AGR 4212 Alternative Crop Systems (Honors Section)

Spring, 2026
Live in person, 3 Credits
Tuesday Period 7; Thursday Period 7-8
McCarty C 426

Instructor

Chris H. Wilson
Associate Professor
Agronomy Department
3119 McCarty Hall B
Phone: 352-273-2217 (office, email is better)
chwilson@ufl.edu

Teaching Assistant

TBD

Course Description

The goal of this course is to confront growing challenges to agricultural systems within the viewpoint of agroecology. Our approach in this course is two-fold. First, we will develop the knowledge needed to holistically and rigorously evaluate cropping systems with respect to both biophysical and human dimensions. Second, we illustrate principles through application to real-world agricultural systems, in order to identify the benefits and challenges of emerging alternative systems and concepts. We consider case studies from a range of agroecosystems including crop-livestock integration, agroforestry, perennial crops, mixed vegetable production systems and more.

Course Learning Objectives

- Describe the origins of "conventional" agriculture and analyze enduring lessons from historical case studies
- Describe the structure and function of agroecosystems in terms of both biophysical and human dimensions
- Analyze synergies and tradeoffs among ecosystem services in agroecosystems.
- Evaluate emerging alternative agricultural systems with respect to both social and biophysical aspects.
- Apply agroecological methods and concepts to in-depth evaluation of a chosen crop system
- Develop effective communication on these topics through written and verbal reports, in both individual and group contexts.

Course Prerequisites

PLS 3001C (recommended, not required)

Textbooks, Learning Materials, and Supply Fees

There is no required textbook for the course. The following are selected examples of course readings:

- Selections from The Ecology of Agroecosystems by J.H. Vandermeer (Jones and Bartlett 2011).
- Chapter 2 from Agroecology: The Ecology of Sustainable Food Systems by S.R. Gliessman (CRC 2015).
- Fuller, DQ et al. (2015). Comparing Pathways to Agriculture. *Archaeology International*, No. 18: p. 61–66, DOI: http://dx.doi.org/10.5334/ai.1808
- Jose, S and Dollinger J (2019). Silvopasture: a sustainable livestock production system. *Agroforestry Systems* 93:1-9. https://doi.org/10.1007/s10457-019-00366-8
- Peterson et al. (2018). Whatever happened to IPM? *American Entomologist*. https://doi.org/10.1093/ae/tmy049
- Glover et al. (2010). Increased Food and Ecosystem Security Via Perennial Grains. *Science* 328: 1638-1639. https://doi.org/10.1126/science.1188761

Instructor Interaction Plan

Dr Wilson will deliver course content through live, in person lectures. Recordings of class periods will be made available through the course e-learning website. All readings, and assignments will be posted and completed on the course website. Dr Wilson and/or a course TA will provide assessments and feedback on student assignments via the e-learning course platform and will also be available to schedule individual meetings.

Technical Support

UF Computing Help Desk & Ticket Number: All technical issues require a UF Helpdesk Ticket Number. The UF Helpdesk is available 24 hours a day, 7 days a week. https://helpdesk.ufl.edu/ | 352-392-4357

Course Module List and Schedule

The following is a rough guide to the topics and order they will be addressed over the semester. Note that we develop an integrated understanding of 'conventional' and 'alternative' systems from the beginning and highlight various 'alternative' systems and practices throughout the semester, culminating in ambitions for perennial agriculture at the end of the semester.

Introductory Framework

1. Course introduction and overview: the problem of agriculture

2. Purpose, history, and intensification of agriculture

Biophysical Emphasis

3. Components of agroecosystems and farming practices
4. Crop growth, development and yield formation
5. Ecosystem processes: soil, energy, carbon, water and nutrients
6. Plant diversity, structure, pest and disease regulation

Human Dimensions Emphasis

7. Land, and Agricultural Macroeconomics
8. Food system analysis, food security and food sovereignty
9. Farm-scale economics
10. Farm labor, mutual aid and cooperatives

Agroecological Case Studies and the Future

11. Perennial agriculture: perennial grains (and light genetics), agroforestry systems
12. Climate change, global challenges and the future of food

Grading Policy

Course grading is consistent with UF grading policies. A minimum grade of B is required to earn Academic points towards Honors Completion Requirements. Once you have earned your final grade in this course, please upload the course information and final grade from your Unofficial Transcript into your Honors Canvas Cohort: Honors Requirements module to earn Honors Milestone / Completion credit.

Course Grading Structure

Students are responsible for all material covered in the lecture modules, readings, and all other assigned materials. Keeping up with the material is important for mastering course content. You will also be expected to complete assignments and quizzes on time.

1) Content module quizzes

Short knowledge checks will be posted at Canvas, mostly during the first half of the class as we progress through the content modules. The purpose of these quizzes is to monitor progress and ensure that everyone is developing the knowledge and tools needed to evaluate alternative crop systems and to develop their semester projects.

2) Discussion activities

During the semester, we will have more in-depth discussion of certain topics in agroecology based on assigned readings, site visits, or other provided material. These discussions will have an online reading and written contribution component, and as well be incorporated into our live class periods. For the honor's section, students will be expected to lead one of the planned in-class discussions, which will be arranged with the instructor ahead of time.

3) Alternative crop system written report

Using the concepts you learned from class and found via independent research, you will develop a written report that examines an alternative agroecosystem or practice of interest to you. This paper will be broadly divided into two sections, first a biophysical description and evaluation, and second a consideration of the human dimensions. In each section you will **synthesize** information from several scholarly sources, while also applying concepts from the course. A more detailed rubric will be provided for each component of this assignment. Your report **is recommended to** include both text and visual components (e.g. graphs, figures). Grades will be based on concept application, use of course content and outside information, and coverage of points mentioned above, NOT artistic ability or web design skills, but creativity is very welcome! **Use of generative AI to produce text for this assignment is strictly prohibited and AI detection features will be enabled during the standard plagiarism check**. The instructor will address proper and improper uses of generative AI tools in class. The honor's section will use a slightly modified rubric, with greater expectation for and emphasis on **synthesis**.

4) Final presentation and Peer Evaluation

Toward the end of the semester you will post a short (~10 minute) presentation covering the results of your research to the Canvas site. We will group the presentations into thematic areas and have a group discussion prompted by your findings. You will also be assigned a short peer assessment for one of your classmate's presentations.

Assignment Type	Point Value	Percent of Final Grade
Quizzes (4X)	100	33.3%
Discussion activities (4X)	50	16.5%
Crop system written report	100	33.3%
Final presentation	35	11.67%
Presentation peer reviews	15	5%

Grading Scale

Assigned exercises, proposals, discussion questions, literature reflections, and quizzes will be graded based on completeness, conciseness, clarity, effort, organization, and originality and/or as indicated in rubrics where provided. It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor. Working independently excludes use of machine learning tools like ChatGPT to complete your discussion posts and exams, or other written assignments. Guidance on use of generative AI tools to foster the research process will be provided during class, office hour, and individual meeting times.

Grade	Points	Percentage
A	540-575	94-100
A-	517-539	90-93.9
B+	500-516	87-89.9
B	477-499	83-86.9
B-	460-476	80-82.9
C+	442-459	77-79.9
C	419-441	73-76.9
C-	402-418	70-72.9
D+	385-401	67-69.9
D	362-384	63-66.9
D-	345-361	60-62.9
S	<345	<60

Academic Policies and Resources

Academic policies for this course are consistent with university policies. See https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/

Campus Health and Wellness Resources

Visit https://one.uf.edu/whole-gator/topics for resources that are designed to help you thrive physically, mentally, and emotionally at UF.

Please contact UMatterWeCare for additional and immediate support.

Honors Program contact information

Honors Program, Honors Village Complex #4, 352-392-1519
Quick questions for an Honors advisor? Email advisor@honors.ufl.edu

Need an Honors advising appointment? Schedule via Microsoft Bookings: https://bit.ly/UFHonorsAdvising
Honors Program Event Calendar: https://www.honors.ufl.edu/news--events/calendar-of-events/

Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Privacy and Accessibility Policies

- Instructure (Canvas)
  - Instructure Privacy Policy
  - Instructure Accessibility
- Zoom
  - Zoom Privacy Policy
  - Zoom Accessibility