

Geology 2400: Introduction to Earth Science

Instructor: Garry Hayes, Naraghi Hall of Science 156

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Required Text: Earth Science, Tarbuck and Lutgens

Welcome to the earth sciences at California State University, Stanislaus! In this class we will begin to understand the Earth, its place in the solar system and universe, and its surface, interior, hydrosphere, and atmosphere. Relationships among these earth systems, major earth processes, natural resources, and natural disasters are examined. When this course is over, you will have a new perspective every time you go outdoors. Our world is a rich and mysterious place, and the science of physical geology is the place to discover it.

Tentative Grading Policy: (Subject to change due to extenuating circumstances)

Approximately 500 points will be possible, with the following grading scale:

A: 500-450 B: 449-400 C: 399-350 D: 349-300



Best 10 of 12 Quizzes	200 points
Poster Session / Teaching Module	100 points
Field Trip Exercise	100 Points
Comprehensive Final	100 points

Tests: The Quizzes and Final will each consist of multiple-choice questions. **Quizzes and midterms cannot be made up** unless the instructor is notified in advance of an absence. Make-up quizzes will be essay questions.

Extra Credit: An extra two points per chapter (up to 30 points) can be earned by completing the review questions at the end of each chapter, to be submitted at the time the quiz for that chapter is given. No late extra credit papers will be accepted.

Attendance: Needless to say, but I'll say it anyway: A class lasting 3 hours a day is going to cover a great many subjects. With only sixteen meetings, missing a class is a major problem. **You need to attend ALL classes.** If you somehow miss a class, it is **your responsibility** to get notes and announcements from someone in the class and to be ready for the quiz the next class. **Always read the relevant chapters in the text before coming to class.** I will assume that you are familiar with the material.

TENTATIVE SCHEDULE

Class meets on Wednesdays from 7:20 to 10:00pm

Week	Subject	Reading Assignment: READ BEFORE CLASS!
1: Feb 1	Intro to Earth Science and the Scientific Method	Chapter 1
2: Feb 8	Earth's Place in the Universe	Unit 7: Chapter 21-24
3: Feb 15	Earth's Place in the Universe	Unit 7: Chapter 21-24
4: Feb 22	Earth's Dynamic Atmosphere	Unit 6: Chapters 16 and 18
5: March 1	Earth's Dynamic Atmosphere (POSTER TOPICS CHOSEN)	Unit 6: Chapters 17 and 19
6: March 8	The Global Ocean	Unit 5: Chapters 13-15
7: March 15	Earth Materials	Unit 1: Chapters 2
8: March 22	Spring break (no class)	
9: March 29	Earth Materials	Unit 1: Chapters 2-3
10: April 5	Earth Materials	Unit 1: Chapters 3
11: April 12	Volcanoes	Unit 3: Chapter 9
12: April 19	Earthquakes	Unit 3: Chapters 8-9
13: April 26	Plate Tectonics and Mountain Building	Unit 3: Chapters 7 and 10
14: May 3	Sculpturing Earth's Surface	Unit 2: Chapter 4-6
15: May 10	Sculpturing Earth's Surface / Poster Session	Unit 2: Chapter 4-6
16: May 17	Sculpturing Earth's Surface, Review	Unit 2: Chapter 4-6
May 24	7:20 PM: Final Examination	

Final Examination:

The final examination is scheduled for Wednesday, May 24 at 7:20 PM. It will consist of 100 multiple-choice questions. No notes will be allowed

Field Trip:

There is a required one-day field trip tentatively scheduled for **Saturday, May 6 to the Sierra Nevada and Yosemite Valley**. If this date is a problem for anyone, please inform me as soon as possible. If you cannot attend, have a valid, documented excuse, and you notify me in advance, an alternate project may be completed as agreed upon by the student and instructor. The students attending the trip will be expected to prepare a report in which each of the field trip stops is described and some specific questions are answered. Details of the trip will be provided in class.



Poster Session/Teaching Module:

One of the final sessions of the class will consist of a poster session or presentation of teaching modules designed by you. Guidelines will be provided, including a list of possible topics. The teaching module is expected of liberal studies majors intending to enter the teaching field; topics will be selected by the fifth class meeting

“After sleeping through a hundred million centuries we have finally opened our eyes on a sumptuous planet, sparkling with color, bountiful with life. Within decades we must close our eyes again. Isn’t it a noble, an enlightened way of spending our brief time in the sun, to work at understanding the universe and how we have come to wake up in it? This is how I answer when I am asked—as I am surprisingly often—why I bother to get up in the mornings.”

Richard Dawkins

Poster Session Guidelines

Objectives:

1. Present material using a poster format to the rest of the class (material and format are described below).
2. Work both independently and cooperatively with group members (2-3 people) during each phase of the project.

Background: One form of information exchange between scientists is the poster session. It is designed to be a quick, efficient means for learning about the latest research. A written description of the idea or research to be presented (called an **Abstract**) is submitted to the scientific meeting review committee. If accepted, the poster is presented during the convention with other posters usually in a large conference room where the scientists convene and view the posters, discussing / critiquing the ideas with the presenters.

Expectations (see rubric attachment)

1. Poster Ideas

A) Define a problem or mystery based on recent research (journal articles) in the earth sciences that needs to be investigated, and *design an experiment that will make this possible*. You won't necessarily actually *do* the experiment; you will instead describe what *could* be done with the appropriate resources. **The execution and conclusion of your experiment should either confirm or disprove a hypothesis.**

B) If you are a liberal studies major, intending to teach, a poster session could present a teaching idea on one of the topics selected. If you can actually do the exercise with students, pictures and results would enhance the poster.

2. Poster Format:

A) Should have both **textual** and **diagrammatic** information (typed/word-processed text; neatly drawn graphics; etc.).

B) Should have a list of [references cited](#) in MLA format (back or front of poster).

C) Should be professional (neat, clear, legible, high quality).

D) Should include an **abstract**. An abstract is a concise summary of conclusions reached in your project. ***It is the most important part of the poster***, as most people only read the abstract. It should be less than 150 words, and should be prominently displayed at the top of the poster.

3. Presentations

A) One group member remains with the poster to explain, defend, clarify ideas at all times during the presentation.

B) Other members evaluate the other posters, completing an evaluation for each group. The feedback you provide is important.

4. Groups

A) 2 or 3 students per group

B) Divide responsibilities evenly between group members

C) Group grade will be determined from:

i) Peer review = 20% (from class evaluations)

ii) Instructor review = 80%

Deadline: The poster session is due to be presented in class on the date announced in the syllabus. **Late efforts will not be accepted.** If your group is not doing their part, let me know.

Support:

1. Research

A) In the library there are many books and journals on various aspects of earth science, check the online catalog or ask a reference librarian for assistance.

B) Within the community there are several consulting firms and governmental agencies that do geological consulting - call them up and ask them questions.

C) I will be available for help and consultation.

D) Don't forget the internet, but ***be sure to confirm*** the accuracy of your web findings. You can start with news articles, but find the original research. Many journals and especially government entities (U.S. Geological Survey, for instance) publish their research online.

2. Materials

A) The geology department may have some materials and I may be able to provide limited supplies - see me if you need support in this area.

Remember -- the main goal is to design an experiment that will result in new knowledge and to share your findings with others in the class. Pick something **interesting** and **fun** - and have fun being **creative** with this project!!

Some examples you *might* choose. ***Please propose ideas of your own!***

A) How will fracking affect groundwater in a given area?

B) How will rising sea level affect coastal cities (pick a specific city, like L.A.)?

C) 1915 Eruption of Mt. Lassen (or some other volcano); how can we predict future eruptions?

D) Great San Francisco Earthquake of 1906 (or some other significant seismic region; how can we predict the next big one?

E) What would be the ecological and sociological effects of draining Hetch Hetchy Reservoir?

F) How will global warming affect California's water resources?

G) How will global warming affect plant and animal life in the Sierra Nevada? How will increasingly intense wildfires alter the ecosystem?

H) How will the Fukushima nuclear disaster affect fisheries and ecosystems in the Pacific Ocean? How would we know?

Poster Project Evaluation

Group Members: _____ **Your Name:** _____

Project Title: _____

Use this form to evaluate each presentation. Fill out a separate form for each group. Use this form as a checklist as you prepare your presentations. I will use these evaluations to: 1) help determine each group's grade; and 2) to assess your evaluation skills (how well do you summarize and criticize the work of others).

The numbers in brackets indicate the weight given to each item. The evaluation scale ranges from 0 to 10, where 0 is "wholly inadequate or missing" and 5 or 10 is "excellent" (some items are worth 10 and the others are worth 5).

1. Content and Communication Subtotal

(5) 0 1 2 3 4 5 Abstract: Includes reasons, methods, and summary? Is it 150 words or less? _____

(10) 0 2 4 6 8 10 **College appropriate:** Does the poster go beyond description, and is the research plan feasible? _____

(5) 0 1 2 3 4 5 **Overall professionalism:** Is the nature and process of the experiment clearly evident? _____

(10) 0 2 4 6 8 10 Are relevant diagrams and photos included that are explained with captions? _____

(5) 0 1 2 3 4 5 Are the references cited in the correct format? _____

2. Presentation

(10) 0 2 4 6 8 10 Is the group able to talk about the material and answer questions appropriately? Do they understand their own poster? _____

(5) 0 1 2 3 4 5 Is the poster organized, clear, and easy to learn from? Are new words are defined for reader? _____

Note: To calculate the total, add all of the subtotal points together, and write the total in the space below. (The total should not add up to more than 50 points.)

_____ **Total** = _____

3. Comments -- Please give: 1) at least one reason **why** their poster presentation went well; and 2) suggest at least one area for improvement.