

NOTE: This is last year's syllabus, but it will give you an idea of what we will cover! The basics will remain the same!

Geological Sciences 126
The history of life on Earth: A view from the museum

Professor:

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Office hours: Mondays 1-3, by appointment, or e-mail me at any time.

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 Museum of Los Angeles as a laboratory. 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 8 th
Midterm 2:	20% March 8 th
Final Exam (cumulative):	20% May 8 th
Lab:	20%
Class Project:	15% Due week of April 10 th
Top Hat Participation:	5%

Lab: Attendance is mandatory. In addition to the labs in Zumberge Hall, we will make extensive use of the Natural History Museum across the street (admission is free with USC ID).

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.

Top Hat: We will use Top Hat, an online participation system during class. Top Hat will count for 5% of your total class grade. To receive the full credit (all or nothing), you must participate in 80% of the Top Hat exercises that are given during the lecture time.

This is from last year, but it will give you an idea of the topics we will cover!!

Readings Your Inner Fish: **YIF** (Shubin-Required), Numbers = Cowen Chapters (optional)

	Jan. 9	What is Science/Life? (and why you don't actually hate science)	No Lab
	Jan. 11	The Earth we live on (minerals, rocks, and the rock cycle)	
	Jan. 16	Plate Tectonics, life, and how the Earth recycles	What is life?
	Jan. 18	Plate Tectonics, life, and how the Earth recycles	<i>Discussion</i>
1	Jan. 23	Evolution Toolkit I: The record of ancient environments	Rocks and Minerals
	Jan. 25	Evolution Toolkit II: What is a fossil and how did it get that way?	<i>(pre-lab museum)</i>
YIF p. 1-80	Jan. 30	How to tell geologic time	Sedimentary rocks/environs
3	Feb. 1	Evolution Toolkit III: Taxonomy vs. Phylogeny and Cladistics	
	Feb. 6	The E Word: Darwinian Evolution and the Modern Synthesis	Fossils: Traces of Life
	Feb. 8	Midterm 1	
	Feb. 13	Exploring Evidence for Evolution: DNA, Doggies, and Fossils	Cladistics
YIF p. 148-157	Feb. 15	Do eyeballs contradict evolution? Evolution of complex structures	
2, 4, 5	Feb. 20	Darwin's Dilemma: Archean and Proterozoic life	Evolution, fact vs. fiction
	Feb. 22	Life, the Great Oxidation Event and the evolution of the atmosphere	<i>Discussion</i>
YIF p. 81-147	Feb. 27	Evolution of Seafood (Evol. of Animals I)	Invertebrates
6, 7, 8	Mar. 1	Leaving the water--your inner fish (Evol. of Animals II)	
9, 10	Mar. 6	No, really...Birds are Dinosaurs (Evol. of Animals III)	Challenges of life on land
	Mar. 8	Midterm 2	<i>Discussion</i>
	Mar. 11-18	Spring Break (no class)	
11, 12, 15	Mar. 20	Dinosaurs, continued (Evol. of Animals IV)	Dinosaurs! (<i>Museum</i>)
YIF p. 158-210	Mar. 22	Your Cousins and You (Evol. of Animals V)	
19, 20	Mar. 27	Evolution of Plants	Mammals! (<i>Museum</i>)
21	Mar. 29	Climate Change Intro: How to read climate proxies through time	
	Apr. 3	Climate Change and Evolution	Reading the climate record
	Apr. 5	Selfies from Deep Time	
16	Apr. 10	What is a Mass Extinction and Why Should We Care?	Project Presentations I
	Apr. 12	Volcanoes and Giant Space Rocks killing things	
	Apr. 17	Are we in the 6th mass extinction (and what we can do about it)?	Project Presentations II
13	Apr. 19	Origin of Flight	
	Apr. 24	Exobiology and the search for life elsewhere	Review Session for Final
	Apr. 26	The Science (or not) of Jurassic Park	