

April 18, 2016 Draft

Spring 2015

Professor: Sarah Hall

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Office hours: Tues 1-5 (sign up via Google calendar)

Phone: 207-801-5375

Office location: Museum 2<sup>nd</sup> floor, on left at top of stairs

Google Calendar:

<https://calendar.google.com/calendar/selfsched?sstoken=UVBVNI9SMTRfbzdPfGRIZmF1bHR8MGE1YmMzN2U4OTNkMDY0Nzk1ZDE1OTkzOTUyZjM0YzY>

## ES578 Geology and Humanity

### **Course logistics:**

Location: Museum Classroom

Meeting Times: Mondays and Thursdays 2:35-4pm

TA: Alba Mar Rodriguez Padilla, [arodriguepadilla@coa.edu](mailto:arodriguepadilla@coa.edu)

### **Course Description:**

(I) In this course we will explore how geology has played a major role in human history and culture over multiple temporal and spatial scales. We will explore the underlying geological processes forming and influencing our environment and how this relates to human migration and settlement patterns, political boundaries, geohazards, resources, the modern landscape, and agriculture. This course will appeal to students interested in exploring connections between geology and other subject areas, or who are curious about humanity's place in geologic time. This course will implement readings from a range of sources: geologic textbooks, excerpts from short historical texts, and scientific journal articles. We will use class time in a variety of ways: lecture-based, seminar-style discussion, and laboratories spent visiting local field sites. Students will be evaluated based on their performance on weekly problem sets or writing assignments, as well as a term project with both oral and written presentation components. Level: Introductory.

Prerequisites: none. Class limit: 16. Lab fee: \$15. \*ES\*

### **Required Materials:**

Freese "Coal: A Human History" (on reserve)

Marshak, 4<sup>th</sup> edition, "Earth: Portrait of a Planet" (on reserve)

### **Recommended (optional) Materials:**

Ruddiman, W., "Earth Transformed"

Montgomery, D. "Dirt: The erosion of civilization"

Martin, R. "Coal Wars"

### **Learning Goals:**

- 1) Be able to describe important Earth systems and how they interact
- 2) Be able to read and use topographic and geologic maps as well as identify landforms using remote data (e.g. aerial images).
- 3) Be able to discuss how past geologic environments and events influence today's surface morphology, resource distribution, geohazards potential, settlement/trade networks, and climate.
- 4) Be able to critically evaluate societal issues that involve a connection to Earth Science and Geologic Time.

**Expectations:**

- I expect that you will show up on time and prepared for every class.
- You will inform me if you have to miss class for any reason and take the responsibility to get notes on the class material from a classmate, find out about any important logistical announcements or information said in class, and arrange a time to meet with me to go over anything you do not understand.
- I expect that you will spend ~12 hours/week outside of class time working on class-related work/reading for a total of 120+ hours/term *in addition* to the 30 hours spent in scheduled class.
- I expect that you will hand your work in complete, on time, and stapled/clipped together (see policy on late work below).
- Plan your term work schedule ahead of time. If you know of a conflict in advance, please come talk to me about it early.
- If you are having trouble with this course or other courses, feel free to come talk to me at any time for extra help. It is your job to ask for help. Your education is your own responsibility – I'm here to facilitate that experience.

**Skills I expect you already have or know how to find out how to do them on your own:**

I will not cover these skills in class, however you can always ask me for help (or other resources) outside of class time.

- Using the library and online databases
- Accessing the portal
- Checking your email ~daily
- Scanning Documents
- Making a document in to a PDF
- Reducing the file size of a PDF so that it can be emailed easily
- Embedding a photo in a text document
- Using text editing tools in Adobe Reader, Word/Pages

**Policy on deadlines and work to be turned in – READ THIS!**

Making deadlines is important. I understand things come up and we can't always make everything on time. **If you think you are not going to make a deadline, come talk to me!** However, there must be some consequences for tardy work – thus, the policy is, for every day the assignment is late, you lose 20% from the overall assignment grade. This is better than a zero! I will not accept an assignment after it is 5 days late. **YOU CAN ALWAYS SUBMIT LATE WORK TO ME BY EMAIL OR BY HAND IN MY OFFICE (do not leave your work under the door or in my mailbox)** – there is no excuse for not being able to submit work.

Assignments you hand in (problem sets, project, responses) **should be neatly prepared, proofread, and spell-checked!** If I cannot read or comprehend your work, I will not grade it and you will receive a zero for the assignment. Please respond to questions with complete well-written sentences. Yes, grammar and clarity count for your grade! It isn't just about getting the right number; it is also about being able to communicate! Most of what you turn in will be in hard-copy form, but occasionally I may ask you to email me an assignment. In this case I expect 1 email with 1 document that has everything in it (pdf format) and **has your name and assignment name in the file title.** This may require you to go to the library and scan the document to be emailed!

**Policy on Academic Integrity:**

*The short version:*

Cheating, plagiarizing, falsely portraying others' ideas – these things are very bad and not tolerated at COA. Misconduct will result in disciplinary action.

*The longer version:*

Please show respect for others, including your fellow classmates, colleagues, and other Academics/Educators. This means being honest in completing your own work on homework, tests, projects – everything. It is very important that your work be truly your own work. Mostly because it is important that YOU learn! But also, it is universally considered misconduct to take others' ideas/words/creations as your own. In the event of academic misconduct, the incident will be reported to the Academic Dean with potential consequences ranging from failure of an assignment to dismissal from COA.

We will often work in teams. I encourage you to discuss ideas with your classmates. But when you turn in work or present an idea, it must be in your words. Please always give credit where credit is due (if it isn't your idea – say whose idea it is!) This is both to protect you and to protect the original author. **If you aren't sure, please ask me and also consult the Academic Handbook and other resources listed below.**

Some additional resources for understanding plagiarism (it's not easy, check it out):

- 1) COA Library: <http://coa.beta.libguides.com/c.php?g=320898&p=2147270>.
- 2) Examples of what IS and what ISN'T plagiarism from Charleston Southern University: <http://www.csuniv.edu/library/Plagiarism/common.htm>
- 3) Harvard's website about plagiarism, especially check out the bit about "mosaic plagiarism": [http://usingsources.fas.harvard.edu/icb/icb.do?keyword=k70847&pageid=icb.page342054#a\\_icb\\_pagecontent732741\\_mosaic](http://usingsources.fas.harvard.edu/icb/icb.do?keyword=k70847&pageid=icb.page342054#a_icb_pagecontent732741_mosaic)

**Come talk to me:**

If you have or experience during the term any specific learning needs, anxiety, death in the family, illness, or anything that prevents you from attending class and completing work, please come talk to me. I do not need to know all of the details, but this is the only way I will be informed of an issue and the only way I might be able to accommodate you in some way. I'm usually in my office, but best if you email first to set up an appointment time.

**Estimated/Suggested Weekly Workload:** ~15 hours/week = 150 hours/term

- 3 hours of class per week
- ~8 hours of work on responses/problem sets/term project
- ~4 hours of reading

This one-credit course delivers a minimum of 150 academically engaged hours. Students will be actively engaged learners beyond their attendance in regularly scheduled classes and required field trips. This commitment includes attendance at individual meetings with the instructor, completion of reading assignments and problem sets, as well as the culmination of the course through a term-long team project for a minimum total of 150 hours dedicated to the course learning experience.

**How you will be graded in this course:**

**Glossary/Ideas Notes: 5%**

A list of words you hear during class or while reading that you don't know the definitions to. Each week, take time to look them up and write them down! Keep the list with you in class.

**Responses (4): 40%**

Written, often in response to a reading in order to prepare for a discussion

**Problem Sets (2): 30%**

Short and long answer, basic calculations, hands-on activities (e.g. Rock ID!)

**Project: (Draft 5%; Final 20%)**

How has Geology shaped your hometown/region? Think about the settlement, history, trade, land-use in your community. This will require some research! How has geology influenced its development? You will work on this project alone, but may consult your classmates and myself (and other faculty) for feedback and assistance. You will work on this project during the entire term. Your project will culminate in a small book or report (loose format) that you will present to your classmates during class on Monday May 30. You will receive feedback from your classmates and myself, which you will incorporate into your final project that is due by email *Monday June 6 (Week 11) by 11:59pm*. You should plan to include a location map, a geologic map and/or possibly a cross-section as appropriate, information on the geologic history, the cultural history, hazards/resources/environmental issues as appropriate.

**Final note to students:**

**The suggested workload is serious. You truly are expected to spend ~10 hours outside of class time, per week, working on readings, assignments, or other class-related work. This is not only to meet national standards, but also to ensure that you are getting the most out of your college experience! Take advantage of this opportunity to immerse yourself in learning! Find something to be passionate about in your classes. Look for connections between your life experiences, community, and classes. Work with your peers – study together, talk about your classes, teach each other. They are one of your most valuable resources here at COA.**

**Weekly Schedule:**

The schedule will be somewhat dynamic depending on time, understanding, etc. – the schedule is likely going to change a bit!

**Week 1: Maps and Scale**

**Reading:**

Freese p. 1-101 (first 4 chapters; for Response 1)

Keller, "Environmental Geology" part of ch. 1 (pdf; for Response 1)

**Class Topic:**

Mon Mar 28 – Introduction: Humans and Geology (population, hazards, resources, etc.)

Thur Mar 31 – Maps and scale (no reading about this – just class – take notes!)

## Week 2: Geologic Time/Stratigraphy

### Reading:

Marshak: p. 400-415 and 443-450 for Thur.

### Class Topic:

Mon Apr 4 – Freese/Keller discussion; practice with maps

**Response 1 due in class on Monday**

Thur Apr 7 – Stratigraphy and Geologic Time - **Start PS1**

## Week 3: Plate Tectonics

### Reading:

Freese p. 103- 161 (Ch. 5-6; for Response 2)

Marshak: p. 55-60, 78-88 (look through all figures of Ch. 4) for class on Monday

Marshak: Ch. 14: p 466-472 (14.1-14.3), and 482-487 (14.6) before class on Thursday

### Class Topic:

Mon Apr 11 - Stratigraphy

Thur Apr 14 – Plate Tectonics/Paleogeography/Coal Formation

## Week 4: Rocks and Minerals

### Reading:

Bryson, Ch. 15 “Dangerous Beauty” (pdf) for Monday

Bjornerud, Ch. 1 “Reading the Rocks” (pdf) for Thursday

Marshak: Interlude A “Rock Groups”, Interlude C “The Rock Cycle” for Thursday

### Class Topic:

Mon Apr 18 – Coal/Resources Discussion; Supervolcanoes (brief intro)

**Response 2 due in class on Monday**

**Tuesday April 19 - HEF TALK: *Life at the Edge: Super Volcanic Eruptions Cause Earth Crises*, Dr. Mike Coffin, University of Tasmania**

Thu Apr 21 - Rock and Mineral ID – **class until 5:30**

## Week 5: Rocks as Resources: *Field trip this week!*

### Reading:

Freese p. 163-231 (Ch. 7-8; for Response 3)

Marshak: Ch. 6, p 140-165 (for Monday)

Marshak: Ch. 15, p. 503-522 (for Thursday and next Monday)

### Class Topic:

**Mon Apr 25 – Field Trip: Granite Industry of MDI – class until 5:30**

**Wed Apr 26 – Optional Help Session 6-8pm**

Thur Apr 28 - Ore, extraction, Callahan Mine, Katahdin Iron Works, Scientific Paper Reading

**PS1 Due in class on Thursday (Stratigraphy, PT, R&M)**

## Week 6: Mining and Energy

### Reading:

Freese, p. 233-248

TBA, maybe Ayuso et al., 2013 (for Monday)

Marshak: Ch. 14, p 487-497 (for Thursday)

### Class Topic:

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Mon May 2 – Discussion Freese and TBA; contaminants, remediation, environment

**Response 3 due in class on Monday**

Wed evening video/Duane Talk?

Thur May 5 – Energy Sources (beyond fossil fuels; Nuclear, Alternatives); global distribution/economics/environment

## Week 7: Hazards 1 – *Field Trip!*

### Reading:

Bryson, Ch. 14 “The Fire Below”

Video: Mt. Pinatubo (Alba?)

TBA (stories)

### Class Topic:

Mon May 9, late class – Volcanoes AND Geothermal Energy and Plate Tectonics; speaker 4-5:30:

Bill Glassely on geothermal energy

Wed evening: Video: Deadliest Earthquakes

Thur May 12 – Earthquakes and Tsunamis

OPTIONAL Saturday Field Trip: KIW, Eskers, Coastal Maine (8am-6pm)?

## Week 8: Remote Data and Landforms

### Reading:

Unit 1 Getsi (before Monday!)

Montgomery OR Ruddiman (TBA) – erosion, agriculture, land-use

### Class Topic:

Mon May 16 – Unit 2, late class?

Thur May 19 – Unit 3

## Week 9 – Mass-Wasting and Wasting Mass (?)

### Reading:

Montgomery OR Ruddiman (TBA) – erosion, agriculture, land-use

### Class Topic:

Mon May 23 – Unit 4, late class?

**PS2a due in class**

Thur May 26 – Discussion of readings, land-use/environment

**Response 4 due in class**

## Week 10 – The End

### Reading:

NONE

### Class Topic:

Monday, May 30: **“Book” peer-review (bring printed version to class!)**

Thurs, June 2 - Evaluations, course debrief

**PS2b – Unit 5 Getsi - due in class**

## Week 11

Monday June 6: **Final version of “Book” due by 11:59p.m., send via email.**

