ENVS 166 Agroecosystem Analysis & Watershed Management
Summer Session 2017
Mon. & Weds. 9-12:30, ISB 221

Instructor: Dr. Katie Monsen, kmonsen@ucsc.edu
NS2 Rm. 471 ☀ Office hours – Tues 12:30-1:30 and by appointment

This is a draft syllabus and highly subject to change.

Course Description
Official: Explores a range of approaches to examine agroecosystem function, watershed management, and concepts of sustainability. Uses a combination of lecture, demonstration, field work, and field trips to illustrate approaches to analysis of managed ecosystems behavior and the integration of biophysical and socio-political knowledge to aid in watershed management.

What is a watershed? What are agroecosystems? How does addressing societal, and especially agricultural, problems with watersheds in mind change our approach to solving them? How do we analyze such problems in the first place? What challenges do our local watersheds (the San Lorenzo River, the Pajaro River, and the Elkhorn Slough watersheds) face, and how do those compare with watersheds in other places, nationally and globally? We will explore these questions and their application through class readings, discussions, field trips, and research, working to understand concepts such as hydrology, nutrients and pesticides, multifunctionality, landscape biodiversity, watershed economics, communities, and knowledge networks.

Course Components
Discussion & participation:
Many class periods will include discussion of course readings as a key mode of engaging with this material. Please prepare for class by engaging with the readings so we can explore them together. Readings will be posted on Canvas. The evaluation of your participation will be based on attendance in class and your contribution to class discussion and activities.

Research project & paper:
You will complete an in-depth study of an aspect of watershed management, including a literature review, critical assessment of the current state of knowledge, identification of future research needs, and a short research proposal that would help address research questions that arise from your work. The term papers will be 1500 words, and will include a minimum of 10 references, all of which must be from peer-reviewed literature or government/NGO documents. Information on how you will be evaluated on the paper will be handed out separately. Students will present their findings to the class informally on Aug. 30.

Written assignments & final exam:
You will have four weekly assignments to help you engage more deeply with the course material. These will be posted by Thursday afternoon and will be due the next Monday in class. Similarly, the take-home final exam will be posted on Aug. 24 and due the last day of class, Aug. 30 (a Wednesday in this case, instead of a Monday).

Coursework evaluation
Participation: 20%
Weekly assignments (total): 30%
Project & paper: 30%
Final exam: 20%

Course schedule:
July 31 ☁ Class introduction, ecosystem concepts & watersheds (geology, soils, climate & cropping systems)
Dolman, B. 2012. Watershed 2.0 (re-thinking and retrofitting for resilience). TEDx Mission City 2.0.

Aug. 2 Multifunctional landscapes & ecosystem services


Aug. 7 Hydrology & soil erosion


Aug. 9 Water quality: nutrients & pesticides in irrigated and organic agriculture


http://www.cdpr.ca.gov/docs/pressrels/dprguide/dprguide.pdf

Aug. 14 Water quality: special cases – cannabis & wine grapes


Aug. 16 Water quality: special cases – animal agriculture


Aug. 21 Beyond agriculture: other human uses in the watershed


Aug. 23  Landscape biodiversity & ecosystem services


Aug. 28  Economics & acceptance of watershed-based practices

Stuart, D., R.L. Schewe, and M. McDermott. 2014. Reducing nitrogen fertilizer application as a climate change mitigation strategy: understanding farmer decision-making and potential barriers to change in the US. Land Use Policy 36: 210-218.

Aug. 30  Social issues: communities, culture & knowledge networks; final presentations

Floress, K., L.S. Prokopy, and S.B. Allred. 2011. It's who you know: social capital, social networks, and watershed groups.

Course Expectations
Timeliness: Assignments are due at the beginning of class or section on the due date. Late assignments will receive a deduction of 10% per day (24 hrs or portion thereof). Please anticipate printer or other common problems and allow time for them.

Ethical conduct: Students are expected to adhere to the UCSC policy on academic integrity - http://www.ucsc.edu/academics/academic_integrity/ and associated links. All written assignments should be original works composed individually for this course. All academic integrity violations (e.g. plagiarism, cheating, multiple submissions, facilitating dishonesty) will be prosecuted. Be sure that you know what constitutes plagiarism - http://scwibles.ucsc.edu/Documents/Avoiding%20Plagiarism.pdf has a good explanation.

Engagement: This class is an opportunity to be deeply engaged with this concept of watersheds. I expect you to
address everyone with whom we interact (including each other) with respect, including by being on time and using laptops for course work while in class. Late arrival (more than 5 min.) will result in reduced participation scores.