

GEOL 102 Historical Geology: The History of Earth and Life

Spring Semester 2013

PLS 1113 9:00-9:50 am MWF (Lecture)
GEO 2107 2:00-5:00 p.m. W (Lab)
Clicker Channel 24; Session ID GEOL102

Dr. Thomas R. Holtz, Jr.

Room: Centreville 1216, Office Hours: M 2-4 pm or by appointment

Phone: x54084, Email: tholtz@umd.edu

CLICKERS: This course uses clickers. Please make certain that you either have access to an RF-LCD clicker or that you obtain a license to use ResponseWare with your web-accessible device (laptop, smart phone, Blackberry, etc.). Also, make certain that you register your clicker before class begins at <http://clickers.umd.edu/Students/WebRegistration.html>.

NOTE: It is your responsibility as a student to completely read through and understand this syllabus. If you have questions about it, please contact Dr. Holtz. You will be held responsible for following all requirements of this syllabus.

LEARNING OUTCOMES: By the end of the semester, every student should be able to:

- Identify the major techniques used by geologists to assess the paleoenvironments and sequence of events found in the rock record
- Recognize the sequence of and interrelationships between major events in the history of the Earth, its surface, and its life forms
- Properly classify different types of sedimentary rocks & structures and major groups of fossilizing organisms from hand samples
- Correctly interpret geological cross-sections, fence-diagrams & other stratigraphic charts, and geologic maps

Course Organization: 3 lectures per week (Monday, Wednesday, Friday), 1 laboratory per week (Wednesday).

Field Trip: 1 non-mandatory field trip is planned:

- Saturday, April 20: historical geology of western Maryland (latest Precambrian through Triassic)
This is non-mandatory and non-graded, but will greatly advance your understanding of historical geology; additionally, there will be rock- and fossil-collecting opportunities on the trips.

Grade:	Online Exam 1: 15%	Labs: 20%	
	Online Exam 2: 15%	Lab Exam 1: 5%	
	Online Exam 3: 15%	Lab Exam 2: 5%	
	Final Exam: 15%	Clicker Quizzes: 10%	

Grade Scale: ≥ 90 , A; 80-89, B; 70-79, C; 60-69, D; < 60 , F. “+” and “-” grades are given to the top and bottom two-point range, respectively, within each grade.

Online Exams: Rather than sit-down exams during course time, there will be three online exams throughout the semester (independent of the final exam). For each of these there will be a section comprised of true/false, multiple choice, matching, and similar type questions (totaling between 60-80% of the points, depending on the exam) and a series of short essay questions (totaling the remaining 20-40%). These exams will be open-note, but they ARE subject to the Honor Pledge: you may not seek help from other people in doing these. The questions, their orders, and answers are randomized, so no two student’s exams will be identical.

You will have a period of 5 days (Monday through Friday) in which to complete the exam. You may only take it once. Since these are accessible on the web, there NO EXCUSES for missing them (including illness; travel due to sports, band, etc.; and so forth). Failure to correctly submit the exam on ELMS during the time period results

in a 0 for that exam. Each exam covers the material from the previous exam (or the start of the course, for the first exam) until the week immediately before the exam.

The exam schedule is:

- Exam 1: Feb. 11-Feb. 15
- Exam 2: Mar. 11-Mar. 15
- Exam 3: Apr. 15-Apr. 19

Final Exam: There will be a traditional, sit-down final exam during the regularly scheduled exam season. It is cumulative for the entire course, but especially concentrates on material since the third online exam.

Participation/Clicker Quizzes: An essential element of education in general is attending lectures and reflecting on the information provided there. In order to help guide this reflection and understanding, a series of clicker quizzes and surveys will be presented during the class. These will not be announced in advance, and may occur at any time in any given lecture. Not every lecture will have a clicker quiz, but some may have more than one. You are expected to be present and ready to answer the clicker quizzes and surveys whenever they are offered (sometimes more than once in a given lecture). Prior to Feb. 5 (the last day of Add/Drop) the quizzes will not count to the final course grade; following that point quizzes (although not surveys) will be graded. The grades are based on the summed total for that day's quizzes; each day's worth of quizzes is weighted equally. The lowest three day's grades will be automatically dropped: this is the method by which absences due to illness, travel, University sports activity, etc. will be dealt.

Clicker quizzes are governed by the Honor Code: if you were to answer for another person on a clicker quiz (or similar case of cheating), you will be dealt with accordingly. However, there will be cases when you are asked to discuss the question with those seated near you before answering.

Lecture Text: *Earth System History 3rd Edition* by Steven M. Stanley (2009, W.H. Freeman & Co., ISBN-13 978-1429233491)

Lab Text: *Deciphering Earth History: Exercises in Historical Geology. 4th Edition. (DEH)* by R.A. Gastaldo, C.E. Savdra & R.D. Lewis (2006, CPC Publishing, ISBN-13 978-0898923162)

Supplementary Text: *Maryland's Geology* by Martin F. Schmidt, Jr. (2010, Schiffer Publishers, ISBN-13 978-0764335938)

Websites: <http://www.geol.umd.edu/~tholtz/G102/>
Website includes copies of the syllabus, handouts, lecture notes, etc. This site will be built up throughout the semester as each lecture page, etc., is added.

The ELMS Canvas site will include required online quizzes; announcements concerning the class; class discussion list; copies of the handouts; and so forth. If you have not already done so, make sure that you get access to ELMS.

Policies: Academic integrity: The University of Maryland has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://shc.umd.edu/SHC/Default.aspx>

The University of Maryland is one of a small number of universities with a student-administered Honors Code and an Honors Pledge, available on the web at <http://osc.umd.edu/OSC/AcademicHonorPledge.aspx>. The code prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents, and forging signatures. The University Senate encourages instructors to ask students to write the following signed statement

on each examination or assignment: “I pledge on my honor that I have not given or received any unauthorized assistance on this examination (or assignment).”

Academic Accommodations: If you have a documented disability, you should contact Disability Support Services 0126 Shoemaker Hall. Each semester students with documented disabilities should apply to DSS for accommodation request forms which you can provide to your professors as proof of your eligibility for accommodations. The rules for eligibility and the types of accommodations a student may request can be reviewed on the DSS web site at http://www.counseling.umd.edu/DSS/receiving_serv.html.

Religious Observances: The University System of Maryland policy provides that students should not be penalized because of observances of their religious beliefs, students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances. It is the responsibility of the student to inform the instructor of any intended absences for religious observances in advance. **Notice should be provided as soon as possible but no later than the end of the schedule adjustment period (February 5).** Faculty should further remind students that prior notification is especially important in connection with final exams, since failure to reschedule a final exam before the conclusion of the final examination period may result in loss of credits during the semester. The problem is especially likely to arise when final exams are scheduled on Saturdays.

Attendance: Regular attendance and participation in this class and lab is the best way to grasp the concepts and principles being discussed. However, in the event that a class must be missed due to an illness, the policy in this class is as follows:

1. For every medically necessary absence from class (lecture or lab), a reasonable effort should be made to notify the instructor in advance of the class. When returning to class, students must bring a note identifying the date of and reason for the absence, and acknowledging that the information in the note is accurate.
2. If a student is absent on days when exams or labs are scheduled he or she is required to notify the instructor in advance, and upon returning to class, bring documentation of the illness, signed by a health care professional. Absences from exams will not be excused except for those causes approved by University policy (see <http://www.umd.edu/catalog/index.cfm/show/content.section/c/27/ss/1584/s/1540> of the *UMCP Undergraduate Catalog*). Only those students excused for these causes will be eligible for a make-up exam.

Absences from the final exam will not be excused except for those causes approved by University policy (see <http://www.umd.edu/catalog/index.cfm/show/content.section/c/27/ss/1584/s/1540> of the *Undergraduate Catalog*). Only those students excused for these causes will be eligible for a make-up exam.

Other: Much of the information presented is not available in the textbook. If you cannot make a certain lecture, try and find another student who might lend you their notes. (In fact, establishing a study group early in the course has proven useful for many students in the past).

In cases of inclement weather or other unexpected emergencies, the University may close. Please consult the University main webpage (<http://www.umd.edu>) or call 301-405-7669 (SNOW) to confirm such cancellations. Dr. Holtz will contact students via ELMS in order to inform them concerning delays of due dates for projects to be handed in or for exams: typically these will be shifted until the next available class date.

Keep up with the required readings! Although the format of the lectures and the chapters do not always match, the readings are important as well. Some of the material to be tested is covered in more detail in the readings than in class.

Readings should be done **prior** to the classtime they are listed.

Course Evaluations: CourseEvalUM will be open for students to complete their evaluations for Spring 2013 courses between Tuesday, April 23, and Friday, May 10. Students can go directly to the website (www.courseevalum.umd.edu) to complete their evaluations, beginning April 23. You will be alerted about these dates and provided more information closer to that time, and students will be alerted via their official University e-mail account.

Students who complete evaluations for all of their courses in the previous semester (excluding summer), can access the posted results via Testudo's CourseEvalUM Reporting link for any course on campus that has at least a 70% response rate. You can find more information, including periodic updates, at the IRPA course evaluation website:
https://www.irpa.umd.edu/Assessment/CourseEval/fac_faq.shtml

The expectation is that all students will complete these. This is YOUR chance to anonymously evaluate this class: please use this opportunity!

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MAIN SYLLABUS

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| Jan. 23 | Ruins of an Older World: The Discovery of Earth History
Reading: Chap 1
LAB: No Lab Today, but meet at lab to go over policies |
| Jan. 25 | Every Rock is a Record of History: Historical Approaches to Lithology
Reading: Chap. 2 |
| Jan. 28 | Terrestrial Sedimentary Environments
Reading: Chap. 5 |
| Jan. 30 | Fluvial & Deltaic Environments; Walther's Law
Reading: Chap. 5
LAB: Description and Classification of Sedimentary Rocks (<i>DEH</i> Lab 1) |
| Feb. 1 | Coastal & Marine Environments; Transgressions & Regressions
Reading: Chap. 5 |
| Feb. 4 | Geologic Time I
Reading: Chap. 6 |
| Feb. 6 | Geologic Time II
Reading: Chap. 6
LAB: Interpretation of Sedimentary Rocks (<i>DEH</i> Lab 2) |
| Feb. 8 | Lithostratigraphy
Reading: Chap. 6 |

--ONLINE EXAM I (Complete from Feb. 11 to 15)--

- Feb. 11 Biostratigraphy & the Geologic Timescale
Reading: Chap. 6
- Feb. 13 Another Geography: Plate Tectonics
Reading: Chap. 8
LAB: Relative Time and Sequence of Events (*DEH* Lab 3)
- Feb. 15 Every Valley Shall Be Exalted...: Orogenesis I
Reading: Chap. 9
- Feb. 18 ...And Every Mountain and Hill Made Low: Orogenesis II & Geochemical Cycles
Reading: Chaps. 9 & 10
- Feb. 20 Fossils & Fossilization
Reading: Chap. 3, 4
LAB: Lithostratigraphy (*DEH* Lab 4)
- Feb. 22 Evolution I: On the Origin of Species by Means of Natural Selection
Reading: Chap. 7
- Feb. 25 Evolution II: Tempo & Mode, Patterns & Process
Reading: Chap. 7
- Feb. 27 Phylogeny, the Tree of Life
Reading: Chap. 7
LAB: Biostratigraphy (*DEH* Lab 5) & Radioisotopic Dating Techniques (*DEH* Lab 6)
- Mar. 1 Introduction to the Precambrian and the Hadean Eon: Strange *Æ*ons
Reading: Chap. 11
- Mar. 4 The Archean Eon I: Rocks and Atmospheres
Reading: Chap. 11
- Mar. 6 The Archean Eon II: Biogenesis
Reading: Chap. 11
LAB: Fossil Preservation and Taphonomy (*DEH* Lab 8)
- Mar. 8 The Proterozoic Eon I: Birth of Modern Geology
Reading: Chap. 12

--ONLINE EXAM II (Complete from Mar. 11 to 15)--

- Mar. 11 The Proterozoic Eon II: Rodinia and Pannotia
Reading: Chap. 12
- Mar. 13 The Proterozoic Eon III: Snowball Earth and the Garden of Ediacara
Reading: Chap. 12
LAB: Lab Exam 1 (Covers material from 1/30 to 2/27)
- Mar. 15 The Early Paleozoic Era I: Cambrian and Ordovician Tectonics
Reading: Chap. 13
- Mar. 18-22 **SPRING BREAK!**
- Mar. 25 The Early Paleozoic Era II: When Trilobites Ruled the Earth

- Reading: Chap. 13
- Mar. 27 The Middle Paleozoic Era I: Siluro-Devonian Geology
Reading: Chap. 14
LAB: Paleontology I Common Paleozoic Fossils I (Lab will be a handout)
- Mar. 29 The Middle Paleozoic Era II: Reef Madness and the Devonian Nekton Revolution
Reading: Chap. 14
- Apr. 1 The Middle Paleozoic Era III: The Conquest of Land
Reading: Chap. 14
- Apr. 3 The Late Paleozoic Era I: Carboniferous Geology
Reading: Chap. 15
LAB: Paleontology II Common Paleozoic Fossils II (Lab will be a handout)
- Apr. 5 The Late Paleozoic Era II: Permian Geology
Reading: Chap. 15
- Apr. 8 The Late Paleozoic Era III: Life in the Coal Swamps
Reading: Chap. 15
- Apr. 10 The Late Paleozoic Era IV: Permian Life and the Permo-Triassic Extinction
Reading: Chap. 15
LAB: Paleontology III Common Post-Paleozoic Fossils (Lab will be a handout)
- Apr. 12 The Mesozoic Era I: Triassic-Jurassic Geology
Reading: Chap. 16

--ONLINE EXAM III (Complete from Apr. 15-19)--

- Apr. 15 The Mesozoic Era II: Cretaceous Geology
Reading: Chap. 17
- Apr. 17 The Mesozoic Era III: Black Shales and Chalk Seas
Reading: Chaps. 16-17
LAB: Interpretation of Geological Maps (Read *DEH* Lab 15; this Lab is a handout, but we will do Lab 15 during the next two weeks)
- Apr. 19 The Mesozoic Era IV: Flowers and Mammals
Reading: Chap. 16-17

Apr. 20 (Sat.) – western Maryland Field Trip: details TBA

- Apr. 22 The Mesozoic Era V: The Age of Dinosaurs
Reading: Chap. 16-17
- Apr. 24 The Mesozoic Era VI: The K/Pg Extinction
Reading: Chap. 17
LAB: Geologic Maps and Interpretation of Earth History in Selected Regions pt. 1 (*DEH* Lab 15)
- Apr. 26 The Cenozoic Era I: Paleogene Geology
Reading: Chap. 18
- Apr. 29 The Cenozoic Era II: Neogene Geology

- Reading: Chap. 19
- May 1 The Cenozoic Era III: The Age of Mammals
Reading: Chaps. 18-19
LAB: Geologic Maps and Interpretation of Earth History in Selected Regions pt. 2 (*DEH* Lab 15)
- May 3 The Cenozoic Era IV: The Scatterlings of Africa
Reading: Chaps. 19
- May 6 The Cenozoic Era IV: Quaternary Geology
Reading: Chap. 19-20
- May 8 The Cenozoic Era V: To the Anthropocene and Beyond!
Reading: Chap. 20
LAB: Lab Exam 2 (covers material from 3/6 onward)
- May 15 (Wednesday) Final Exam, PLS 1113, 8:00-10:00 am