

Geological Sciences 126
The History of Life on Earth: A View from the Museum

Note on remote learning: If you are in a faraway time zone from California, the lectures will be recorded so you can view them to best fit your schedule, and accommodations will be made for face-to-face time with the professor and TAs.

Lab assignments will be largely asynchronous, with the scheduled lab sessions open to you for help, for maximum flexibility during these unusual times. There are a multitude of lab times, including in the evening, California time, that should accommodate all time zones around the world.

Exams will accommodate alternate time zones, as well.

Wellness days have been added to the lecture schedule. Labs will accommodate wellness days.

Professor:

Frank A. Corsetti, 211 Zumberge Hall, fcorsett@usc.edu (note dropped "i")

Office hours: Mondays 1-3, by appointment, or e-mail me at any time. I will be available in the evenings California time to accommodate other time zones.

Required Reading: Your Inner Fish (Shubin)

Optional Reading: History of Life (Cowen) (see lecture schedule for reading assignments).

Course Description and Goals: Topically-driven exploration of evolution, environmental change, and the history of life on Earth via the fossil record with the Natural History Museums of Los Angeles and other museums as a focus (many great museums are available via online learning. How the changing Earth and life co-evolved through time.

After you take this class you should:

1. Understand the fundamental science and **evidence** behind evolution.
2. Understand the major events in evolution and Earth history, including environmental change, atmospheric change, and mass extinctions.
3. Appreciate how all life on Earth as we know it is linked via the genetic code.
4. Appreciate how the fossil record can inform our understanding of the history of life.
5. Appreciate the importance of museums as archives of scientific data and thought.

Grading:

Midterm 1:	20% February 18 th
Midterm 2:	20% March 30 th
Final Exam:	20% May 11 th

Lab: 20%
Class Project: 20% Due week of April 19th

Lab: Labs will support and supplement the materials from the lecture.

Class Project: A 5-10 minute presentation is required for this class on your favorite fossil from a museum. The details will be introduced in lab during week 3—thus, you have plenty of time to work on the project. The project is worth 20% of your grade. Advice: do not wait until the last minute to do your project. There will be graded milestones along the way to help you finish on time, and example presentations will be given to help you know what we expect.

Blackboard: This course will make extensive use of the Blackboard online system where class notes, the syllabus, labs, and other useful materials will be available. Check it frequently.

Statement on Academic Conduct and Support Systems:

Discrimination, sexual assault, intimate partner violence, stalking, and harassment are prohibited by the university. You are encouraged to report incidents, and a good place to start is the recently-implemented Office of the Ombuds (<https://ombuds.usc.edu>). The USC Office of the Ombuds will provide a safe place on both campuses for faculty, students, and staff to navigate policies, issues, concerns, and conflicts without fear of reprisal or judgement. In doing so, the Office will promote and embody an ethical, empathetic, and engaged university culture committed to problem-solving, dispute resolution, and workplace wellness.

Furthermore, you may go directly to the *Office of Equity and Diversity/Title IX Office* <http://equity.usc.edu> and/or to the *Department of Public Safety* <http://dps.usc.edu>. This is important for the health and safety of the whole USC community. Faculty and staff must report any information regarding an incident to the Title IX Coordinator who will provide outreach and information to the affected party. The sexual assault resource center webpage <http://sarc.usc.edu> fully describes reporting options.

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, “Behavior Violating University Standards” <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Support Systems: A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://ali.usc.edu>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* <http://dsp.usc.edu> provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu> will provide safety and other updates, including ways in which instruction will be continued by means of Blackboard, teleconferencing, and other technology.

Readings	Your Inner Fish: YIF (Shubin-Required), Numbers = Cowen Chapters (optional)		Lab topic
	Jan. 19	What is science (and why you don't actually hate science)	No Lab
	Jan. 21	Plate Tectonics, life, and how the Earth recycles	
	Jan. 26	The Earth we live on (minerals, rocks, and the rock cycle)	Discussion: Observation vs. Interpretation
	Jan. 28	Evolution Toolkit I: The record of ancient environments	
1	Feb. 2	Evolution Toolkit II: What is a fossil and how did it get that way?	Exploring the Grand Canyon (rocks, environments)
	Feb. 4	Evolution Toolkit III: How to tell geologic time	
YIF p. 1-80 3	Feb. 9	Evolution Toolkit IV: Taxonomy vs. phylogeny and cladistics	Who becomes a fossil?
	Feb. 11	Evolution Toolkit V: DNA, genes, and the genetic code	
	Feb. 16	The E Word: Darwinian Evolution and the modern synthesis	Building trees
	Feb. 18	Midterm 1	
YIF p. 148-157	Feb. 23	Exploring evidence for evolution: DNA, doggies, and fossils	Emergence of complexity
	Feb. 25	Do eyeballs contradict evolution? Evolution of complex structures	
2, 4, 5	Mar. 2	Darwin's dilemma: The Cambrian Explosion	The Burgess Shale and the Royal Tyrrell Museum
	Mar. 4	Evolution of Animals I: Origin of Seafood	
YIF p. 81-147 6, 7, 8	Mar. 9	Evolution of Animals II: Leaving the water—your inner fish	Your Inner Fish
	Mar. 11	Evolution of Animals III: No, really...Birds are Dinosaurs!	

9, 10	Mar. 16	Evolution of Animals IV: Your cousins and you—your inner monkey	Your Inner Reptile
	Mar. 18	Evolution of Plants	
	Mar. 23	Wellness Day (no class)	Your Inner Monkey
	Mar. 25	Co-Evolution	
11, 12, 15 YIF p. 158-210 19, 20	Mar. 30	Midterm 2	Famous Museums of the World 1
	Apr. 1	Climate Change Intro: How to read climate proxies through time	
21	Apr. 6	Climate Change and Evolution	Famous Museums of the World 2
	Apr. 8	Snapshots from Deep Time	
	Apr. 13	What is a Mass Extinction and why should we care?	Reading the climate record
	Apr. 15	Giant space rocks killing things	
16	Apr. 20	When the Earth tries to kill itself	No Lab, watch projects <i>Projects Due April 19</i>
	Apr. 22	Wellness Day (no class)	
13	Apr. 27	Are we in the 6th mass extinction (and what we can do about it)?	Review session for final
	Apr. 29	The Science (or not) of Jurassic Park	