



Earth History: Historical Geology and Paleontology

College of Natural Sciences and Mathematics

Department of Environmental Sciences

EEES 2230-001

CRM 10170

Instructor: Email: mark.camp@utoledo.edu

Office Hours: 8:30-9:25 MW, 12-2M, 8:30-9:30TR

Office Location: 3022 BO **Office Phone:** 419-530-2398 **Term:** Spring 2015

Class Location: BO 1006 **Class Day/Time:** MW 11-11:50

Lab Location: BO1006 **Lab Day/Time:** 2-3:50M **Credit Hours:** 3

EEES – 2230 EARTH HISTORY: HISTORICAL GEOLOGY AND PALEONTOLOGY [3 hours]

The morphology and paleoecology of fossil taxa, significant strata, and tectonic events important to the interpretation of paleoenvironments and Earth history are stressed. Field trip(s) required. [Spring] Prerequisite: EEES 2100 (*Taught as a writing intensive course—WAC*)

COURSE OVERVIEW

Ever wonder about what the earth was like before the time of humans or maybe during the time of dinosaurs? What about the different rocks you see? Ever been to the Grand Canyon? What about fossils? By the end of this course you will be well versed in the geologic and biologic history of Earth.

STUDENT LEARNING OUTCOMES

- Apply the scientific method to concepts of historical geology and paleontology
- Use the principles of relative dating and absolute dating to chart the history of Earth and its organisms through geologic time
- Understand the development of the geologic time scale
- Become familiar with the use of geologic maps, cross sections, and stratigraphic columns to interpret Earth history
- Identify important fossil forms from each period and master selected index fossils
- Understand the concepts of evolution
- Understand the physical, chemical, and tectonic evolution of Earth through geologic time
- Understand sequence stratigraphy

Related TAGs: Geology

Students will be able to:

1. Understand the origin and evolution of the earth
2. Understand the physical and chemical history the earth
3. Understand the origin and evolution of life through geologic history
4. Understand methods of relative and absolute age dating
5. Interpret geologic history using rocks, fossils, and maps
6. Understand the evolution of significant geological concepts
7. Apply methods of scientific inquiry

8. Interpret geologic maps
9. Identify fossils

TEACHING STRATEGIES

Power point lectures will focus on the basics of North American stratigraphy and paleontology. After preliminary information, the course will follow geologic time from PrePaleozoic to Cenozoic, presenting major tectonic events, transgressions and regressions, and evolution of lifeforms. A mix of laboratory experiences with maps, fossils, and field work will be intertwined with lectures. Student expression will be encouraged in writing assignments. The travel journal will be kept while lectures cover the progression through geologic time. You are encouraged to be creative in telling the story of the development of North America and its life.

PREREQUISITES AND COREQUISITES

EEES 2100

REQUIRED TEXTS AND ANCILLARY MATERIALS

Levin, Harold, *The Earth Through Time*, any recent edition, hard copy, on-line, or rental version

TECHNOLOGY REQUIREMENTS

Computer access to book website www.wiley.com/college/levin

UNIVERSITY POLICIES

The University is an equal opportunity educational institution.

Academic Accommodations

The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course please contact the [Student Disability Services Office](#).

ACADEMIC POLICIES

Academic dishonesty Academic dishonesty in this course will not be tolerated. Examples of academic dishonesty include:

1. Obtaining or using work other than your own on tests, exams, quizzes or assignments.
2. Unauthorized use of notes, calculators or other programmable equipment during tests, exams, or quizzes.
3. Soliciting or providing answers on exams, tests or quizzes.

Students who violate the above policy can expect disciplinary action. Disciplinary action may consist of receiving a zero on the assignment, failing the course, being reported to the Dean of Students, or other action as deemed appropriate by the course instructors.

*(Insert specific academic policies the student is expected to comply with; policies **may** include student conduct, academic dishonesty, missed class policy, student grievances, etc.)*

COURSE EXPECTATIONS

GRADING

Papers, Lab Reports, and Writing Exercises:

Five topical papers will be written during the semester. Each will be of a 3-4 page length and focus on different forms and/or styles of writing which may include compare and contrast, scientific reporting, newspaper reporting, discovery of new species, fictional time travel, etc. Each paper will be completed individually (with the exception of the field project) and submitted by a certain due date. No handwritten or hand-printed papers, please. Please

double space and use standard 12-14 black Times New Roman or some similar font. Each paper will be critiqued on content, organization, reference use, grammar, and mechanics using the attached 20 point rubric. The student will then have a chance to make corrections and resubmit the paper within 3 days to receive a second revised score. The final grade for the paper will be an average of the two scores or the solitary score if resubmission is not chosen.

Eleven 2-3 page **Lab Reports** will cover studies of major fossil taxa and geologic mapping. These may require short essay answers, identifications, map reading and interpretation, standard objective answers, etc. No handwritten or hand-printed reports, please. Please double space and use standard 12-14 black Times New Roman or some similar font. The reports will be due at scheduled dates, usually a week after the lab date.

A **Time Travel Journal** will be kept by each student beginning 2/12/14 when lectures turn to a presentation of the history of life through time. These are to be kept in a loose-leaf notebook. No handwritten or hand-printed journals, please. Please double space and use standard 12-14 black Times New Roman or some similar font. An entry (one or more pages, as appropriate) will be made for each eon of the Pre-Paleozoic and for each period of the Phanerozoic. Pretend that you are there for each interval of time and record the major geologic and biologic events and happenings you witness or observe. This is your chance to be creative.

A **Field Project** will be begun in early April. This will involve a weekend field excursion to selected geologic sites in Indiana, Kentucky, and/or Ohio. Students will make observations, collect specimens, and prepare a field report. More details on this project will be presented after Spring Break.

Midterm Grading

A midterm grade will be assigned based on performance on papers and labs completed by late February. Please realize that this includes only about 33% of your course grade, but should indicate your current performance in the course. Please make an appointment to see me if your performance is judged unsatisfactory so that you can receive help in improving your progress.

Final Grading

Grades will be assigned based on five 20 pt. papers, eleven 10 pt. lab reports, a travel journal (50 pts.), a field project (50 pts.), and considerations of attendance, attitude, and classroom participation. Total points possible is 310. A curve will be formulated for the class results. Grades will be assigned from the A, A-, B+, B, B-, C+, C, C_, D+, D, D-, F scale.

COMMUNICATION GUIDELINES

For any concerns or questions I prefer you to visit me during office hours or make an appointment at another agreed upon time. You may also e-mail me; I check e-mail a number of times daily. You can also call—leave a short message if I am not in.

STUDENT SUPPORT FACILITIES

Please consult any of the agencies below for furthering your success at UT.

Student Support Services

University Libraries

<http://www.utoledo.edu/library/>

Learning Enhancement Center

<http://www.utoledo.edu/success/lec/>

Writing Center

<http://www.utoledo.edu/success/writingcenter/index.html>

Success Coaches

<http://www.utoledo.edu/successcoach/index.html>

Counseling Center

<http://www.utoledo.edu/studentaffairs/counseling/>

CLASS SCHEDULE

- Jan. 12 Introduction, early geological thought and relative dating techniques
In class writing sample.
Lab: Development of geologic time chart **(Ch. 3)**
- 14 Absolute dating **(Ch. 3)**
- 19 Holiday No Class**
- 21 Sedimentary rocks and depositional environments **(Ch. 5)**
Paper #1 due (20 pts.) Lab: Geologic maps (#1) **(Ch. 5)**
- 26 Sedimentary facies and sedimentary structures **(Ch. 5)**
- 28 History of paleontological studies **(Ch. 6)**
- Feb 2 Fossilization **(Ch. 6)**
Lab: Modes of fossil preservation (#2) **Lab Report #1 due** (10pts.)
- 4 Evolution—basic concepts **(Ch. 6)**
- 9 Paleocology and Paleogeography **(Ch. 6)**
Lab: Fossil correlation (#3) **Lab Report # 2 due** (10 pts)
- 11 Plate Tectonics-development of concept, including continental drift **(Ch. 7)**
- 16 Plate Tectonics-seafloor spreading and today's theory **(Ch. 7)**
Lab: Taxonomy and classification (#4) **Lab Report #3 due** (10 pts.)
- 18 The earliest history of Earth—Archean time **(Ch. 8)** Begin Journal entries
Paper #2 due (20 pts.)
- 23 Geology of the Lake Superior Region **(Ch. 8-9)**
Lab: Lake Superior geology (#5) **Lab Report # 4 due** (10 pts.)
- 25 Proterozoic fossils **(Ch. 9)**
- Mar 2 The Cambrian explosion **(Ch. 12)**
Lab: Archaeocyathids, trilobites, and other Cambrian organisms (#6) **Lab Report #5 due** (10 pts.)

4 Cambro-Ordovician North American geology—Taconic orogeny (**Ch. 10**)
Paper #3 due (20 pts.)

9, 11 **SPRING BREAK No class**

16 The first vertebrates (**Ch. 12**)

Lab: Brachiopods and bryozoa (#7) **Lab Report # 6 due** (10 pts.)

Journal Check

18 Silurian North American geology (**Ch. 10**)

23 Devonian geology-Acadian orogeny (**Ch. 11**)

Lab: Cnidaria lab (#8) **Lab Report #7 due** (10 pts.)

25 The Age of Fishes (**Ch. 12**)

30 The movement of life onto land, early plants (Ch. 12)

Lab: Echinoderms (#9) **Lab Report # 8 due** (10 pts.) **Paper #4 due**
(20 pts.)

Apr 1 Mesozoic North American geology (Ch. 13)

6 The rise of Mesozoic life (Ch. 14) Lab: Coal formation
environments and early plant fossils (#10) **Lab Report #9 due**(10pts.)

8 The Dinosaurs (Ch. 14)

13 The dinosaurs , birds and first mammals (Ch. 14)

Lab: Mollusks (#11) **Lab Report #10 due** (10 pts.)

15 Cenozoic North American geology (Ch. 15)

20 The Rise of Mammals (Ch. 16) Lab: tba (#12) **Lab Report #11 due**
(10pts.)

22 The Great Ice Age (Ch. 15) **Paper # 5 due** (20 pts.)

27 The Great Ice Age (Ch. 15) Lab: field project

29 The Great Ice Age (Ch. 15) **In class writing.**

May 8 **Journals and field projects due by 5PM** (100 pts.)
