AGROECOLOGY (AGROECOL)

AGROECOL/AGRONOMY/C&E SOC/ENTOM/ENVIR ST 103 – AGROECOLOGY: AN INTRODUCTION TO THE ECOLOGY OF FOOD AND AGRICULTURE
3 credits.

Agroecology has blossomed across the world in recent decades as not only a science, but also a practice, and a movement. Employ the multiple disciplines and perspectives that Agroecology affords to analyze our agricultural and food systems wihin a broader context of dynamic social and ecological relationships.
Requisites: None
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Elementary
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Fall 2024
Learning Outcomes: 1. Explain and analyze basic biophysical processes of agricultural ecosystems and the challenges and benefits of various management systems
Audience: Undergraduate

2. Interrogate social, economic, and political structures underlying agriculture at local, regional, national, and global scales
Audience: Undergraduate

3. Describe how they personally connect to local to global agricultural landscape as humans, ecological actors, food and fuel consumers, and thoughtful citizens
Audience: Undergraduate

AGROECOL 187 – PLANTS AND THE SCIENCE OF SURVIVAL
3 credits.

Could you grow and gather enough food to feed yourself? Learn the biology behind how to grow healthy plants in a healthy ecosystem by creating plans for a large food garden. Focus on understanding the scientific method, analyzing data and sources, and using scientific research as a tool to make decisions. Identify credible information sources for solving unpredictable, real-world problems faced by food growers. Practice awareness and understanding of the natural world.
Requisites: None
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Elementary
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Summer 2024
Learning Outcomes: 1. Create an evidence-based plan for a growing space
Audience: Undergraduate

2. Explain how the structure, function, growth, origin, evolution, distribution, and taxonomy of plants impact humans' use of them as food and medicine
Audience: Undergraduate

3. Demonstrate knowledge of scientific concepts and assumptions as they apply to growing and harvesting plants
Audience: Undergraduate

4. Analyze, interpret, and locate scientific evidence about homesteading-related topics
Audience: Undergraduate

5. Demonstrate knowledge of the scientific method
Audience: Undergraduate

6. Apply scientific reasoning to determine when scientific information supports a given conclusion about plant use and production
Audience: Undergraduate

7. Critically evaluate the impacts of plant sciences on our communities and food systems
Audience: Undergraduate

AGROECOL 303 – AGROECOLOGICAL SYSTEMS: WORKING TOWARDS SUSTAINABILITY
3 credits.

Explores in-depth agriculture systems as coupled ecological and social complexities. Examines the components of agricultural systems and analyzes how different ecological and social contexts influence and are influenced by the agricultural system. Explores and analyzes how management decisions (crop breeding, in-crop management, landscape-level, etc.) ramify to influence processes and outcomes at different levels of complexity (e.g., ecosystem, landscape, social well-being, human health, economic) and the socio-ecological tradeoffs that ensue. Develops skills to analyze how the design and implementation of integrated agricultural systems can contribute to solutions for pressing societal challenges such as climate change, biodiversity declines, unsustainable resource use and social inequality.
Requisites: ENVIR ST/AGROECOL/AGRONOMY/C&E SOC/ ENTOM 103
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Learning Outcomes: 1. Identify ecological biotic and abiotic aspects of agricultural systems as stocks and flows of energy and matter within and between organizational levels (e.g. cellular, organismal, ecosystem, landscape, and global)
Audience: Undergraduate

2. Describe the social dimensions of agricultural systems as stocks and flows of knowledge, information, and beliefs at organizational levels within agroecosystems
Audience: Undergraduate

3. Explain and analyze how the management of agroecosystems influences ecological and social processes
Audience: Undergraduate

4. Evaluate how agriculture can be designed and managed to be a solution for modern ecological and social challenges of today (e.g.climate change, unsustainable resources use, biodiversity declines, social inequality) in different socio-ecological contexts
Audience: Undergraduate

5. Compare and contrast careers in agroecology through interactions with a wide variety of persons working in the field, from practitioners to industry professionals
Audience: Undergraduate

6. Solve problems individually and as part of teams using the scientific method, logic, and reasoning by identifying and differentiating the strength and value of information, evidence, and approaches related to the management and sustainability of agroecosystems
Audience: Undergraduate

7. Reflect on one's participation in food systems from local to global scales
Audience: Undergraduate

AGROECOL 399 – COORDINATIVE INTERNSHIP/COOPERATIVE EDUCATION
1-8 credits.

Internship under guidance of a faculty or instructional academic staff member in Agroecology and internship site supervisor. Students are responsible for arranging the work and credits with the faculty or instructional academic staff member and the internship site supervisor.
Requisites: Consent of instructor
Course Designation: Workplace - Workplace Experience Course
Repeatable for Credit: Yes, unlimited number of completions
Learning Outcomes: 1. Apply concepts learned in coursework to authentic professional situations
Audience: Undergraduate

2. Demonstrate professional skills appropriate for the industry
Audience: Undergraduate

3. Identify and reflect on how concepts learned in coursework apply to specific work settings and situations
Audience: Undergraduate

AGROECOL 400 – STUDY ABROAD IN AGROECOLOGY
1-6 credits.

Provides an area equivalency for courses taken on Madison Study Abroad Programs that do not equate to existing UW courses. Current enrollment in a UW-Madison study abroad program
Requisites: None
Repeatable for Credit: Yes, unlimited number of completions

AGROECOL 503 – AGROECOLOGY CAPSTONE
3 credits.

A stepping stone between the classroom and society. Emphasizes integration of diverse bodies of agroecological knowledge, critical thinking, and engagement with real-world problems and current research. Topics such as: bioproducts, food systems and security, economic vitality of communities, climate change, humans and their environment, biodiversity, resource management and policy, and social equity.
Requisites: ENVIR ST/AGROECOL/AGRONOMY/C&E SOC/ENTOM 103, AGROECOL 303, and senior standing
Repeatable for Credit: No
Learning Outcomes: 1. Integrate diverse bodies of knowledge to solve an agroecological problem or formulate a policy of society importance
Audience: Undergraduate

2. Evaluate the strength and value of information, evidence, and approaches relevant to a specific problem or policy
Audience: Undergraduate

3. Discuss and lead discussions with peers regarding a specific agroecological problem or policy
Audience: Undergraduate

4. Write and present comprehensive reports regarding a specific agroecological problem or policy for scientists or policymakers
Audience: Undergraduate

5. Write and present comprehensive reports regarding a specific agroecological problem or policy for the general public
Audience: Undergraduate

AGROECOL 699 – SPECIAL PROBLEMS
1-3 credits.

Scholarship on special topics, under the supervision of an agroecology faculty member.
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2024
Learning Outcomes: 1. Frame an agricultural problem using an agroecological lens
Audience: Undergraduate

2. Describe multifunctional agricultural solutions
Audience: Undergraduate

AGROECOL 701 – THE FARM AS SOCIO-ENVIRONMENTAL ENDEAVOR
3 credits.

Farms may be analyzed as intentional entities shaped by the contexts in which they must operate. This course explores how these biophysical and social contexts both exert constraints and provide opportunities, leading to the diversity of farms observed.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2024
Learning Outcomes: 1. Develop a vision of agriculture as a social and ecological activity for which we have many diverse demands
Audience: Graduate

2. Differentiate the roles of the natural and social sciences of agriculture, including their basic methods of inquiry
Audience: Graduate

3. Apply an agroecological imagination to think about food and agriculture contextually
Audience: Graduate

4. Reflect on the organizational, political, and personal challenges to cultivating a more beneficent agriculture
Audience: Graduate

5. Engage with the organizational, political, and personal challenges of this contextualized diversity for the cultivation of a more beneficent agriculture

Audience: Graduate

AGROECOL 702 – THE MULTIFUNCTIONALITY OF AGRICULTURE
3 credits.

Agroecology systems provide a variety of social, economic, and ecological functions to society, each with a different network of stakeholders. This course explores methods of evaluating these diverse functions and perspectives, with a special focus on participatory approaches.
Requisites: Declared in Agroecology MS
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2025
Learning Outcomes: 1. Collect, analyze, and interpret data on an agroecology-related issue
Audience: Graduate

2. Integrate and apply multiple disciplinary perspectives such as technical, economic, socio-political, and environmental factors in the context of complex agroecology problems
Audience: Graduate

3. Plan and manage a long-term project
Audience: Graduate

4. Communicate effectively with clients and multidisciplinary teams
Audience: Graduate

5. Produce professional-quality deliverables such as presentations and reports
Audience: Graduate

AGROECOL 710 – SEMINAR IN AGROECOLOGY
1 credit.

Facilitated discussions on agroecology-related scholarship, policies, and practices. May include presentations on current or proposed research.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2025
Learning Outcomes: 1. Present current or proposed research
Audience: Graduate

2. Facilitate discussion of agroecology-related scholarship
Audience: Graduate

3. Integrate and apply multidisciplinary perspectives to evaluate and propose solutions to agroecology problems
Audience: Graduate

4. Analyze and discuss agroecology research, policies, and practices
Audience: Graduate

5. Evaluate peer presentations
Audience: Graduate

AGROECOL 720 – AGROECOLOGY FIELD STUDY
1-3 credits.

Field study of farms, processing, marketing, distribution, and policy-making in the food system. Courses will be several days of visits, discussions with the operators, and student-faculty discussion sections. Presentations or written reports may be required.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2024
Learning Outcomes: 1. Interact with practitioners of agroecology, such as farmers, ranchers, field researchers, policy makers, social scientists
Audience: Graduate

2. Describe the scope of agriculture in Wisconsin and relationships among the university and the community
Audience: Graduate

AGROECOL/AGRONOMY/ENVIR ST 724 – AGROECOSYSTEMS AND GLOBAL CHANGE
3 credits.

Impacts of global change drivers (climate change, atmospheric chemistry, bioenergy, urbanization, policy) on agroecosystems and their associated goods and services; environmental impacts of agricultural land use and feedbacks to climate; modeling approaches; critical review of current scientific literature.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023
Learning Outcomes: 1. Explain key physical, biological, and social drivers of change to agroecosystems on planet Earth
Audience: Graduate

2. Apply important biophysical and biological concepts to describe how a changing climate and changes in atmospheric composition impact agricultural systems
Audience: Graduate

3. Describe how agricultural land management impacts the Earth's climate system through changing biogeochemical cycling
Audience: Graduate

4. Discuss how agricultural land management impacts Earth's climate system through biogeophysical processes that effect energy and water balance in the soil-plant-atmosphere system
Audience: Graduate

5. Identify and summarize ecosystem services that are impacted by agroecosystems and land management decision-making, and how this effects global environmental sustainability
Audience: Graduate

AGROECOL 799 – PRACTICUM IN AGROECOLOGY TEACHING
1-3 credits.

Instructional orientation to teaching at the higher education level in Agroecology, direct evidence-based teaching experience under faculty supervision, experience in testing and evaluation of students, and the analysis of teaching performance.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Learning Outcomes: 1. Articulate learning goals for the practicum in cooperation with supervising instructor
Audience: Graduate

2. Prepare and/or implement lesson plans for a class period, week, or module of the class
Audience: Graduate

3. Deliver course content and/or facilitate discussion
Audience: Graduate

4. Identify pedagogical strengths and opportunities for growth based on classroom assessment and/or feedback
Audience: Graduate

AGROECOL 990 – RESEARCH
1-12 credits.

Independent research on the student's thesis or degree project.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2025
Learning Outcomes: 1. Conduct agroecological research including framing with a multifunctional perspective, engaging in co-learning with communities, and communicating with diverse partners
Audience: Graduate