

*In the end, we will conserve only what we love, we will love only what we understand, and we will understand only what we are taught -- Baba Dioum, 1968*

## Earth Sciences 20: Environmental Geology

### 5 units (SI)

Lectures: MWF 10:40 – 11:45am, Nat Sci Annex 101  
Instructor: Prof. Slawek Tulaczyk, EMS Bldg. A112, 459-5207, [stulaczy@ucsc.edu](mailto:stulaczy@ucsc.edu)  
Office hours: Slawek = MW 11:45am-12:45, in A112 EMS Bldg.; Steph = Th 4-6pm in C332 EMS Bldg.  
Sections: T 9-10am, Tu 10:15-11:15am, Th 6-7pm, (all sections meet in EMS D226)  
Section TA: Steph Taylor, [stetaylo@ucsc.edu](mailto:stetaylo@ucsc.edu),  
Textbook: Any edition of Carla W. Montgomery, *Environmental Geology*, McGraw Hill, and i<Clicker  
Final Exam: Monday, June, 11, 4-7pm, Nat Sci Annex 101  
Field Trip: Saturday May 19, 9am - 5pm, meet at the bus stop in front of Baskin Engineering  
*Class web site will be on Canvas.* Login using your CruzGold user ID and password  
If you are enrolled in the lab (EART 20L) sections are not required.

**COURSE DESCRIPTION AND GOALS** - The aim of this course is to increase your understanding of the interactions between humans and their planetary environment. This planet provides us with all the resources and threatens with natural hazards. Population is growing as is our appetite for space and material goods. We must manage our relationship with the planet to achieve long-term sustainability. During this course we will: learn basic earth materials and processes; understand the dynamic interactions between Earth's major systems; explore natural variability in these systems and their impact on society; investigate the impact of human activities on Nature; consider the physical, chemical, and biological parameters necessary for comfort and survival of our species; examine strategies for maintaining those parameters.

**WHAT CAN YOU EXPECT FROM ME IN THIS COURSE?** - You should expect me to care about teaching and to work sincerely on engaging you in this course. The material I cover should be relevant and interesting. I should be open to questions in class and outside of class. You should expect to be treated fairly and not be ridiculed or embarrassed. You should expect that your work will be evaluated in a timely fashion and that it is clear to you why you are getting the scores that you will get.

**WHAT I WILL EXPECT FROM YOU** - I expect that you are taking this course because you have a sincere desire to learn about its subject and that you are ready to put in the work necessary to achieve new knowledge and skills. The standard time commitment is that for each credit hour a student should spend 2-3 hours/week on the course. Hence, you should plan to spend 10-15 hours/week on this course. I expect that you will treat me fairly and that you will help make this a good course. I expect students to attend lectures. I expect that students behave respectfully and quietly during lectures. Per UCSC regulations, disturbing conduct during lectures, as well as cheating/plagiarism, provide bases for disciplinary action. I will promptly request disciplinary actions against students violating these rules. Absolutely no make-ups for exams, except in cases of documented excused absence. Travel plans are not an emergency. *No extra credit assignments*

### BREAKDOWN OF COURSE ASSESSMENT

Section quizzes (10 quizzes at 1.5% each) - 15%; I-clicker participation - 10%; I-clicker answers - 5%; Field trip participation or substitute assignment (oral presentation) - 10%; Midterm - 20%; Comprehensive Final - 40% *Note: students taking the lab instead of the section will have the lab grade count for the 15% of the final EART 20 grade (to substitute for the 15% that section quizzes are worth).*

**DETAILS REGARDING EXAMS AND OTHER ASSIGNMENTS** - Exams will be multiple choice with questions based on selected material covered in lectures, sections, and assigned readings. The final is comprehensive.

One **field trip** will be organized to bring your classroom experience closer to the real world. This will be a Saturday trip starting at 9am and lasting till about 5pm. For budgetary reasons, we will have just one bus. This means that just 50 students can go for the field trip. In order to go for the field trip, you have to sign up for it by putting your name on a list which will be circulated in class. The substitute assignment for those students who will not sign up for the trip will consist of a 10-minute oral presentation (with PowerPoint slides) on a local geologic topic. The make-up presentation can be given during sections and labs either before or after the field trip. Those students who sign up for the field trip but do not go (except for excused and documented absences as defined by university regulations) will not be able to use the substitute assignment as a make-up. Each oral presentation will be graded based on instructor's assessment of: (1) the quality of a Power Point (Keynote, PDF, etc.) presentation, which must be submitted by email to the section TA no later than one day before your scheduled presentation, (2) quality of presentation content (should be brief but informative, with clearly explained and dependable sources), (3) presentation structure (introduction explaining who you are and elucidating the 'what-why-how' = 2 minutes, main body of the presentation = 6 minutes, summary and conclusions = 2 minutes), (4) composure of the presenter (aim for calm, confident, and to the point).

You are required to bring to lectures an i>clicker remote for in-class participation. I>clicker is a classroom response device that allows you to **respond to questions posed during class**. Starting in the second week of classes you will be graded on your answers to these in-class questions. In order to receive this credit, you will need to register your i>clicker remote in class. I will project a Registration screen with 3 steps to follow (look for your last name, which will alphabetically scroll down the screen). If you follow these three steps, your i>clicker will be registered. Once your remote is registered, your last name will no longer appear on that scrolling list and you are registered for the entire semester. If for some reason, you can't follow these steps, please see me. Graded class questions will fall into two categories: (1) questions asked early in each class period will focus on the reading material and material from the previous lecture, (2) questions asked at the end of a class will focus on the material covered during this lecture.

**HONOR CODE** - For the duration of this course we will form a small community whose honor code should include the simple rule "that none of us will ever harm the interest of any other member of the community." How does that apply? For instance, cheating and plagiarism committed by one student are offenses against his/her peers who are actually doing the work themselves.

**Distribution of Lecture Notes and Materials:** Please note that students may be disciplined for selling, preparing, or distributing course lecture notes, including notes created independently by students. The unauthorized sale of lecture notes, handouts, readers or other course materials is a violation of campus policies as well as state law. Violation by distribution to the public may also constitute copyright infringement subject to legal action.

**DRC Accommodations:** If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your "Accommodation Authorization Letter" from the Disability Resource Center (DRC) to me privately during my office hours or by appointment, as soon as possible in the academic quarter, preferably within 1 week. I also am open to and want

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to encourage you to discuss with me ways I/we can ensure your full participation in this course. If you have not already done so, I encourage you to learn more about the many services offered by the DRC. You can visit their website (<http://drc.ucsc.edu/index.html>), make an appointment, and meet in-person with a DRC staff member. The phone number is 831-459-2089 or email [drc@ucsc.edu](mailto:drc@ucsc.edu).

Date	Topic	Reading
4/2	Introduction	none
4/4	The Solar System - getting stuck on a lone lifeboat	Planetary environment
4/6	History of Life 1	Floods, fossils, and heresies (Canvas)
4/9	History of Life 2	Evolution (Canvas)
4/11	Earth's building blocks - minerals and rocks	Rocks and minerals
4/13	Assembling the Earth - the puzzle that never stopped (Plate Tectonics)	Plate tectonics
4/16	Assembling the Earth - the puzzle that never stopped (Plate Tectonics)	Plate tectonics
4/18	Volcanoes and volcanic hazards - brimstone and fire	Volcanoes
4/20	Earthquakes - why the Earth breaks (including where you live)	Earthquakes
4/23	Earthquake hazards - wrecking your life in under 60 seconds	Earthquakes
4/25	Streams and flooding	Streams and flooding
4/27	Coastal zones and processes	Coastal zones and processes
4/30	MIDTERM	
5/2	Weathering and mass movements	Mass movements
5/4	Ice, glaciers, wind and deserts	Ice, glaciers, wind and deserts
5/7	Climate changes	Climate - past, present and future
5/9	Water as a resource - is there enough? 1	Water as a resource
5/11	Water as a resource - is there enough? 2	Water as a resource
5/14	Soil as a resource - breaking out of a nutritional trap	Soil as a resource
5/16	Mineral and rock resources - what isn't grown has to be mined	Mineral and rock resources
5/18	Making of fossil fuels - locking solar energy in coal, oil, and gas	Energy resources - fossil fuels
5/21	Fossil fuels - the way of the past	Energy resources - fossil fuels
5/23	Renewable energy - the future is here	Energy resources - alternative sources
5/25	Solid waste disposal - out of sight, out of mind	Waste disposal
5/28	Memorial Day	
5/30	Water pollution	Water pollution
6/1	Air pollution	Air pollution
6/4	Environmental law and policy	Environmental law and policy
6/6	Land-use planning and engineering geology	Land-use planning and engineering geology
6/8	Review Session	
6/11	Final Exam 4-7pm in Nat Sci Annex 101	

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