



Welcome! By signing up for this elective class I think you have signaled that you are a special kind of student with a real interest in the future of agriculture and the harmony of people and nature. In the course of the semester, I hope you will share your experiences and ideas to help us all better grapple with the biological, social and economic complexities of making agriculture more sustainable.

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Reading Assignments: Numerous papers will be linked to or uploaded on the ENST 441 BlackBoard site: <https://elms.umd.edu>

Term Project: In order to allow you to delve more deeply into a topic of special interest and interact more intensely with several peers, small groups of 3 to 4 students will be formed, each preparing a focused report to present to the class during the last two weeks of the semester. Option: creative activism as term project (see suggestions below).

Grades: 3 exams -- mainly essay type (two 1-hr exams and a final exam,) 25% each + group presentation and written summary sheet (25%).

Field Trips: As announced in the schedule of classes, two Saturday field trips (Sept. 15 and October 27) to sustainable farms are planned. Attendance is *required*. We will meet in HH parking lot at 7:00 AM Sept. 15 and 8:00 AM Oct. 27. We have rented a motor coach (big bus!) and will leave on time. Bring your own lunch and water to drink. Details to be announced in class. We will post photos on line for further discussion. Before the Final Exam each student is expected to enter a comment or intelligent question about photos 4 photos for each trip.

Guest Speakers: Numerous experts and players in various aspects of sustainable agriculture (including a farmer or two) have been invited to speak and lead discussions.

Class format: discussion/seminar format with some lectures.

Attendance: Because class discussion is a major component of this course, attendance is required.

Main topics addressed: The course will address both local and global issues of sustainability of agricultural and food production systems mainly from ecological and environmental perspectives, but also considering critical social/political and economic aspects. While not a "how to" farming course, we will delve into production practices for soil fertility, erosion, weed control, pest control, water management and the like.

ENST 441 (Issues in Sustainable Agriculture)

Group Term Project Presentation details of Assignment.

Project title and team Due September 13.

Early in the semester, students will be given opportunities to organize themselves into groups and choose a general topic area from the list below. No less than three and no more than four students per group. Up to two groups may choose a given topic area, but the particular aspect of the topic or approach should be unique for each group. The presentations should clearly address agricultural sustainability as defined in the first week of class. Topics may be broad or narrowly focused, as the presenters see fit.

Each group will turn in 1 sheet stating the title of the presentation and listing the group members names and emails. I will then know how many groups there are and we will be able to schedule the dates of the actual presentations.

Outline of Project Due October 18.

...each group will turn in a one to two page outline of what will presented. This outline should include:

- a list of the main points and
- a paragraph stating the "take home lesson" or "central question" of the presentation.
- *for graduate students only*, also include 5 reference citations and a working hypothesis that you intend to evaluate.

Presentation summary sheet - Due November 27 (determined by the number of presentations).

For undergraduate students: Based on the outline, each group will prepare a summary of the presentation. Enough copies for each student and the instructor of this summary will be turned in at the beginning of the class on the first day of presentations. The summary will be a single, double sided sheet (two single-spaced pages in length, using 11 point type and 1 inch margins on all sides and printed on both sides of the paper). It will include:

1. a clear informative, catchy title
2. list of group members' names and emails
3. summary of main themes and points
4. data tables or figures to support your presentation
5. citations to at least 5 key references.

This summary will be passed out to the class on the day of the presentation. Every effort should be made to ensure that the summary and the presentation itself are clear, informative, thought provoking, and professional. Be sure to focus on just a few main concepts ... don't spread yourselves too thinly.

For graduate students: Your summary should be up to 5 pages, and should include at least 20 reference citations, and should include at least one original quantitative treatment of the topic related to your hypothesis.

The presentations should allow about 1/3 of their time for class discussion and questions. Students are expected to exercise creativity in making the presentations and original modes of presentation are encouraged (e.g., debates, drama, video, illustrations, activities, displays could be used). Although the time available will depend on the number of projects, I expect total time allocated for each presentation to be 35 minutes (including 10 min for discussion). Practice meeting these time limitations. Quality presentations of this type require careful thought, research, planning, rehearsal and execution.

Suggested General Topic Areas for Group Presentations

Actual topics may concern a particular aspect of these general areas. Topic may focus on Technology and Practices or Policy and Societal issues.

Farming Systems Integration	Water Resources	Rural Communities
Livestock/Pasture Mgt.	On Farm Energy Use / Conservation / Production	Agric. Research Policy
Weed Mgt.	Genetic Resources	Food Safety/Quality
Insect Mgt.	Agric. Research Approaches	Food Labeling Programs
Soil Quality/Health	Government Farm Programs	Organic Certification
Soil Conservation, Erosion Control	Farmland Preservation	Community Supported Agriculture
Crop Rotations	Third World Development	Other Marketing Approaches
Composting/Recycling	Economics/Competitiveness	

Some options for creative activism term projects:

Foodie heaven: feast of a term project	Cater two dinners for the class (on a \$/student budget): conventional and sustainable. Report on costs, nutrition, impacts, times, issues while class tastes (and votes on?) the results.
Save Nick's Organic Farm	Volunteer to be active in this effort: report on experience, organics, urban/rural and land use issues.
Close your nutrient cycle the easy way	Volunteer to collect and use your personal urine for growing assorted fall crops in your garden. Determine al amounts, plant response, and nutrient analysis.

Grading Scheme for Group Presentations

The presentations will account for 25% of the course grade. On the basis of a total possible 100 points for the project, grades will be based on the following criteria (10% will be deducted for each school day late for outline and summary sheet):

1.	Outline - logic, relevance to course, statement of central theme.	10
2.	Summary sheet	
	organization, logic	10
	clarity, style, neatness	10
	integration of range of sources/views	10
	substantive information/accuracy	10
3.	Presentation	
	originality/creativity/ holistic viewpoint / context	10
	focus on one or two main themes or questions	10
	substantive and accurate contribution about topic	10
	class discussion and responses to questions	10
	<u>individual student "performance"</u>	<u>10</u>
	Total	100

ENST 441 -- SUSTAINABLE AGRICULTURE

Class Schedule (Subject to Change) Fall 2012

Date	TOPICS / SPEAKERS	Readings Assigned (changes and additions likely)
08/30	Introduction to course.	
9/04	What is Sustainable Agriculture? ---coming to a definition.	Weil, R. R. 1990. Defining and using the concept of sustainable agriculture . J. Agron. Educ. 19:126-130. What Is Sustainable Agriculture? http://www.sarep.ucdavis.edu/concept.htm#Top John Ikerd: video Sustainable Capitalism: http://www.youtube.com/watch?v=U7-83F1rMV8 Gomiero, et al. 2011. Is There a Need for a More Sustainable Agriculture? Critical Reviews in Plant Sciences 30:6-23. (PDF on Blackboard)
9/06	We are we headed: conventional agriculture and sustainable alternatives.	Natural Systems Agriculture: More on The Marriage of Agriculture and Ecology. Wes Jackson. <i>The Land Report</i> #51, Winter 1994. http://www.landinstitute.org/vnews/display.v/ART/41ed96a54369c Miller 2008: World Regional Trends in Agriculture ftp://ftp.fao.org/docrep/fao/006/Y5160e/Y5160e04.pdf Pretty, J. 2008. Agricultural sustainability: concepts, principles and evidence. PhilosTrans Royal Society B: Biological Sciences 363:447-465. http://rstb.royalsocietypublishing.org/content/363/1491/447.full.pdf+html Foley et al 2011: Solutions for a cultivated planet http://www.nature.com/nature/journal/v478/n7369/full/nature10452.html Rodale's LaSalle on organic farming to mitigate global warming: http://www.eenews.net/tv/video_guide/796 Meeting near the middle large scale farmer-innovators: http://cornandsoybeandigest.com/tillage/no-tills-next-level-farmer-innovation-yields-soil-health-payoffs
9/11	Sustainable Soils Management No-till and conservation tillage as tools for sustainability	Weil, Ray. 2001. Soil management for sustainable intensification: some guidelines . p. 145-154. In Keeney, D Sustainability of Agricultural Systems in Transition. Agronomy Soc. of America Special Pub. 64, ASA, Madison, WI. "Mine" the websites of the four farms to be visited on Saturday to evaluate indications of sustainability: Larriland farms, Calvert's Gift farm, One Straw Farm, Cedar meadow farm.
9/13	Cover Crops as Tools for Sustainability	Weil and Kremen 2007. Thinking across and beyond disciplines to make cover crops pay: http://enst2.umd.edu/covercrops.pdf Midwest cover crop innovators: http://www.mccc.msu.edu/innovators.html Wisconsin cover cropping: http://www.youtube.com/watch?v=VTV7cAEHDuY&feature=related
9/15	Saturday- All Day Field Trip to 4 innovative vegetable farms.	Meet in HH parking lot at 7:00 a.m. Bring a bag lunch. Be sure to car pool as much as possible to get to campus, but we will have a bus...and it will leave on time at 7:30am.
9/18	Lessons learned from Field trip	Bring your notes and questions!
9/20	Alternative Weed Control	Zimdahl 1995 – Weed Science in Sust. Ag (PDF on Blackboard) Fisher, M. 2012 -Many Little Hammers: https://www.agronomy.org/files/publications/csa-news/many-little-hammers.pdf Gruver and Clayton. 2012. Excellence in Organic Weed Management (PDF on Blackboard)
09/25 (Weil in Africa)	Natalie Lounsbury: Organic Standards	The organic foods production act of 1990-regulatory text. USDA Agric. Marketing Service. Section on production practices: http://ecfr.gpoaccess.gov/cgi/t/text/text-

		idx?c=ecfr;sid=cfdb74b11cee21f6fa5fc9e8517c3c4c;rgn=div6;view=text;node=7%3A3.1.1.9.32.3;idno=7;cc=ecfr http://www.beyondpesticides.org/documents/ofpa.pdf
09/27 (Weil in Africa)	Jim Baird Mid-Atlantic States Director, American Farmland Trust	"Preserving Farmland and Farm Viability in a Suburbanizing Society" 2007 Farm Bill commodity. Conserve org./ new markets / http://www.ssu.missouri.edu/faculty/jikerd/papers/ASASFarmPolicy.htm farmland preservation- court case in NJ: http://www.dailyrecord.com/article/20120828/NJOPINION03/308280001/Farmland-preservation-can-dirty-business?odyssey=nav%7Chead&nclick_check=1 Farmland Preservation in California's Central Valley THE LAST CROP trailer: https://vimeo.com/41472442/
10/02 (Weil in Africa)	EXAM 1	
10/04 (Weil in Africa)	Ferd Hefner: Politics of Sustainable Ag & Federal farm /food policy	Buttel 2005 The Politics of Agricultural Research Activism in the Molecular Age. Agriculture and Human Values 22:275-283.
10/09	Animals and agriculture Managing Pasture and Manure Grazing and livestock issues	Gilker, R.E., R.R. Weil, and B. Mertz, (eds.). 2004. Making the Switch: Two Successful Dairy Graziers Tell Their Stories . Future Harvest - Chesapeake Alliance for Sustainable Agriculture:1-16. Dairy farming -From Wikipedia http://en.wikipedia.org/wiki/Dairy_farming National Science Foundation Center for Integrated Pest Management http://cipm.ncsu.edu/about.cfm Basics of Dairy Farming (EPA): http://www.epa.gov/agriculture/ag101/dairy.html Video news story on pasture renovation with Forage Radish: http://www.wcax.com/story/19193065/how-giant-radishes-help-vt-farmers-make-better-milk?autoStart=true&topVideoCatNo=default&clipId=7577563
10/11	Soil Conservation for Sustainability: example of Ethiopian highlands	Gender and Soil Fertility in Africa; http://web.africa.ufl.edu/asq/v6/v6i1.htm African Millenium Villages: http://www.millenniumvillages.org/docs/PNAS.pdf Sustainable agriculture and wildlife in Africa, video on Zimbabwe elpahants: http://allafrica.com/view/group/main/main/id/00018596.html
10/16	Dale Johnson: Economic sustainability	profitability of small diversified livestock operations: read pdf on Elms Cash flow of a CSA: study xls file on Elms
10/18	Lincoln Smith: Forest gardening	USDA National Agroforestry Center: http://nac.unl.edu/profitable_farms.pdf . read sections on Alley Cropping and Forest Farming. World Agroforestry: http://worldagroforestry.org/sites/default/files/ICRAF%202011-12%20annual%20report-29th%20August.pdf
10/23 (Weil at Soils Sci. Conf.)	EXAM 2	
10/25	Report from national Soils/Agronomy Meetings	No class due to delayed flight
10/27	<u>Saturday</u> - All Day Field Trip to family-sized commercial animal farms in Frederick County	Meet in HH parking lot at 8:00 a.m. Bring a bag lunch.
10/30	Lessons learned from field trip farms	Enter your questions/comments on Picassa albums (4 for each field trip)
11/01	No class – Groff Field Day	Come if you can . See here for details : http://covercropsolutions.com/field-days/field-days.php
11/06	Cerruti Hooks, ENTM Dept.	Guide to organic pest control (from Cornell Univ., Ithaca NY):

	UMD Companion Planting for Pest Management	http://www.nysaes.cornell.edu/pp/resourceguide Farmscaping: An alternative to pesticides: http://www.attra.org/attra-pub/farmscape.html
11/08	Nutrient Mgt and Balance for Sust Ag	
11/13	Sustainable Ag and Sustainable Development: Millennium Villages Project case study	Three Seasons: video on first three years of Millennium Villages Project in Malawi
11/15	Sustainable Ag and Sustainable Development: Millennium Villages Project case study	
11/20	student presentations	Bring your appetite ☺ Sustainable v Conventional Meal
11/22	No class Thanksgiving	
11/27	student presentations	Livestock Management Sustainable Weed Management
11/29	student presentations	Educational Gardens in Developed Countries Rooftop gardening and farming
12/04	student presentations	Biofuels and Sustainable Agriculture Integrating Biodiversity Conservation with Sustainable Farming Methods
12/06	student presentations	Closed Nutrient Garden The Economics of Composting
12/11	Wrap up /catch up	Big Ideas/Open Questions Review for Final Exam
12/18	Final Exam Tuesday 4 : 00pm - 6 : 00pm	Room 1104 HJP

Dates highlighted in yellow are those when Weil will be away.

