EaES 494 Fall 2012
Earth System History

GENERAL INFORMATION

Instructor: Roy E. Plotnick
Office: 2454 SES *Office hours:* by appointment, I am almost always there
Phone: 312-996-2111
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Website:
Information on the course, announcements, lecture notes, external links, etc, will be available from the Blackboard system. I will also send occasional e-mails.

Class hours: MW 9:00-10:50. Lectures will generally be during the first class session of each week; the second meeting will focus on class discussions.

Textbook: Steven M. Stanley. 2009. *Earth System History*. 3rd edition. Freeman.
(also available as an e-book at: http://www.whfreeman.com/Catalog/Product.aspx?isbn=9781429233491)
We will use the textbook primarily for basics and review. Use also to correct any deficiencies you may have in background knowledge. Most the assigned readings will be from the primary literature.

Also get a copy of: John McPhee.1982. *Basin and Range.* Macmillan. Available online for as low as $4 (http://www.bookfinder.com). We will read through this during the semester.

Term paper: You will be required to complete a 15 page term paper on an approved topic of your choice. See separate handout.

Weekly discussions: You will be expected to read 2 to 3 papers from the primary literature each week. Please be prepared to discuss each week's paper(s) during the second class meeting of the week. You will be graded on your leadership of and participation in the discussions.

Field trip: We will have a field trip to the Mazon Creek collecting area or to another local site.

Course goals: After completing this course, you will be able to:
1. Describe the methods used to establish the relative and absolute ages of geologic events, including their correlation;
2. Understand the techniques used to reconstruct ancient geographies and environments;
3. Apply this knowledge to analyzing the primary literature of Earth system history; and
4. Explain the key events of Earth history in the context of the interactions of the components of the Earth system;
5. Place current changes in the Earth system, such as climate change and biodiversity loss, in their historic perspective.

Notice:
Students with disabilities who require accommodations for access and participation in this course must be registered with the Office of Disability Services (ODS). Please contact ODS at 3120413-2103 (voice) or 312-413-0123 (TTY).

Class Schedule – subject to change!

Week	Topics	Textbook Readings
1	Introduction – earth history as a science; the nature of geologic time	S: Chap. 1
2	Basic principles of stratigraphy; Biostratigraphy; Magnetic stratigraphy	S: p. 125-132
3	Lithostratigraphy; Chemostratigraphy; Wire-line logs	S: p. 132-136; 141-144; Ch. 10
4	Sequence stratigraphy and sea-level change	S p. 144-147
5	Seismic stratigraphy; Cyclostratigraphy; Numerical models	S p. 147-149
6	Geochronology and the modern time scale	S p. 136-140
7	Global tectonics and paleogeography	S Chap. 5, 8,9
8	Hadean to Archaean: Origin of earth and Moon; Late Heavy Bombardment	S p. 239-250
9	Archaean: creation of crust; origin of oceans, life, atmosphere;	S p. 251-262
10	Proterozoic: Great oxygenation event; Snowball Earth; Origin eukaryotes and multicellular organisms; early supercontinents; origin of the North American craton	S Chap. 12
11	Paleozoic 1: Cambrian and Ordovician radiations; life on land; assembly of Pangaea; Devonian extinctions; North American orogenic events	S Chap. 13
12	Paleozoic 2: Cyclothems; Greenhouse/Icehouse; Permian mass extinction	S Chap. 14-15
13	Mesozoic: Breakup of Pangaea; western North American orogenic events; Mesozoic life; K-PG mass extinction	S Chap. 16-17
14	Cenozoic 1: PETM; Late Cenozoic Cooling; Messinian salinity crisis; Cenozoic tectonics	S Chap. 18, 19
15	Cenozoic 2: Pleistocene and Anthropocene	S Chap. 20