

GEOL 104 Dinosaurs: A Natural History

Fall Semester 2013

Section 0101

PLS 1130 10:00-10:50 am MWF

Clicker Channel 28; Session ID GEOL104

Instructor: Dr. Thomas R. Holtz, Jr.

Room: Centreville 1216 Office Hours: T 8:30-11 am, or by appointment

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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 <https://myelms.umd.edu/courses/1020311>

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.

Course Description: Dinosaurs, their evolution, and our understanding of their fossil record. Students will examine the geologic record and the tools used by paleontologists to determine: geologic ages and ancient environments; evolutionary history and extinctions; dinosaurian biology and behavior; and their survival as birds. Mechanisms of global change ranging from plate tectonics to asteroid impact will be discussed.

Learning Outcomes: By the end of the semester, every student should be able to:

- Identify the major clades of dinosaurs and their primary attributes (anatomy, behavior, stratigraphic and geographic distribution, etc.)
- Interpret cladograms in determining evolutionary relationships and distribution of specializations
- Assess claims of inferred dinosaurian behavior, physiology, and extinction patterns from fossil evidence

Themes: This course examines how scientists study the age, environments, evolution, origin, biology, behavior, and extinction of dinosaurs and the other inhabitants of their world. Over this time we will explore several big themes:

- The scale of geologic and evolutionary time
- Biological evolution and the origin, evolution, and diversification (and occasional extinction) of branches of the Tree of Life
- The nature of scientific knowledge, and how diverse lines of evidence are used to reconstruct events of the ancient past
- What an understanding of dinosaurian biology, behavior, ecology, and extinction can reveal about modern environmental conditions

Course Organization: 3 meetings per week (Monday, Wednesday, Friday).

Grade:	Online Test 1:	15%	Smithsonian Assignment:	10%
	Online Test 2:	15%	Clicker Participation Quizzes:	10%
	Online Test 3:	15%	Final Exam:	20%
	Online Test 4:	15%		

No separate extra credit assignments are planned for this course. However, tests and assignments have extra credit questions.

NOTE: Late Smithsonian Assignments will be docked 25% of the total grade if not turned in on time, but turned in (at my mailbox in the Geology Building) prior to the next class day, or docked 50% if handed in the next class day. After that point, the grade for that assignment will be a 0. Online Tests cannot be completed for a grade after their regularly assigned due date passes.

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 Tests: Rather than sit-down exams during course time, there will be four online tests 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 (normally totaling 80% of the points) and a series of short essay questions (totaling the remaining 20%). Additional extra credit questions will also be provided. These tests will be open-note, but they ARE subject to the Honor Pledge: you may not seek help from other people in doing these.

You will have a period of 5 days (Monday through Friday) in which to complete the test. You may only take it once. Since these are accessible on the web, there are NO EXCUSES for missing them (including illness; travel due to sports, band, etc.; and so forth). Failure to correctly submit the test on ELMS during the time period results in a 0 for that test. Each test covers the material from the previous test (or the start of the course, for the first test) until the week immediately before the test.

The test schedule is:

- Test 1: Sept. 23-27
- Test 2: Oct. 14-18
- Test 3: Nov. 11-15
- Test 4: Dec. 2-6

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 with a special emphasis on the last two weeks of course material. **NOTE:** This exam is on Saturday, Dec. 21. Please plan your winter schedule accordingly!!

Smithsonian Assignment: To take advantage of our proximity to the Smithsonian Institution National Museum of Natural History and its excellent display of fossil materials, there is a small assignment requiring you to go to that museum and answer a series of questions based on your observations. There is no single formal field trip; you may go on your own or in small groups. The project is due in class on **NOVEMBER 8**.

Clicker Participation 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 most will 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 Sept. 16 (the last day of Schedule Adjustment) 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. The lowest three day's grades will be automatically dropped: this is the method by which absences due to illness, travel, 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.

Textbook: No required textbook for purchase. However, please keep current with the online lecture notes (<http://www.geol.umd.edu/~tholtz/G104/104Syl.html>)

Other Materials: This course uses clickers; please make certain to obtain one for this course (or a license for ResponseWare on your portable web-accessible device).

Websites: <http://www.geol.umd.edu/~tholtz/G104/>
This Website contains a copy of the course policies, the syllabus, lecture notes, copies of some of the handouts, dinosaur-related web links, and other features. Please feel free to utilize this resource, and email Dr. Holtz with any suggestions on improving this resource.

<http://elms.umd.edu/>
The ELMS Canvas site will include required online tests; 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://www.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://shc.umd.edu/SHC/HonorPledgeInformation.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 (September 16).** 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.

Other: All work on tests, assignments, exams, etc. must be your own. Although group study can be very useful, make sure that all your work you turn in is your own.

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 *University of Maryland Undergraduate Catalog*). Only those students excused for these causes will be eligible for a make-up exam.

Throughout the course there will be a series of online tests using the ELMS system. Please make certain that you stay current with these: once the deadline has passed, you will not be able to make them up and you will receive a 0 for that test.

Attendance in class is expected. If you cannot make a certain lecture, try and find another student who might lend your their notes. (In fact, establishing a study group early in the course has proven useful for many students in the past). Furthermore, Clicker Participation Quizzes can only be completed in class.

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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 online notes! Although the format of the lectures and the notes do not always match, these readings are important as well. Readings should be done **prior** to the classtime they are listed.

NOTE: As part of the nature of the course, there will be a lot of memorization (less than a foreign language class, but more than that found in more mathematically-oriented introductory science classes). This will include lots of anatomical, geological, and paleontological terms, as well as evolutionary and temporal relationships. If you have difficulty memorizing, this may not be the class for you. Also, if there are words or concepts with which you are not familiar, feel free to ask Dr. Holtz (in class, after class, over email, etc.) for an explanation or clarification.

Course Evaluations: CourseEvalUM will be open for students to complete their evaluations for Fall 2013 courses between Tuesday, December 3 and Sunday, December 15. Students can go directly to the website (www.courseevalum.umd.edu) to complete their evaluations, beginning December 3. 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

- Sept. 4 Introduction to the Course; What are Dinosaurs?
- Sept. 6 What is Science? The Meaning of Fossils
- Sept. 9 The History of Prehistory: the Great Exposition through Great Expeditions
- Sept. 11 Basics of Geology: Every Rock is a Record of the Environment in Which It Formed
- Sep. 13 Fossils and Fossilization
- Sept. 16 Deep Time I: Ruins of an Older World
- Sept. 18 Deep Time II: Plate Tectonics and the Earth Engine
- Sept. 20 The Living Earth: Ecology
- SEPT. 23-27: Online Test I-----**
- Sept. 23 Our Bodies, Our Selves: Introduction to Vertebrate Osteology

- Sept. 25 Taxonomy and Species
- Sept. 27 Evolution I: Descent with Modification
Smithsonian Assignment available
- Sept. 30 Evolution II: On the Origin of Species by Means of Natural Selection
- Oct. 2 Evolution III: Patterns and Processes
- Oct. 4 Systematics I: The Tree of Life
- Oct. 7 Systematics II: Tree-Based Thinking
- Oct. 9 The Colonization of Land
- Oct. 11 Life on Land Before the Dinosaurs

-----OCT. 14-18: Online Test 2-----

- Oct. 14 The Rise of the Dinosaurs
- Oct. 16 Thyreophora: Defense! Defense! Defense!
- Oct. 18 Ornithopoda: Beaks, Bills & Crests
- Oct. 21 Marginocephalia: That's Using Your Head!
- Oct. 23 Sauropodomorpha I: Dawn of the Thunder
- Oct. 25 Sauropodomorpha II, Neosauropoda: Size Matters! & Theropoda I: Basal Theropods
- Oct. 28 Theropoda II: Dinosaurs Red in Tooth and Claw
- Oct. 30 **WATCH ON ELMS:** Theropoda III, Coelurosauria: Tyrant Kings and Lesser Royals
- Nov. 1 **WATCH ON ELMS:** Theropoda IV, Maniraptora: The Feathered Dinosaurs
- Nov. 4 Theropoda V: Rise of Birds
- Nov. 6 Dinosaurs Take Flight
- Nov. 8 The Worlds of Dinosaurs: Dinosaur Paleocology
Smithsonian Assignment due

-----NOV. 11-15: Online Test 3-----

- Nov. 11 Dinosaur Olympics: Locomotion and Dinosaurs in the World of Physics
- Nov. 13 Walking with Dinosaurs: Trace Fossil Analysis
- Nov. 15 Through the Eyes of a Dinosaur: Dinosaur Senses
- Nov. 18 *Tyrannosaurus* Sex: Dinosaur Social Behavior
- Nov. 20 Bringing Up Baby: Dinosaur Families and Growth

- Nov. 22 The Hot-Blooded Dinosaurs
- Nov. 25 Heart Beats & Deep Breaths
- Nov. 27 So You Want To Be An Endotherm?
- Nov. 28-29 **Thanksgiving Recess: enjoy your roasted maniraptoran**
- Dec. 2-6: Online Test 4-----*
- Dec. 2 Dinosaur Physiology roundup
- Dec. 4 Dragons of the Sea and Air: Marine Reptiles and Pterosaurs
- Dec. 6 In the Shadow of the Dinosaurs: Mesozoic Mammals and Plants
- Dec. 9 The Cretaceous-Paleogene Extinction I: All Good Things...
- Dec. 11 The Cretaceous-Paleogene Extinction II: One REALLY Bad Day!
- Dec. 13 The Cretaceous-Paleogene Extinction III: End of an Era
- Dec. 21 (**SATURDAY!!**) **FINAL EXAM**, PLS 1130, 8:00-10:00 am