

Agroecology Practicum

ENVS 133-02 • Summer 2014 • Mon., Tues., & Thurs. 2:00 – 5:00 pm

This is a draft syllabus and subject to change.

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Office hours: M 10:30 am-12:30 pm and by appt.

Course description:

Lectures and demonstrations are combined with field applications to give students direct experience and knowledge of sustainable agriculture and horticulture practices and principles. UCSC Farm and Garden are the living laboratories for testing agroecological principles. Emphasis is placed on small-farm systems.

Course components:

Class participation: Most class periods will include both lecture/discussion and fieldwork. Students are expected to prepare for lecture and discussion through engagement with the readings and assignments. Students are also expected to engage fully with the outdoor work of field experiments and crop management; you should dress appropriately for working in the sun on summer afternoons. Full engagement also means arriving **on time**. Each arrival more than 5 min. late (with one pass) will result in losing 1% off your total course grade of 100%. The evaluation of your participation will be based on attendance, timely arrival, and contribution to lecture/discussion and fieldwork.

A non-graded part of participation is built into our daily break. Because agroecology seeks to engage the entire food system, reaching beyond the farm gate to the table, and because I hope that through this class you broaden your network of people interested in creating a more sustainable food system, we will share food during a 10-15 min. break each day. One or two people will be responsible for providing the snack; we will sign up for spots on the first day of class. Also, some people struggle with making or eating food, for a variety of reasons. If you have concerns about this that you would like to share with me, please let me know.

Required reading: Readings are listed on the syllabus or will be assigned in class as appropriate, and are available on eCommons (<https://ecommons.ucsc.edu/>) unless handed out in class.

Coursework & reading journal: Students will submit journal entries with observations about the work or dialogue in which we engage, and the readings assigned; sometimes a prompt will be given. The journal entries will be submitted each day (3x/week) on eCommons.

Double-dug agroecology paper: When facing agricultural problems today, we stand on the shoulders of previous researchers and farmers. However, often we fail to return to these early works to see what prior knowledge has been, how it has developed, and what we may learn from it now. The goal of this paper is for students to engage with topics that are 1) timely and 2) of interest to them, either from the natural or social sciences, and to explore what double-digging into the literature may uncover. The 1500-word paper should present a problem and trace its development through the literature, including an article that's at least 30 yrs old and from a peer-reviewed publication. The paper must include a minimum of 5 references with at least 3 from peer-reviewed journals. ** Websites do not count as part of the 5 references, but may be used as supplemental material as appropriate.

Weekly assignments: Students will complete four weekly assignments related to our coursework for each of the first four weeks of the class.

Final exam: A take-home exam will be distributed on Aug. 21 and due on Aug. 28.

Coursework grading:

Class participation: 25%
Journals: 10%
Double-dug agroecology paper: 20%
Weekly assignments: 20%
Final exam: 25%

Course schedule:

Jul. 28-31

Topics: Fertility management, varietal selection

Crews, T.E., and M.B. Peoples. 2005. Can the synchrony of nitrogen supply and crop demand be improved in legume and fertilizer-based agroecosystems? A review. *Nutrient Cycling in Agroecosystems* 72 (2): 101-120.

Lammerts, E.T., S.S. Jones, L. Tamm, K.M. Murphy, J.R. Myers, C. Leifert, and M.M. Messmer. 2010. The need to breed crop varieties suitable for organic farming, using wheat, tomato and broccoli as examples: A review. *NJAS - Wageningen Journal of Life Sciences*.

Leather, S.R. 2004. Reinventing the wheel – on the dangers of taxon parochialism and shallow reference trawling. *Basic and Applied Ecology* 5 (4): 309-311.

Aug. 5,7 (no class Aug. 4)

Topics: Cultivation/tillage, marketing

Double-dug agroecology paper due on Aug. 5

CASFS. Undated. A soil primer with sustainable management strategies. For the Gardener.

Peirce, Pam. 2010. Ch. 3, What Can You Grow? *from Golden Gate Gardening: The Complete Guide to Year-round Food Gardening in the San Francisco Bay Area and Coastal California*.

Rabkin, Sarah, et al. 2012. Cultivating a movement: chapter on Steve Kaffka.

Jul. 8-11

Topics: Fertility management continued, irrigation

Kirchmann, H., and M.H. Ryan. 2004. Nutrients in organic farming – Are there advantages from the exclusive use of organic manures and untreated minerals? *Proceedings of the 4th International Crop Science Congress*:

Masumoto, D.M. 2014. The conversation: a farmer's perspective on groundwater. *Sacramento Bee*.

Miller, G.M., N. Pressler, and M. Dukes. 2003. How uniform is coverage from your irrigation system? *Golf Course Management* 71: 100-102.

Van Horn, M. 1995. Compost production and utilization: A growers' guide. CDFA Fertilizer Research and Education Program and UC Division of Agriculture and Natural Resources: Davis, CA.

Jul. 15-18

Topics: Crop planning, organic regulation

California Certified Organic Farmers. 2007. Manual two: USDA National Organic Program Standards 7 CFR Part 205. CCOF: Santa Cruz, CA.

Greene, C. 2007. An overview of organic agriculture in the United States. p. 17-28 *in Organic food: consumers' choices and farmers' opportunities* (M. Canavari and K.D. Olson, eds.). Springer.

Toogood, A. 1999. Introduction *in American Horticultural Society plant propagation: The fully illustrated plant-by-plant manual of practical techniques*.

Jul. 22-25

Topics: Insect & weed management, synthesis

Take-home final due on July 25

De Gryze, S. M. V. Albarracin, R. Catalá-Luque, R.E. Howitt, and J. Six. Modeling shows that alternative soil management can decrease greenhouse gases. *California Agriculture* 63 (2): 84-90.

Liebman, M., and E. R. Gallandt. 1997. Many little hammers: ecological approaches for management of crop–weed interactions. p. 291–343. In L. E. Jackson (ed.) *Ecology in agriculture*. Academic Press, San Diego, CA.

Tutorials for broadleaf identification, grass identification, and sedge identification at the UC IPM Weed Photo Gallery: http://www.ipm.ucdavis.edu/PMG/weeds_intro.html

Summary of key activities & locations:

July 28	Course intro & Haybarn Field	Aug. 14	Chadwick Garden, campus greenhouses
July 29	Down Garden	Aug. 18	Chadwick Garden
July 31	Planting & apprenticeship class	Aug. 19	Field
Aug. 4	Holiday	Aug. 21	PICA
Aug. 5	Chadwick Garden	Aug. 25	Chadwick Garden
Aug. 7	Field trip to Everett Family Farm	Aug. 26	Field & Down Garden
Aug. 11	Haybarn Field	Aug. 28	Final exams due, presentations
Aug.12	Down Garden		

A few last notes:

Engagement: This class is an opportunity to be deeply involved with the CASFS Farm & Gardens. We'll be learning from CASFS staff, first- and second-year apprentices, guests, and each other. We expect you to address everyone with whom we interact with respect, including by being on time and turning off cell phones. Also give your full attention when we're working with our projects; in addition to just being good science, paying attention will help prevent errors in project establishment and data collection.

Honesty in academic work: **You are absolutely expected to do your own work.** This course requires good teamwork, but you will receive no credit for work that isn't your own, and I will follow UCSC policy for plagiarism: http://www.ucsc.edu/academics/academic_integrity/undergraduate_students/