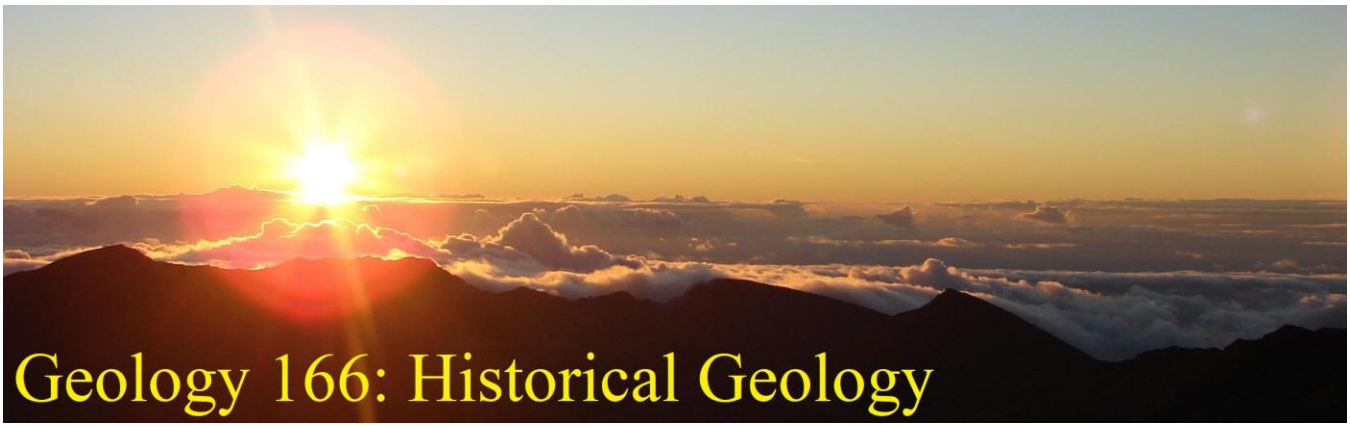
Geology 166: Historical Geology



"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

Instructor:	Garry Hayes	Term:	Spring 2021
Office:	SCC 336 (not accessible spring 2021)	Class Meeting Days:	Tuesday/Thursday
ConverZoom:	https://cccconfer.zoom.us/j/94906039062	Class Meeting Hours:	6:30-9:30 PM
E-Mail:	Hayesg@yosemite.edu	Class Location:	Online
Website:	Geotripper.blogspot.com		
Office Hours:	TTh 8:15-8:45; 11:45-12:45, 5:30--6:30		

Course Information

Course Overview

Welcome to the geological sciences! Historical geology deals with the history of planet Earth and the development and evolution of life throughout geologic time. During the semester, we will deal with the origin of the planet and Solar System, the origin of life, the myriads of life-forms that have inhabited the planet, mass extinctions, movement and collisions of continents, and the origins of many of the features we see on earth today.

Course Prerequisites/Requirements

There are no prerequisites, but because this course is being taught online, you will need secure internet access and a computer/laptop (smartphones will not work for longer written assignments).

Required Texts and Materials

The Earth Through Time, Harold Levin (11th edition)

Course Learning Outcomes

What will you know when you finish this course? What new skills will you have? The following items are the Student Learning Outcomes (SLO's) for Historical Geology. Upon successful completion of the course, you will be able to:

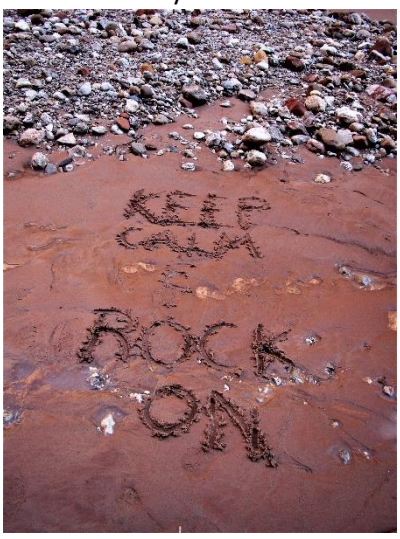
A. Analyze the elements of the scientific method and explain how these principles apply to the study of the earth. All sciences share a common methodology of attaining knowledge that seeks to eliminate bias and prejudice in research. You will know the difference between a hypothesis and a theory.

B. Use the basic geologic principles of uniformitarianism, original horizontality, lateral continuity, superposition, cross-cutting relationships, and biologic succession, and the examples of present-day geologic processes to explain the formation and evolution of the features of the earth. Many people are surprised that a geologist can look at a few rocks in a roadcut or mountainside and then immediately tell a complete story of how those rocks came about. In this class, you will learn the set of principles that geologists use to tell the story of the rocks. You will have the ability to interpret the story in the rocks yourself, either in pictures or diagrams.

C. Assess and evaluate competing hypotheses regarding the concept of geologic time, the origin of the earth and solar system, patterns of evolution and paleobiology, and the development and movement of continents through time. Geologists are still arguing about geological processes. This is how science is meant to work, so we will be learning how controversies and arguments are settled in geologic research.

D. Identify the most common minerals and igneous, sedimentary and metamorphic rocks. You will know fully 95% of all the minerals and rocks anyone will ever ask you about! We will especially observe sedimentary rocks and the structures they have that reveal the past history of the earth and its environment.

E. Identify and interpret the evolution of life through time through the observation and analysis of fossils. The record of life is replete with strange creatures of great diversity. We will learn of the extensive fossil record that exists in the rocks.



F. Interpret geologic features and landforms from geologic and paleogeographic maps. Historical geologists reconstruct past worlds through the use of these maps; we will do the same, figuring out the locations of ancient mountain ranges, valleys and oceans, where none exist today

G. Explain the necessary role of the historical geologist in the modern technological society in areas such as urban planning, the search for new energy resources, and environmental research. Are politicians correct when they say global warming is not real, or that what we are now experiencing is a natural, repeating process? What are the long-term effects of human activity on the biosphere? Are we causing a mass extinction event like those of the geologic past? Geologists have a lot to say about these issues, and you will understand how scientists approach these problems.

Course Assignments and Grading

Week	Canvas Module	Reading
1	The Science of Historical Geology	Chap. 1
2	Basic Principles	Chap. 2
3	Time and Geology	Chap. 3
4	Rocks and Minerals	Chap. 4
5	The Sedimentary Archives	Chap. 5
6	The Fossil Record	Chap. 6
7	Earth Structure and Plate Tectonics	Chap. 7
8	The Archean	Chap. 8.
9	The Proterozoic Eon	Chap. 9
10	The Paleozoic Era	Chap. 10-11
11	Life of the Paleozoic	Chap. 12
12	Mesozoic events	Chap. 13
13	The Mesozoic Era	Chap. 14
14	Cenozoic events	Chap. 15
15	Life of the Cenozoic	Chap. 16
16	Final Examination	Comprehensive

Grading Policy: (subject to change due to extenuating circumstances)

Task	Points Possible	Percentage of Grade
Quizzes		25%
Laboratory		40%
Online Projects		10%
Final Exam		25%
Total	TBD	100%

Grading Scale (%)	
90-100	A
80 - 89	B
70 - 79	C
60 - 69	D
0 - 59	F

What are Modules?

We use Canvas modules in Geology 166. There will be two each week, except for the first week of class, when there are three. It is a good idea to get started on them early in the week, before our class session on Tuesday. In general, the weekly quiz is due by Sunday night.

Module Progression

There are certain elements you can accomplish ahead of schedule but be aware that changes will probably take place as we modify exercises in response to circumstances. Some modules will be locked until the week before they take place.

Course Participation

Participation is essential to your success in this online environment. Participation includes:

- Posting to discussion boards
- Attending and participating in regularly scheduled ConferZoom sessions
- Submitting assignments and projects
- Taking quizzes and exams

How much time is required?

Be prepared for about 13 hours of work, including class and lab time, per week in this course. A 4-unit lecture course, by virtue of what is known as the Carnegie Unit (Links to an external site.), mathematically establishes a standard amount of work expected from a student (and the instructor) in a 16-week course. This is a state of California regulation.

How to contact your peers

- You can always reach out to your peers through the Q&A Discussion Cafe and the Student Lounge.
- There will be a variety of discussions throughout our course (written and video).
- You can message your peers by using the Canvas Inbox feature.

How I'll contact you

Like you, I'm juggling many responsibilities every day, so I may have limited availability during traditional business/college hours, but I want to help you succeed in this course. Here is my plan for maintaining **Regular Effective Contact** with you throughout the term:

- I will usually post at least one **announcement** per week with reminders and other notifications about what is happening in the course and/or on campus.
- I will provide you with **feedback on your assignments**. My goal is to do this within one week, but sometimes it takes a little longer.
- I may occasionally **participate in discussion board assignments** with you.
- I may **message you** if I see that you are falling behind. Please try to let me know if you run into difficulties that prevent you from submitting in a timely fashion.
- I may reach out to you in other ways as well, including **phone messages** and **email**.

Drop Policy

If you stop participating (missing 3 consecutive modules), you may not be able to finish the course. If you are ill or have a family emergency that prevents you from participating for more than a week, CONTACT ME. I am ALWAYS willing to work with you towards success in this course. After evaluating your specific circumstances and you feel you may not have the time to invest in this course, it will be **your responsibility** to drop/withdraw.

Due Dates and Late Work

Use the Canvas calendar and To Do list to keep track of upcoming assignments in all of your courses.
Late assignments will be accepted for up to 60% of the total score, and only for one week past the due date. If you have circumstances that keep you from submitting an assignment, it's best to begin by sending me an email and letting me know. We can work together to help figure something out for you.

Overall, it's important to submit work on time. You'll want to be on the same page as your peers during group work and discussions.

Academic Honesty

At MJC, we expect academic honesty and integrity in all of the work you submit. This means completing your own, original work for every assignment.

Course policy:

Any assignment where academic dishonesty is involved will automatically receive an F (zero points), which may result in the student failing the course. A report may be filed. For further information, please see the MJC catalog for Student Code of Conduct.

In this course, **plagiarism** detection software such as Turnitin may be used on assignments you submit. Plagiarism includes copying writing or even ideas from the published or unpublished work of another person without full, clear acknowledgment of the source. If you paraphrase or summarize what someone else has said, you must acknowledge that source even when you put those ideas into your own words. You are plagiarizing if you cut and paste bits and pieces of writing from the internet or any other source and make it appear as if you wrote those words (i.e. if you don't use quotation marks and cite the source). **Plagiarism also includes copying from yourself--that is, turning in material that you wrote for another class.**