GEOS 1234-101 Historical Geology Lecture Syllabus

Instructor: Dr. Jesse Carlucci (jesse.carlucci@mwsu.edu), (940) 397-4448

Class: MWF, 10am -10:50am, BO 100

Office hours: Bolin Hall 131, MWF, 11am – 2pm, Tuesday, 11am - 1pm.

You can arrange to meet with me at any time, by appointment.

Textbook: *Earth System History by Steven M. Stanley, 3rd edition*. I will occasionally post articles and other readings on D2L. I will also upload Power Point presentations to D2L before each class, if possible.

Course Objectives: Historical Geology provides the student with a comprehensive survey of the history of life, and major events in the physical development of Earth. Most importantly, this class addresses how processes like plate tectonics and climate interact with life, forming an integrated system. The first half of the class focuses on concepts, and the second on a chronologic overview of major biological and physical events in different geologic periods.

LECTURE SCHEDULE

*Jan 14-18: Overview of course; what is science? The Earth as a planet*
  Stanley (pg. 244-247)

*No class on January 21, Martin Luther King Day.*

*Jan 23-25: Earth materials; rocks and minerals*
  Stanley (pg. 13-17; 25-34)

*Jan 28-Feb 1: Rocks & minerals continued; plate tectonics.*
  Stanley (pg. 3-12; 35-46; 128-141; 175-186)

*Feb 4-8: Geological time and dating of the rock record; chemical systems, the climate system through time. Quiz 1 (Feb 8; 5%).*
  Stanley (pg. 187-194; 196-207; 215-223; 232-238)

*Feb 11-15: Sedimentary environments and life; paleoecology.*
  Stanley (pg. 76-80; 84-96; 99-123)

*Feb 18-22: Biological evolution and the fossil record.*
  Stanley (pg. 151-173; 47-55)

*Feb 25-March 1: Precambrian Earth and life; the fossil record of early life. Mid-term exam (March 1; 15%).*
  Stanley (pg. 247-280)
March 4-8: The early Paleozoic Earth; Cambrian explosion of life on earth; invertebrate animals
Stanley (pg. 65-70; 287-311)

No Class Spring Break March 11-16

March 18-22: The middle and late Paleozoic Earth; vertebrate origins and characteristics, fishes, life moves onto land.
Stanley (pg. 315-338; 341-358)

March 25-27: The early Mesozoic Earth; marine vertebrates, dinosaur origins ecology and evolution. Quiz 2 (March 27; 5%).
Stanley (pg. 373-393)

No class Easter Break March 29

April 1-5: The late Mesozoic Earth; life in the Cretaceous, birds are dinosaurs, early mammals.
Stanley (pg. 403-418; 423-427)

April 8-12: Mass extinctions in the fossil record.
Stanley (pg. 308-309; 334-335; 358-361; 394-395; 418-421)

April 15-19: The early Cenozoic Earth; mammals and their relatives.
Stanley (pg. 429-451)

April 22-26: The late Cenozoic Earth; human evolution.
Stanley (pg. 453-470; 484-493)

April 29-May 3: The late Cenozoic Earth; modern extinctions and climate, human impact on the biosphere. Essay due (May 3, 20%).
Stanley (pg. 495-511; 514-519)

Final (Wed, May 8, 10:30am; 20%)

Grading scheme
Quizzes 10%
Lecture mid-term 15%
Lecture final 20%
Essay 20%
Labs 35%

The quizzes will be held in the first 25 minutes of class, and I will let everyone know the subject the class period before.
Review sheets for the lecture midterm and final will be passed out the class period before the exam. Each will include a combination of multiple choice, short answer, and essay-style questions.

Grading Standards: In this class, the following numerical equivalents for grades are used: A = 100-90% | B = 89-80% | C = 79-70% | D = 69-60% | F = 59-0%.

Attendance: Attendance is required for both lecture and lab. Absences can only be excused by contacting me in advance, prior to lecture or laboratory assignments. Absences presented after the class is over will not be accommodated except in rare circumstances. I reserve the right to drop any student from the class who has more than 3 unexcused absences. Attendance will be used to make decisions on the final grade score of students who are on the border between two letter grades.

Late assignment policy. For lab assignments and the essay, the late penalty is 5% per working day (25% per week). No assignments or essays will be accepted after Wednesday of finals week.

Essay Format (DUE May 3)
The essay should have introduction and conclusions sections. All sources of information must be cited in the body of the text and listed in a reference list at the end of the essay. Citation consists of the author's name plus the publication date. e.g. Jones (2001) or (Jones, 2001). You should use several references in writing the essay (at least half-a-dozen) and most of these must be from scientific journals.

Web sites are not usually appropriate sources for college level essays. Do not use web sites as sources of information for your essay. However, you are encouraged to use the Midwestern Library on-line resources to research your essay. An essay that makes extensive use of web sites as primary sources is not acceptable.

The following journals are good sources and many of them can be accessed on-line:

Semipopular journals: Scientific American; American Scientist.

Research journals: Paleobiology; Journal of Paleontology, Lethaia; Science; Nature; Palæoecology, Palæogeography, Palæoclimatology; Palaios.

Illustrations should be included where appropriate and may be photocopied or scanned directly from a scientific journal or text book. However, the source of the information should be indicated in the figure caption (e.g. from Jones, 2001). You may also use images from the web, but include the site information.

Length. The text (excluding title page and references) of the essay should be 6-8 pages (double spaced) in length; 12 point font; margins should be 1 inch. There is no limit on the number of illustrations.
Check that your essay is free from basic grammatical, spelling and typographic errors before handing it in.

**Essay topics.** The essay can be on *any* topic in the history of the earth and life. In order to assist you in choosing a subject, a list of potential topics is included below. However, you are free to come up with your own topic if none of these are appealing. It is a good idea to clear your essay topic with me prior to writing.

1. Detailed look at one mass extinction in the fossil record.
2. Ecology of dinosaurs
3. Physiology of dinosaurs ("warm-blooded" or "cold-blooded")
4. Evolution of flight in birds.
5. Evolutionary history of land plants.
7. Composition and significance of the Ediacaran fauna.
9. Ice ages through geological time
10. Composition and significance of the mid-Cambrian Burgess Shale fauna.
11. The Supercontinent Cycle.
12. Changes in the composition of marine communities during the Phanerozoic.
13. Human evolution.
15. Emergence of life onto land.
16. Controls on sea level over geological time
17. Human impacts on the biosphere (global warming; recent extinctions, etc.).
19. The significance of a major figure in the development of geology or paleontology as a science (e.g., Steno, Hutton, Smith, Darwin, etc.).
20. How the retreat of glaciers affected topography.
21. The geology of one mountain building event (Taconic, Acadian etc.).
22. Geologic history of Yellowstone, Grand Canyon etc.