Sustainable Agriculture

(Interdepartmental Graduate Major)

The graduate program in sustainable agriculture is an interdepartmental major offered through faculty in nineteen participating departments: Agricultural & Biosystems Engineering; Agricultural Education & Studies; Agronomy; Animal Science; Anthropology; Civil, Construction & Environmental Engineering; Community & Regional Planning; Ecology, Evolution & Organismal Biology; Economics; Entomology; Food Science & Human Nutrition; Horticulture; Industrial & Manufacturing Systems Engineering; Natural Resource Ecology & Management; Philosophy & Religious Studies; Plant Pathology; Political Science; Sociology; and Veterinary Diagnostic & Production Animal Medicine.

Master's students 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. Doctoral students 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. To acquire these abilities, students learn agroecological principles, study social relations underlying sustainable farming and food systems, and gain experience with practical techniques of sustainable agriculture. The program seeks 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.

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 applications procedures, research interests of the faculty, and specific requirements of the major may be obtained at http://www.sust.ag.iastate.edu/gpsa/ or by contacting gpsa@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 E, AGRON, AN S). (3-0) Cr. 3. Alt. F., offered 2011. *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 2014.
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 2013. *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.
(Dual-listed with SUSAG 471). (2-3) Cr. 3. Alt. S., offered 2012. *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.
(Dual-listed with SUSAG 484). (Cross-listed with HORT). (3-0) Cr. 3. Alt. S., offered 2014. *Prereq: 9 cr. in biological or physical sciences*
Delate. Understanding of the historical origins and ecological theories underpinning the practices involved in organic agriculture. Interdisciplinary examination of crop and livestock production and socio-economic 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 AGRON, A E, 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.