

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

**As of now, we are back in person, and many of our labs take place at the various museums across the street from USC, so not only will you get to see fossils in lab at USC in person, you'll get to hang out at one of the best museums in the country (including one of the most spectacular dinosaur exhibits in the world). We will visit the Natural History Museum, the Museum of Science, and the La Brea Tar Pits during the course of the class.**

**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.

**Professor:**

Frank A. Corsetti, 211 Zumberge Hall, [fcorsett@usc.edu](mailto: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.

**TAs:**

TBA

**Required Reading:** Your Inner Fish (Shubin)

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

**Grading:**

Midterm 1:	20% February 17 <sup>th</sup>
Midterm 2:	20% March 29 <sup>th</sup>
Final Exam:	20% May 10 <sup>th</sup>
Lab:	20%
Class Project:	20% Due week of April 19 <sup>th</sup>

**Lab:** Labs will support and supplement the materials from the lecture. **IMPORTANT:** you must pass the lab to pass the class.

**Class Project:** A 5-10 minute presentation is required for this class on your favorite fossil from a museum or elsewhere. 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, recorded lectures, the syllabus, labs, class project and other useful materials will be available. Check it frequently.

**Poll Everywhere:** We will use the online interactive tool, Poll Everywhere, during the class sessions. You will find that the Poll Everywhere questions are a good indication of what will be on the exams, so please keep up with them. It will not be graded, but your participation will be used as an indicator in the event that you are borderline between grades.

**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: <b>YIF</b> (Shubin-Required), Numbers = Cowen Chapters (optional)	Lab topic	
	Jan. 11 What is science (and why you don't actually hate science)?	No Lab	
	Jan. 13 The Earth we live on (minerals, rocks, and the rock cycle) I		
	Jan. 18 Plate Tectonics, Life, and how the Earth recycles	Minerals at the Museum	ZHS Lab Rooms, Natural History Museum of LA County
	Jan. 20 Evolution Toolkit I: The record of ancient environments		
1	Jan. 25 Evolution Toolkit II: What is a fossil and how did it get that way?	Rocks as evidence for Ancient Environments	ZHS Lab Rooms
	Jan. 27 Evolution Toolkit III: How to tell geologic time		
<b>YIF p. 1-80</b>	Feb. 1 Evolution Toolkit IV: Taxonomy vs. phylogeny and cladistics	Living organisms as future fossils	<i>California Science Center</i>
3	Feb. 3 Evolution Toolkit V: DNA, genes, and the genetic code		
	Feb. 8 The E Word: Darwinian Evolution and the modern synthesis	Fossils as the remnants of once-living organisms	ZHS Lab Rooms
	Feb. 10 Exploring evidence for evolution: DNA, your pets, and fossils		
<b>YIF p. 148-157</b>	Feb. 15 Do eyeballs contradict evolution? Evolution of complex structures	Building Trees	ZHS Lab Rooms
	Feb. 17 <b>Midterm 1</b>		
2, 4, 5	Feb. 22 Darwin's dilemma I: The air that you breath	Emergence and Complexity	ZHS Lab Rooms
	Feb. 24 Darwin's dilemma II: The Cambrian Explosion		
<b>YIF p. 81-147</b>	Mar. 1 Evolution of Animals I: Origin of seafood	Royal Ontario Museum and the Cambrian Explosion	ZHS Lab Rooms
6, 7, 8	Mar. 3 Evolution of Animals II: Your inner fish		
9, 10	Mar. 8 Evolution of Animals III: Which came first, chicken or egg?	Major fossil groups	ZHS Lab Rooms
	Mar. 10 Evolution of Animals IV: No, really...Birds are Dinosaurs!		
	Mar. 15 Spring Break	No Lab	Spring Break
	Mar. 17		
11, 12, 15	Mar. 22 Evolution of Animals V: Your inner monkey	Dinosaurs!	Natural History Museum of LA County
<b>YIF p. 158-210</b>	Mar. 24 Evolution of Plants		
19, 20			
21	Mar 29 <b>Midterm 2</b>	Mammals!	Natural History Museum of LA County
	Mar. 31 Snapshots from Deep Time: LA Story		

	Apr. 5	Climate Change Intro: How to read climate proxies through time		
	Apr. 7	Climate Change and Evolution	LA Back in Time	La Brea Tar Pits
	Apr. 12	Major Evolutionary Trends Through Time		
	Apr. 14	What is a Mass Extinction and should we/we should care	Reading the climate record	ZHS Lab Rooms
16	Apr. 19	Giant space rocks killing things		
	April. 21	When the Earth tried to kill itself	<b>Project Presentations</b>	ZHS Lab Rooms
13	Apr. 26	Are we in the 6th mass extinction (and what we can do about it)?		
	Apr. 28	The Science (or not) of Jurassic Park	<b>Project Presentations</b>	ZHS Lab Rooms