interdisciplinary examination of Midwestern agricultural and food systems, emphasizing field visits, with some classroom activities. Focus on understanding multiple elements, perspectives (agronomic, economic, ecological, social, etc), and scales of operation.

SUSAG 515: Integrated Crop and Livestock Production Systems

(Cross-listed with A B E, AGRON, AN S). (3-0) Cr. 3. Alt. F., offered odd-numbered years.

Prereq: SUSAG 509

Methods to maintain productivity and minimize the negative ecological effects of agricultural systems by understanding nutrient cycles, managing manure and crop residue, and utilizing multispecies interactions. Crop and livestock production within landscapes and watersheds is also considered. Course includes a significant field component, with student teams analyzing Iowa farms.

SUSAG 530: Ecologically Based Pest Management Strategies

(Cross-listed with AGRON, ENT, PL P). (3-0) Cr. 3. Alt. F., offered even-numbered years.

Durable, least-toxic strategies for managing weeds, pathogens, and insect pests, with emphasis on underlying ecological processes.

SUSAG 546: Strategies for Diversified Food and Farming Systems

(Cross-listed with AGRON, HORT). (3-0) Cr. 3. Alt. S., offered odd-numbered years.

Prereq: SUSAG 509

Project-focused engagement in food and farming systems using tools and perspectives drawn from multiple disciplines. Includes a field component.

SUSAG 571: Agroforestry Systems

(Cross-listed with NREM). (2-3) Cr. 3. Alt. S., offered even-numbered years.

Prereq: 6 credits in biological science at 300 level or above

Concepts of sustainable land use, agroecological dynamics, and component interactions of agroforestry systems. Agroforestry systems in temperate and tropical regions. Design and evaluation techniques for agroforestry systems. Ecological, socioeconomic and political aspects of agroforestry.

Meets International Perspectives Requirement.

SUSAG 584: Organic Agricultural Theory and Practice

(Cross-listed with AGRON, HORT). (3-0) Cr. 3. Alt. S., offered odd-numbered years.

Prereq: 9 cr. in biological or physical sciences

Understanding of the historical origins and ecological theories underpinning the practices involved in organic agriculture. Interdisciplinary examination of crop and livestock production and socioeconomic processes and policies in organic agriculture from researcher and producer perspectives.

SUSAG 590: Special Topics

Cr. 1-3. Repeatable. F.S.SS.

Prereq: Graduate classification, permission of instructor

For students wishing to conduct in-depth study of a particular topic in sustainable agriculture.

SUSAG 599: Creative Component

Cr. arr. F.S.SS.

Pre-enrollment contract required. For MS students pursuing the non-thesis degree option. Final product is a creative component.

Courses for graduate students:

SUSAG 600: Sustainable Agriculture Colloquium

(1-0) Cr. 1. Repeatable. F.S.

Weekly seminar for graduate students in the Sustainable Agriculture program.

SUSAG 610: Foundations of Sustainable Agriculture

(Cross-listed with A B E, AGRON, ANTHR, SOC). (3-0) Cr. 3. F.

Prereq: Graduate classification, permission of instructor

Historical, biophysical, socioeconomic, and ethical dimensions of agricultural sustainability. Strategies for evaluating existing and emerging agricultural systems in terms of the core concepts of sustainability and their theoretical contexts.

SUSAG 699: Research

Cr. arr. Repeatable. F.S.SS.

MS and PhD thesis and dissertation research.