

**ENVS 23**  
**The Physical & Chemical Environment**

**Lectures:** Tuesday / Thursdays 9 am – 12:30 pm, Summer Session II, 2014

**Place:** Nat. Sci. Annex 103

**Summer Faculty:** Sharifa Crandall

**Office hours:** Tuesdays 1-3 pm (and by appointment) in Nat Sci. 2 room 487

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**Course description:** Provides an overview of the physical and chemical environment of planet Earth. Fundamental chemistry and physics is introduced in the process of learning about Earth in a holistic way. The influence of human societies on the global environment is one focus of discussion. Earth's many "spheres" are explored first: the lithosphere, the atmosphere, the hydrosphere, and the ecosphere. Then global cycles of carbon, nitrogen, and several other elements are studied in the context of basic sciences and societal issues.

Understanding the chemical, geologic, and physical processes at work in our world will help you be able to engage more deeply in upper division Environmental Studies courses, as well as critically read news articles about the environment, engage meaningfully in conversations -- interpersonal to institutional -- on environmental issues, and help adapt to, diminish, or reverse human-induced changes in the environment. As the course instructor, my goal is to facilitate your learning of these concepts; the course requirements are how I evaluate your knowledge of the material.

**Course schedule (estimated):**

**July 29 & July 31**

Course introduction, Gaia hypothesis, earth's processes, the lithosphere  
Mackenzie ch. 1-3; Article: Newsome et al. 2010

**August 5 & 7**

Atmosphere, hydrosphere, and air-sea interactions  
Mackenzie ch. 4-5; Article: Xu et al. 2009  
*Last day to drop is August 3*  
*Aug 5 includes a rock hike on campus*

**August 12 & 14**

Midterm exam; ecosphere, carbon cycle, global environmental change over time  
Mackenzie ch. 6-8  
*Midterm exam is the last half of class on August 12*  
*Last day to withdraw is August 15*

**August 19 & 21**

Biogeochemical cycles; terrestrial vegetation; land changes; water pollution  
Mackenzie ch. 7-11; Article: Bonan et al. 2008  
*Class will be in the Thimann greenhouse (roof) on August 19*

**August 25 & 28**

Acid deposition, photochemical smog, factors influencing climate & climate change; final exam  
Mackenzie ch. 11-14  
*Final exam is August 28*

**Course requirements:** Students will be graded on five course components:

- a. Two online quizzes per week (20%) Nine available on ecommons
- b. In-class Assignments (19.5%) Eight small-group assignments
- c. Course Evaluations (0.5%)
- c. Midterm exam (25%)
- d. Final exam (35%)

**Quizzes:** Each week, two quizzes will be available on eCommons (see "Tests & Quizzes" under Course Tools); both quizzes will close on Sunday at 11:59 pm. You may submit the quiz up to three times; your highest score will be counted. It is entirely your responsibility to take the quiz on time.

**In-class Assignments:** Most class days you will complete and submit a short in-class assignment in a group of ~3 people. The assignments are meant to allow you to work with the current course material as we go.

**Course Evaluations:** The ENVS faculty also agreed that 0.5% of your grade goes toward you filling out a thoughtful and constructive course evaluation at the end of the quarter (easy points)!

**Midterm & Final exams:** The midterm exam will be August 12 at 11 am (during the second half of class), and will cover material through August 7. The final exam will be August 28 at 9 am, and will focus on material after August 7, although you will be expected to be able to use concepts from throughout the quarter. Make-ups for quizzes, assignments, and exams are not allowed.

**Bonus Assignment:** There will be an extra credit opportunity to take a natural history walk or visit the natural history museum on the campus (to be announced). This tour will apply concepts from class to the campus environment. Time slots will be announced in class, and participation and completion of a short assignment related to the walk will count for one in-class group assignment.

**DRC:** If you have permission for accommodations through the UCSC Disability Resource Center, please bring your paperwork to me the first week so I can do my best to help you get the services you need. If you have a disability that affects your learning but have not yet enrolled with the DRC, please see their website for information on how to be able to use their services.

**Academic integrity:** By enrolling in the university, students are automatically agreeing to abide by policies, including those on academic misconduct. Academic integrity and scholarship are core values that should guide our conduct and decisions as members of the UCSC community. Plagiarism and cheating contradict these values, and so are very serious academic offenses. Penalties can include a failing grade in an assignment or in the course, or suspension or expulsion from the university. This course follows the University's Rules of Conduct regarding student conduct and discipline. Students who submit work containing plagiarized material or information they did not collect or whose quizzes, assignments or exams are not clearly their own *will fail the course and be referred to his/her college provost for disciplinary action*. Anyone who tries to help a friend by letting him copy his work is also considered guilty of academic dishonesty according to university regulations. If you have any questions about what constitutes unfair collaboration or plagiarism, please contact the instructor. Students who violate the academic integrity policy typically fail the course. Finally, as a member of the campus community, you are expected to demonstrate integrity in all of your academic endeavors and will be evaluated on your own merits. So be proud of your academic accomplishments and help to protect and promote academic integrity at UCSC. The consequences of cheating and academic dishonesty — including a formal discipline file, possible loss of future internship, scholarship, or employment opportunities, and denial of admission to graduate school — are simply not worth it.

**Textbook:** Mackenzie, Fred T. 2011. Our changing planet: an introduction to earth system science and global climate change. 4th ed. Available at Bay Tree Bookstore.