

# GEOL 104 Dinosaurs: A Natural History

Fall Semester 2015

Section FCH1 Freshmen Connection

Lectures: Online via ELMS

Discussion: TWS 1100 4:30-5:45 pm Th

Instructor: Dr. Thomas R. Holtz, Jr.

Room: Geology 4106 Office Hours: Th 1-3 pm, or by appointment

Phone: x56965, Email: tholtz@umd.edu

**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

**Textbook:** No required textbook for purchase. However, please keep current with the online lecture notes (<http://www.geol.umd.edu/~tholtz/G104FC/104FCSyl.html>)

**Course Organization:** This course is a “**flipped classroom**”: things which are traditionally done in class (especially lectures) are moved to online delivery for you to watch at your own time; other aspects traditionally done outside the classroom (“homework”) are done in small group in class. The discussion section is 4:30-5:45 pm in TWS 1100. Attendance at the discussion section is mandatory.

Watching the video lectures is also mandatory. These videos will be made available in advance on the ELMS site for the course, using the Panopto software. Please make certain within the first week of the class that you are able to view these videos, as they are essential for the course.

<b>Grade:</b>	Midterm Exam 1:	20%	Quizzes:	15%
	Midterm Exam 2:	20%	In-class Participation:	20%
	Final Exam:	20%	Smithsonian Field Trip Project:	5%
	EXTRA CREDIT POINTS for Course Evaluation			

**NOTE:** Smithsonian Field Trip projects cannot be completed for a grade after their regularly assigned due date passes.

**Grade Scale:** The numbers given represent the thresholds that must be passed in order to reach that grade (for example, A+ is 97.000... and any number greater). There is no rounding for letter grades; the thresholds must be passed. F is any grade below D-. Thresholds: 97, A+; 93, A; 90, A-; 87, B+; 83, B; 80, B-; 77, C+; 73, C; 70, C-; 67, D+; 63, D; 60, D-; < 60, F.

The Final Grade is the algebraic sum based on the numerical grades.

**Midterm Exams:** Two mid-term exams are scheduled for this course. They combine true/false, multiple choice, matching, identification, fill-in-the-blank, short answer, and short essay questions. They are held during regular lecture periods. The dates for these exams are **October 8** and **November 12**. 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> in the University of Maryland Undergraduate Catalog). Only those students excused for these causes will be eligible for a make-up exam.

**Final Exam:** The final exam has a similar format to the mid-term exams. It is cumulative for the entire course, but with a special emphasis on the material since the second exam. **NOTE:** This exam is on **Friday, December 18** from 4-6 pm. ***Please plan your winter schedule accordingly!!*** Again, absences from exams will not be excused except for those causes approved by University policy in the University of Maryland Undergraduate Catalog). Only those students excused for these causes will be eligible for a make-up exam.

**Quizzes:** The quizzes will cover the online lectures from the previous week. They will be done at the beginning of discussion period, so that it is essential you show up to discussion on time. The quizzes are generally multiple choice, true/false, matching, or identifications. Your lowest quiz grade will be automatically dropped; if you miss a quiz for any reason, it will be accommodated in this fashion. However, only one quiz at most will be dropped.

**In-class Participation:** An essential element of education in general is discussion, reflection, and clarification of key concepts. That is one of the main functions of the discussion section. In each discussion section there will be a review of the previous week's lectures as well as in-class interactive assignments and discussions which examine the material of that week.

In order to get the complete Participation aspect of the "In-class Participation" grade you must:

- Attend every discussion section
- Be able and willing to discuss the lectures and participate in the in-class assignments in an informed manner
- Be a productive and constructive participant in the discussions

You might receive (at Dr. Holtz's discretion) award up to 2 more percentage points as extra credit for particularly helpful or effective participation in the discussion. Students who are present for all discussion sections but are non-participants or are disruptive may be docked up to 2 and 4 percentage points (respectively) at Dr. Holtz's discretion.

**Attendance in Discussion Section:** While the expectation is that students attend **EVERY** discussion section, it is recognized that occasionally conditions (accident, illness, etc.) arise that prevent such. To recognize that, every student is allowed **one** (1) absence in discussion section without penalty, so long as:

- A. It is not the date of their Team Project Presentation.
- B. They inform their Dr. Holtz by email before hand (if at all possible), or certainly by the end of that same day that they will be absent and the reason for that absence. **NOTE:** word of mouth is not counted as sufficient for this! It is in your interest that there are electronic copies of your request and my reply in case of grade disputes.
- C. 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.
- D. The students make arrangements with Dr. Holtz to do a make-up of the in-class assignment if it is one which is potentially doable by the student on their own.

Should these conditions not be met, the students will receive a 0 for the grade for that discussion section meeting. Additionally, if there is more than one absence the student will receive a 0 for the grade each additional discussion section meeting missed.

If there is a medical condition or other extraordinary circumstance that does require missing **more than 1** discussion section meeting, the student must provide written documentation from the appropriate sort of official (health professional; court official; etc.) explaining the absence.

**PLEASE make certain that you have a pen or pencil at every class!**

**Smithsonian Field Trip Report:** 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 online **NOVEMBER 19**.

**EXTRA CREDIT Course Evaluations:** CourseEvalUM will be open for students to complete their evaluations for Fall 2015 courses between Tuesday, December 1 and Sunday, December 13. Students can go directly to <http://www.courseevalum.edu> to complete their evaluations, beginning December 1. 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](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!

In order to reward good citizenship, the class as a total will receive +1 percentage point if at least 70% of the students do the Course Evaluation and a +2 if 90% or more!

Otherwise, no separate extra credit assignments as such planned for this course, although individual exams and homework assignments may have extra credit questions which add up in the final course grade.

Websites: <http://www.geol.umd.edu/~tholtz/G104FC/>  
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 the online lectures; 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)."

Thus, in GEOL104, work submitted under your name, even for extra credit, must **unambiguously** be exclusively your own. Any evidence of dishonesty on any graded assignment will result in a referral to the Office of Student Conduct. **Note that Geology regards the**

**unauthorized distribution of any course materials as constituting facilitation of academic dishonesty and will report this to the OSC.**

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://counseling.umd.edu/DSS/registration.php>.

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 14).** 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 late Friday or the weekend.

Laptop/Tablet/Smartphone Use: Recent studies have shown that:

- People who take notes using pen/pencil and paper more effectively process and master the material, especially with regards to their ability to answer conceptual questions. (Also, taking notes by hand allows easier doodling, which has been shown to promote focus and memory).
- More importantly, people using laptops are likely to start multitasking (pulling up social media; watching videos; playing games; doing work for other classes; etc.) and that such multitasking is detrimental to the both the student doing it and all students within view of that screen.

Because of this, and because of past bad experience, smartphones, tablets, laptops, and all other modes of electronic communication must be **turned off** and **stowed away** during discussion time. (**NOTE:** using your smartphone between your legs underneath the desk is *NOT* “stowed away”, and you aren’t and have never fooled a teacher or instructor when you try that...) Apologies to those students who prefer to use this method to take notes, but this is the only effective way of dealing with the bad actors.

That said, there may be some group activities in which we will use individual laptops/tablets/smartphones in class. Dr. Holtz will make every effort to inform you about this in advance. However, in those situations you may only use these devices for the task at hand.

(**NOTE:** if you have a reason for using laptops for note taking approved by the Disability Support Service, please bring that to the attention of both Dr. Holtz prior to using them in class, and please make a copy of a DSS note to that affect available for our records.)

Miscellaneous: All work on quizzes, 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.

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 and viewing of lectures should be done **prior** to the discussion period 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.

Copyright: Copyright 2015 Thomas R. Holtz, Jr. as to this syllabus, all lectures, and all written material provided in this course. Students are prohibited from copying and selling course materials, from selling lecture notes, and from being paid to take lecture notes without the express written permission of the professor teaching this course.

### MAIN SCHEDULE

Week	Lecture Topics	Discussion Date and Topic
I	Introduction to Dinosaurs The Nature of Science The History of Paleontology	9/3 Introduction to the Course
II	The Geologic and Fossil Records	9/10 <b>Quiz 1</b> Commando Geology & Paleontology
III	Geologic Time Earth Systems & Ecology	9/17 <b>Quiz 2</b> Understanding Geologic Time & Ancient Environments
IV	Comparative Anatomy Taxonomy & Species Evolution	9/24 <b>Quiz 3</b> Interpreting Form & Function from Anatomy
V	Phylogenetic Systematics	10/1 <b>Quiz 4</b> Reconstructing the Tree of Life
VI	Life Before the Dinosaurs	10/8 <b>MID-TERM EXAM I</b>
VII	Dinosaur Origins	10/15 No in-class meeting
VIII	Thyreophora Marginocephalia Ornithopoda	10/22 <b>Quiz 5</b> Understanding Ornithischians
IX	Sauropodomorpha Theropoda	10/29 <b>Quiz 6</b> Understanding Saurischians
X	Origin of Birds & Flight Dinosaur Diversity Over Time	11/5 <b>Quiz 7</b> Birds as Dinosaurs
XI	Dinosaur Olympics Dinosaur Senses	11/12 <b>MID-TERM EXAM II</b>
XII	Dinosaur Behavior Dinosaur Growth	11/19 <b>Quiz 8</b> Trace Fossil Analysis
XIII	Dinosaur Physiology	11/24 No in-class meeting: Thanksgiving

XIV Dinosaur Contemporaries

12/3 **Quiz 9**  
Dinosaur Physiology

XV Dinosaur Extinctions  
Dinosaurs in Modern Society

12/10 **Quiz 10**  
Dinosaur Extinction

---

**FINAL EXAM** (NOTE: subject to change: to be confirmed later toward the end of the semester):  
December 18 (**FRIDAY**): 4-6 pm, TWS 1100