Goals for the course: My primary goal is to further the development of your critical thinking skills in paleobiology, and how this can lead to a better appreciation for the world we live in today. What is the history and evolution of life as revealed by the fossil record through “deep time,” and how is it relevant to today?

Course values: I want to begin by acknowledging that winter 2021 is not normal. The fact that you are here is meaningful and a testament to your dedication. If unexpected circumstances come up, I will do my best for you and will try to respond with patience and creativity to the circumstances that arise. I understand many of you are working in difficult conditions and perhaps juggling paid work, education, and the care of loved ones. I want to help you succeed but can’t unless you speak with me; please contact me with any questions or issues that may come up.

Class format: The class is organized around a standard lecture format. I strongly encourage you to interrupt me to ask questions in class, even though the class is pretty large. Attendance will not be taken and is not required. However, watching the lecture videos will be necessary to pass the course.

Grade Breakdown:
- Activity 1 (15%)
- Activity 2 (15%)
- 3 Writing assignments (10% each; 30% total)
- Final exam (40%)

Activities and Writing Assignments:

Activities: will be assigned through CANVAS at the end of the first two modules (see schedule below). These activities are still in development, but they will review the concepts presented in each of the first two modules (see Lecture Schedule below). The activities will go online the Friday after the last lecture, and then will be due the following Tuesday; this means you will have four days to complete the activity. Working in groups is encouraged. However, the materials will closely relate to what is on the final exam, so make sure you know what you’re doing!

Writing Assignments: At the beginning of each module, I will provide you with ~3 pieces of popular scholarship. These are different forms of media done by trustworthy scientists and science writers but present their ideas in a more general format. You will be required to pick one and write a short (1 page max) response. Start off by describing one claim that the media makes. You will not be able to summarize the entirety of the piece, rather I want you to zero in on one aspect of the piece. Secondly, I want you to put this media in context. How does it fit in with the ideas from the lecture? Is it reinforcing ideas from lecture or is it presenting a new point of view? Does it make you consider what you’ve read or learned in this class or other classes?

All written assignments are expected to be in 12-point Times New Roman font, double-spaced, and with standard 1-inch margins. Please cite any readings using MLA format; you can learn about MLA formatting on this site.
Using something that you wrote for another class, that your friend wrote, that you found online, or that you read elsewhere but didn’t properly credit, are all plagiarism. Don’t do it. It will result in you receiving a 0 for the assignment. If you are unclear about whether something is plagiarism, you are welcome to email me or schedule a Zoom meeting. For further info please see: https://ossja.ucdavis.edu/preventing-plagiarism

**Final exam:** Will be multiple choice, cumulative, and asynchronous.

**Due dates and late work:** Assignments are to be submitted to canvas by 11:59pm (PST) the due date listed on the syllabus. Work is due by the posted due dates. Late assignments are automatically reduced 10% each day they are late. If you are having problems finishing items on time, contact me and we’ll discuss the situation.

**Contesting a grade:** Discussions of grades or grade changes on assignments and exams will only occur during office hours / scheduled appointments. Discussion may begin after a 24-hour ‘cooling off period’ and within two-weeks of the assignment, project or exam’s return.

Justification for a final grade of incomplete (“I”) requires a serious and compelling reason, as well as written verification from an appropriate source.

**GEL 107L:** GEL 107L is a separate 2-unit laboratory course that can be taken concurrently with GEL 107. The lab is required only for Geology majors, but taking it, no matter what your major, will very likely improve your understanding of the course material in GEL 107 and enrich your knowledge of the fossil record. GEL 107L and GEL 107 will cover similar topics but not at the same time.

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**LECTURE SCHEDULE (SUBJECT TO CHANGE)**

**Module 1: Paleontological Data and its Interpretation**

**Week 1:** The strengths and limitations of science  
Monday (1/4/21): Introduction  
Wednesday (1/6/21): What is science  
Friday (1/8/21): How to interpret popular science

**Week 2:** How fossils are produced  
Monday (1/11/21): The organism (biomineralization)  
Wednesday (1/13/21): The environment (biostratigraphy)  
Friday (1/15/21): The Earth (diagenesis)

**Week 3:** Making sense of fossils  
Monday (1/18/21): Species  
Wednesday (1/20/21): Growth (ontogeny)  
Friday (1/22/21): Classification (phylogeny)

**Module 2: Using fossil data to reconstruct the past**

**Week 4:** Reconstructing time and space  
Monday (1/25/21): Biostratigraphy  
**Tuesday (1/26/21) Activity 1 & Writing assignment 1 Due**  
Wednesday (1/27/21): Biogeography  
Friday (1/29/21): Continental drift

**Week 5:** Reconstructing prehistoric life  
Monday (2/1/21): Adaptation and common ancestry  
Wednesday (2/3/21): Functional morphology I  
Friday (2/5/21): Functional morphology II
Week 6: Reconstructing prehistoric ecosystems
Monday (2/8/21): Paleoecology
Wednesday (2/10/21): Predation
Friday (2/12/21): Competition and cooperation

Module 3: Testing for major trends and patterns

Week 7: Rates and laws of evolution
Monday (2/15/21): Rates of evolution according to the fossil record
Tuesday (2/16/21) Activity 2 & Writing assignment 2 Due
Wednesday (2/17/21): Laws of evolution according to the fossil record
Friday (2/19/21): Combining molecular and fossil data

Week 8: Complexity and contingency
Monday (2/22/21): Does life get more complex over time?
Wednesday (2/24/21): Replaying the tape of life
Friday (2/26/21): Life on other planets

Week 9: Extinction and Climate Change
Monday (3/1/21): Estimating extinction rates
Wednesday (3/3/21): Mass extinctions
Friday (3/5/21): The connection between extinctions and climate

Week 10: Conclusion
Monday (3/8/21): Summary
Tuesday (3/9/21) Writing assignment 3 Due
Wednesday (3/10/21): The future of paleobiology
Friday (3/12/21): Final exam review

Wednesday (3/18/20): Final Exam