Dinosaurs, Early Humans, Ancestors & Evolution: The Fossil Record of Vanished Worlds of the Prehistoric Past (GEOL 204)

Term: *Spring 2026*

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Credits: 3
Course Dates: From Jan 26, 2026-May 12, 2026
Course Times: Lectures TuTh 9:30-10:45 am, Discussion Sections M 3-3:50 (0101, 0104), 4-4:50 (0102, 0105), or 5-5:50 (0103, 0106)
Classroom: Lectures TWS 0320, Discussion Sections SYM 0209 (0101, 0102, 0103) or PLS 1119 (0104, 0105, 0106)

Course Description

Welcome to GEOL204 Dinosaurs, Early Humans, Ancestors & Evolution: The Fossil Record of Vanished Worlds of the Prehistoric Past. (By the way, just call the course "The Fossil Record": that's how it shows up in the transcript!)

This is one of the "Big Questions" courses. The Big Questions courses are designed to speak to important issues that spark the imagination, demand intellect, and inspire innovation. They challenge students to wrestle with big questions and examine the ways that different disciplines address them. Our Big Question is:

WHAT GOOD IS THE FOSSIL RECORD?

Where did we, and the other living things on Earth, come from? What lived here before us? How do we know? The questions of the origins of humanity and of the other inhabitants of our world have intrigued cultures throughout history. During the last several centuries scientists have developed many techniques in the natural historical sciences-geology, paleontology, biology, archaeology-which allow us to answer those questions. "The Fossil Record" will consider the many different types of evidence from used to reconstruct events in the history of life by looking at particular case studies of the fossil record. In discussion sections students will be introduced to reading the scientific literature and interpreting examples of data sets, plots, and charts used to interpret the fossil world. We will also examine how the fossil record informs our understanding of (and possible response to) the recent and near-future impact of human technology and activity on the Earth systems and planetary biosphere.
This course examines how scientists study the age, environments, evolution, origin, biology, behavior, and extinctions of dinosaurs and the other inhabitants of their world. 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
- The complex interactions between the living and non-living world
- The role of information from the prehistoric past in understanding climate change and modern biodiversity

Lecture Themes: Each lecture will have one (sometimes more) central question presented towards the beginning, and over the course of the lecture you will see how paleontologists and related scientists answer those questions. It is important that you pay attention to ***HOW*** such questions are answered, and not merely what the answers are.

A Note on Content: Science is demonstrably Humanity's most effective way of assessing reality about the natural world. Many of its discoveries contradict deeply held traditional, religious, political, or personal beliefs. In this particular course, we shall examine what Science has uncovered about the age of the Earth and its inhabitants, the origin and interrelationships of species (including our own), and the reality of climate change (including human contribution to this phenomenon). We will not shy from indicating where the scientific discoveries demonstrate that other beliefs about these aspects of the natural world are in error. If you find it distressing to hear people's beliefs called 'inaccurate' (whether you hold them or not), this may not be the course for you; there are many other courses available at the University which fulfill the same requirement. If, however, you wish to understand not merely what Science has discovered but also HOW it discovered it-regardless of its implications for traditional, religious, political, or personal beliefs-then we encourage your active participation.

Learning Outcomes

After successfully completing this course, you will be able to:

- Identify the major techniques used by scientists to date events in the ancient past, the evolutionary relationships of organisms, and the behavior and function of ancient life
- Recognize how scientists test alternative models of evolutionary events and transitions
- Properly identify the various components of a peer-reviewed research paper, its conclusions, and the evidence used to support those conclusions
- Effectively present and document scientific information by means of PowerPoint presentations and other media

- Furthermore, as DSNS (Distributive Studies Natural Sciences) course, all students who complete this course should be able to:
    - Demonstrate a broad understanding of scientific principles and the ways scientists in a particular discipline conduct research.
    - Apply quantitative, mathematical analyses to science problems.
    - Solve complex problems requiring the application of several scientific concepts.
    - Look at complex questions and identify the science and how it impacts and is impacted by political, social, economic, or ethical dimensions.
    - Critically evaluate scientific arguments and understand the limits of scientific knowledge.
    - Communicate scientific ideas effectively.
- Additionally, as an SCIS ("Big Question") course, all students who complete this course should be able to
    - Identify the major questions and issues in their I-Series course topic
    - Describe the sources the experts on the topic would use to explore these issues and questions
    - Demonstrate an understanding of basic terms, concepts and approaches that experts employ in dealing with these issues
    - Demonstrate an understanding of the political, social, economic, and ethical dimensions involved in the course
    - Communicate major ideas and issues raised by the course through effective written and/or oral presentations
    - Articulate how this course has invited them to think in new ways about their lives, their place in the University and other communities, and/or issues central to their major disciplines or other fields of interest

Required Resources

- Course Website: https://geol.umd.edu/~tholtz/G204/ and elms.umd.edu
- Book: No required textbook for purchase; instead, there are extensive online lecture notes. There will be some additional readings associated with the Discussion Sections and Homeworks; links to these will be provided on ELMS.
- There is one required self-guided field trip to the Smithsonian Institution's National Museum of Natural History. Although the museum is free, you would need to transport yourself them. The Archives/Navy Memorial Metro Station is the closest, and (like the College Park Station) is on the Green Line.
- Total Estimated costs of required course materials: $10 round trip Metro fare from the College Park Station to Archives/Navy Memorial Station.

Course Structure

2 lectures per week (Tuesday, Thursday), 1 discussion section per week (Monday). **NOTE**: You must attend the particular discussion section for which you are registered.

Lectures lost due to University late openings or cancellations or instructor absence will be made up as Panopto video recordings on the ELMS page. Discussion sections missed due to early closings or cancellations will be handled on a case-by-case basis: expect an announcement on ELMS for these.

Attendance in lecture is expected. The individual PowerPoints will not be provided to students, although there are detailed lecture notes online. Furthermore, the Questions of the Day (QotDs) will only be provided during lecture. If you want to achieve a good grade in the course, the time to start working towards that is from the very beginning! Keep up with the material as it is presented rather than "cramming" to study it right before exams

Attendance in Discussion Section is required: see the grade items for "Discussion Participation" below for details.

NOTE: Attendance means more than mere presence: it means "paying attention". Please refrain from texting/web-browsing/doing homework/etc. in class.

Tips for Success in this Course

1. **Participate.** We invite you to engage deeply, ask questions, and talk about the course content with your classmates. You can learn a great deal from discussing ideas and perspectives with your peers, TAs, and instructor. Participation can also help you articulate your thoughts and develop critical thinking skills.
2. **Manage your time.** Students are often very busy, and we understand that you have obligations outside of this class. However, students do best when they plan adequate time that is devoted to course work. Block your schedule and set aside plenty of time to complete assignments including extra time to handle any technology related problems.
3. **Login regularly.** We recommend that you log in to ELMS-Canvas several times a week to view announcements, answer your Questions of the Day, keep up with the lecture notes, and answer the weekly online homework.
4. **Do not fall behind.** This class moves at a quick pace and each week builds on the previous content. If you feel you are starting to fall behind, check in with the instructor and TA as soon as possible so we can troubleshoot together. It will be hard to keep up with the course content if you fall behind in the pre-work or post-work.
5. **Use ELMS-Canvas notification settings.** Pro tip! Canvas ELMS-Canvas can ensure you receive timely notifications in your email or via text. Be sure to enable announcements to be sent instantly or daily.
6. **Ask for help if needed.** If you need help with ELMS-Canvas or other technology, IT Support. If you are struggling with a course concept, reach out to me and your classmates for support.

Policies and Resources for Undergraduate Courses

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

- Academic integrity
- Student and instructor conduct
- Accessibility and accommodations
- Attendance and excused absences
- Grades and appeals
- Copyright and intellectual property

Please visit www.ugst.umd.edu/courserelatedpolicies.html for the Office of Undergraduate Studies' full list of campus-wide policies and follow up with me if you have questions.

Course Guidelines

Names/Pronouns and Self-Identifications:

The University of Maryland recognizes the importance of a diverse student body, and we are committed to fostering inclusive and equitable classroom environments. I invite you, if you wish, to tell us how you want to be referred to in this class, both in terms of your name and your pronouns (he/him, she/her, they/them, etc.). Keep in mind that the pronouns someone uses are not necessarily indicative of their gender identity. For more information about names and gender markers, visit the LGBTQ+ Equity Center.

Additionally, it is your choice whether to disclose how you identify in terms of your gender, race, class, sexuality, religion, and dis/ability, among all aspects of your identity (e.g., should it come up in classroom conversation about our experiences and perspectives) and should be self-identified, not presumed or imposed. We will do my best to address and refer to all students accordingly, and We ask you to do the same for all of your fellow Terps.

Video or Audio Recording:

Video or audio recording of class sessions, activities, or discussions is prohibited without advance permission from the professor. Maryland is one of 11 U.S. states that require two-party, or all-party, consent before it is permissible to record or otherwise intercept and/or capture communications (such as phone calls, in-person conversations, video conferences). This means that everyone participating in a conversation must give their consent before any communication is recorded. Read this UMD article on Audiovisual Recording for more information.

Communication with Instructor:

Email: If you need to reach out and communicate with me, please email me at tholtz@umd.edu or (preferred) using the Inbox email function of ELMS; similarly, please contact the TAs using their email or the Inbox on ELMS. Please DO NOT email us with questions that are easily found in the syllabus or on ELMS (i.e., When is this assignment due? How much is it worth? etc.) but please DO reach out about personal, academic, and intellectual concerns/questions. While we will do our best to respond to emails within 24 hours, you will more likely receive email responses from me on morning after you send an email message.

ELMS: We will send IMPORTANT announcements via ELMS messaging. You must make sure that your email & announcement notifications (including changes in assignments and/or due dates) are enabled in ELMS so you do not miss any messages. You are responsible for checking your email and Canvas/ELMS inbox with regular frequency.

Communication with Peers:

With a diversity of perspectives and experience, we may find ourselves in disagreement and/or debate with one another. As such, it is important that we agree to conduct ourselves in a professional manner and that we work together to foster and preserve a virtual classroom environment in which we can respectfully discuss and deliberate controversial questions. We encourage you to confidently exercise your right to free speech—bearing in mind, of course, that you will be expected to craft and defend arguments that support your position. Keep in mind, that free speech has its limit, and this course is NOT the space for hate speech, harassment, and derogatory language. We will make every reasonable attempt to create an atmosphere in which each student feels comfortable voicing their argument without fear of being personally attacked, mocked, demeaned, or devalued.

Any behavior (including harassment, sexual harassment, and racially and/or culturally derogatory language) that threatens this atmosphere will not be tolerated. Please alert us immediately if you feel threatened, dismissed, or silenced at any point during our semester together and/or if your engagement in discussion has been in some way hindered by the learning environment.

In order to be an effective participant Discussion Sections, please:

- **Arrive on time.** If you do have to arrive late, please enter with as minimal disruption as possible. Full credit for that meeting is based on the expectation you are there for the full session
- **Do not leave before the session ends.** Expect to use the full class time; that said, some may actually end early.
- **Stow away all laptops, smartphones, tablets, etc.** Using them during section meetings will result in a grade penalty for that meeting. **EXCEPTIONS**: there may be some activities when their use is encouraged (for calculations, to look up key information, etc.). Also, there may be occasions where you or the TAs may want to verify some information relevant to the discussion at hand; with the TAs permission, you can use your

devices to look up information. But refrain from checking social media, doing homework for other classes, and the like!

- **Be prepared to participate.** That is, when there are assigned readings/videos, make sure you have read/screened and understood them. Make sure you have already completed and posted your student-generated questions for that week. If there is some other project due, make sure you have them completed. And always be prepared to discuss the previous week's lectures! You will called upon to discuss your assignment, and you should be ready to add additional information/observations to the class if you think it is relevant.
- **Be courteous.** Obviously, this includes general courtesy: don't insult each other; be respectful of each other; etc. But specifically, express academic courtesy:
    - Make sure each person is allowed to express their thoughts. In other words, don't monopolize the discussion and don't interrupt each other.
    - Be respectful of other people's right to hold beliefs different than your own.
    - Similarly, remember that it IS okay to confront a belief if you have actual evidence, but confront the **belief itself**, not the person or people who hold it.
    - Everyone makes mistakes. If you yourself states something incorrect, it isn't the end of the world. If someone else states something incorrect, that doesn't mean that they are incompetent. Be prepared to learn from your own mistakes, and the errors of others. That is a big part of the learning process (uncomfortable as it might be at the time...)
- **Everyone is expected to participate.** Ideally you will do so willingly and graciously. But if you are sitting there passively trying to be invisible (we've all been there at some point...) you still might be asked to give your response/answer/whatever. Please do so.
- **Help each other out, so long as it isn't an academic honesty violation!** A big part of the role of discussion sections is to generate and promote collective learning: by interacting as a group, you help reinforce learning you have already done, and get a chance to learn new ideas, concepts, and approaches.
- **Stay engaged.** Please eliminate or reduce as much as feasible other distractions. For instance, please stay away from social media, non-emergency texting, emailing, and phone messages, doing homework for other classes, etc., during the time in our session. You may sometimes need to have access to online materials (papers, ELMS, etc.) during class, of course: that is part of the meeting itself.

By the way, if you feel like there are additions or modification to this list, bring them up with Dr. Holtz and I'll see about such changes.

Major Assignments

Midterm Exams (15% each): Three online exams on **March 4-5** (covers the lectures from 1/27 to 2/26), **April 14-15** (covers the lectures from 3/3 to 4/9), and **May 7-8** (covers lectures from 4/14 to 5/7) respectively. For each of these there will be a section comprised of true/false, matching, multiple choice, and similar type questions, as well as a few short answer and essay questions. These exams are open note but timed (75 minutes) and are subject to the University's Honor Pledge; you may not seek help from fellow students or other people in doing these. If you encounter a technical problem, please contact ELMS@umd.edu for help (and Dr. Holtz so that he is aware of your situation.

Discussion Participation (10%): An essential element of education in general (and the Big Questions courses in particular) is discussion, reflection, and clarification of key concepts. That is one of the main functions of the discussion sections. In any given discussion section, there might be a review of the previous week's lectures and readings; a review of homework assignments; the assignment and explanation of new homework projects; interactive participatory activities; student presentations; reviews for forthcoming exams; and actual good old-fashioned discussions.

In order to get the complete Participation grade, you must:

- Attend every discussion section (the TA will keep a record of the presence and absence of students in their section)
- Be prepared to (when called upon) discuss the course material (lectures, homework assignments, etc.) in an informed manner
- Be a productive and constructive participant in discussions and in interactive activities
- For those days with presentations, do peer reviews for all presentations (Rubrics and rules for this will be provided later.)
- Be attentive during the session. (NO texting or using social media in section meetings, for instance.)

The TA may (at their own discretion) award up to 2 more percentage points as extra credit for particularly helpful or effective participation in the discussion for students in their section. 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 the TA's discretion.

Attendance in Discussion Section: While the expectation is that students attend ***EVERY*** lecture and ***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:

- It is not the date of their Platform Presentation.
- They inform their TA by email (cc:ing Dr. Holtz in the email) beforehand (if at all possible), or certainly by the end of that same day that they will be absent and the reason for that absence.
- 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.
- ***NOTE***: excused absences from Discussion Sections do NOT excuse students from submitting online assignments. These must still be submitted in a timely fashion. If there are extenuating circumstances, please contact the TA and the instructor.

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, legal obligation, or other extraordinary circumstance that does require missing ***more than 1*** discussion section meeting—or missing the date of the Platform Presentation—the student must provide documentation from the appropriate sort of official (health professional; court official; etc.) explaining the absence.

In cases of dispute between student and TA over the Discussion Participation grade Dr. Holtz (as "instructor of record") will be the final arbiter (but be informed he will take the TA's advice very seriously).

Homework (10% total): Throughout the course there will be short homework projects provided on ELMS. The homeworks are submitted as ELMS quizzes. These include short answers (typically true/false, multiple choice, or matching questions) and occasionally this requires an image upload. These projects are intended to allow you to use and interpret the type of data (some of it directly from the peer-reviewed literature) that paleontologists and other scientists employ in understanding the fossil record. Your TA will discuss aspects of the homework in class, and you may discuss the packets with your classmates, but ultimately the answers you turn in ***must be your own.*** If there is even the appearance that you collaborated on homework answers, your homework will be turned over to the Office of Student Conduct for evaluation. The lowest Homework grade is automatically dropped.

Individual Platform Presentations "Notes from the Fossil Record" (10% total): As a term project for the course, you will have an individual presentation about a recent technical research paper in paleontology, which will be presented as an in-Discussion section platform (e.g., PowerPoint) presentation. More details about the logistics of the project, choosing your paper, grading rubric, etc., will be made available later this semester. Your grade will be 50% from your peers' evaluations and 50% from your TA.

Questions of the Day (QotD) (5% total): During each lecture there will be one or more brief question shown on the board. Depending on the particular question, you might submit your answer on your own to ELMS, or after discussing it with a classmate nearby. You will have only a short window in which to answer the question. The format of the question can be true/false, fill-in-the-blank, multiple choice, or more open-ended. In some cases we'll review your submissions as a point of in-lecture discussion.

The **lowest four (4) grades** of your QotDs will be automatically dropped. This is how absence from lecture will be handled. In other words, you don't separately ask for an excused absence for these. **NOTE**: facilitating fellow students who are not present in answering these questions remotely is absolutely an Honor Code violation and will result in action taken against you and the student receiving the at-a-distance help. Individually these are low-point assignments, so it is much better to lose a few points than to risk a course grade of "XF" on your University transcript!

Smithsonian Self-Guided Field Trip Report (10%): To take advantage of our proximity to the Smithsonian Institution National Museum of Natural History and its excellent display of fossil materials, there is an 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 **April 27**.

Team Project "Museum of the Fossil Record" (10%): In lieu of a traditional final exam, the final project of this course is a team project. The theme of this project is the creation of a "museum exhibit" around a particular paleontological, paleoanthropological, or related topic. Each exhibit will be fully researched, illustrated, and created by teams of 2-3 students. There are a series of graded items in this project, culminating in a final version. The final version might be a poster, video, pamphlet, or other format of your design. The final Showcase of these items will be during the official Final Exam period, that is **TUESDAY MAY 12, 10:30 am-12:30 pm**: please plan your end-of-semester travel (if any…) accordingly!! (It that means informing your parents about this ***now***, please do so!).

Grading Structure

Assignment	Percentage %
Midterm I	**15%**
Midterm II	**15%**
Midterm III	**15%**
Discussion Participation	**10%**
Homework	**10%**
Individual Platform Presentation	**10%**
Questions of the Day (QotDs)	**5%**
Smithsonian Self-Guided Field Trip Report	**10%**
Team Project	**10%**
Total	**100%**

Academic Integrity

The University's Code of Academic Integrity is designed to ensure that the principles of academic honesty and integrity are upheld. In accordance with this code, the University of Maryland does not tolerate academic

dishonesty. Please ensure that you fully understand this code and its implications because all acts of academic dishonesty will be dealt with in accordance with the provisions of this code. All students are expected to adhere to this Code. It is your responsibility to read it and know what it says, so you can start your professional life on the right path. **As future professionals, your commitment to high ethical standards and honesty begins with your time at the University of Maryland.**

It is important to note that course assistance websites, such as CourseHero, or AI generated content (such as ChatGPT, Meta's LLaMa, and the like) are not permitted sources. Material taken or copied from these sites can be deemed unauthorized material and a violation of academic integrity. Please note that these systems are NOT search engines and are not designed to delivery factual information: instead, they are created to deliver a facsimile of human communication, without regards to its truth. Using these sources will hamper your learning process, particularly the critical thinking steps necessary for college-level assignments. The point of assignments is for you to be able to develop your skills in marshalling arguments and understanding the concepts and techniques covered in this program, not for you to simply provide us with answers we already know.

Additionally, students may naturally choose to use online forums for course-wide discussions (e.g., Group lists or chats) to discuss concepts in the course. However, collaboration on graded assignments is strictly prohibited unless otherwise stated. Examples of prohibited collaboration include: asking classmates for answers on quizzes or exams, asking for access codes to clicker polls, etc. Please visit the **Office of Undergraduate Studies' full list of campus-wide policies** and reach out if you have questions.

Finally, on each exam or assignment you must write out and sign the following pledge: ***"I pledge on my honor that I have not given or received any unauthorized assistance on this exam/assignment."*** If you ever feel pressured to comply with someone else's academic integrity violation, please reach out to me straight away. Also, ***if you are ever unclear*** about acceptable levels of collaboration, ***please ask***! To help you avoid unintentional violations, ***the following table*** lists levels of collaboration that are acceptable for each graded exercise. Each assignment will contain more specific information regarding acceptable levels of collaboration.

Midterm Exams	✓	---	---	---	---
Discussion Participation	✓	✓	---	✓	✓
Homework Assignments	✓	✓	---	---	---
Individual Platform Presentations	✓	✓	---	---	---
QotDs	---	---	---	---	---
Smithsonian Field Trip Report	✓	✓	---	---	✓
Team Project	✓	✓	---	✓	✓

Grades

All assessment scores will be posted on the course ELMS page. If you would like to review any of your grades (including the exams), or have questions about how something was scored, please email us to schedule a time for us to meet and discuss.

Late work will not be accepted for course credit so please plan to have it submitted well before the scheduled deadline. (Please contact us as soon as possible if some issue came up that prevented your timely submission of an assignment.) We are happy to discuss any of your grades with you, and if we have made a mistake, we will correct it as soon as possible. Any formal grade disputes must be submitted in writing and within one week of receiving the grade.

Final letter grades are assigned based on the percentage of total assessment points earned. To be fair to everyone we have to establish clear standards and apply them consistently, so please understand that being close to a cutoff is not the same as making the cut (89.99 ≠ 90.00). It would be unethical to make exceptions for some and not others.

Final Grade Cutoffs									
+	97.00%	+	87.00%	+	77.00%	+	67.00%	+	
A	93.00%	B	84.00%	C	73.00%	D	63.00%	F	<60.0%
-	90.00%	-	80.00%	-	70.00%	-	60.00%	-	

Misunderstanding the Course and Assignments

Over the years, some students have expressed misunderstandings about the nature of the course and the graded items in it. Here are some of the more common misunderstandings and responses:

- **"This is a 200-level GenEd & I-Series class; it is supposed to be easy!"** Like any course, it will involve learning and applying new information and skills. If you keep current with the lectures and assignments and ask for clarification when you don't fully understand it, you should do fine. But learning is an active verb; ***you*** need to make the effort to master the information if you expect to get a good grade. Furthermore, the "Big Questions" (formerly I-Series) courses are supposed to be challenging, even if they don't have any pre-requisites.
- **"I spent XXX hours on this assignment/studying for this exam, so my grade should be higher!"** You are being graded on the results of the assignment, rather than the effort you put into it as such. If you find that your results are not what you'd hoped, you might try new styles of studying. For instance, you might try forming a study group with other students, asking each other questions about the material. There is no single best way to study: each of us has different strengths and weaknesses. You might consult the Office of Undergraduate Studies website on Academic Success for tips and resources if you want more help: https://tutoring.umd.edu/academic-success
- **"Dr. Holtz included material in the lecture and the lecture notes that weren't on the exam!"** Guilty as charged!! Perhaps the single most common misunderstanding about a University education is that the lectures and assignments exist for you to pass the exam. (It isn't your fault for this misunderstanding; quite

frankly much of K-12 education is, sadly, structured this way!!) Instead, University courses exist for you to increase your knowledge about the discoveries, insights, ways of thinking, and approaches to understanding to the diverse subjects we teach. Exams, homework, and other graded assignments exist so that we can assess that learning is going on. Towards this end, these will always cover just a subsample of what we teach.

- **"I'm not a Geology major; how am I supposed to know these things?"** You aren't expected to know the course material in advance. (If you already knew the subject, there wouldn't be much point in taking a class!) I try to provide sufficient material to bring everyone up to speed on the subjects we cover. (And an aside: except for the subjects of rock formation, sedimentology, geologic time, plate tectonics, and fossilization, the material of this course is far outside what most Geology majors learn. In fact, if you master the details of this class, you will know more about this subject than most of the faculty in my Department!)
- **"I didn't have time enough on the exam to look up the answer to every question."** The goal of the exam is not to check your ability to look things up. Ideally you would do the entire exam without looking up any answers. You are provided with an exam review sheet in advance which lists the key concepts and materials you should understand for the exam; if you go into the exam knowing this material, you should be fine.

Course Outline

Week	Date	Topic	Question
I	Jan. 26	**Discussion:** Introductions; Policy Review; Overview of Syllabus; Icebreakers	
	Jan. 27 Lecture	"Into the Darkness of Prehistory": Our Long Quest for Origins	How did people discover the prehistoric past?
	Jan. 29 Lecture	Bringing Fossils to Life: Paleobiology and the Methods of Science	How do we use the fossil record to understand the biology and evolution of extinct organisms?
II	Feb. 2	**Discussion:** What are Scientific Papers, and How Do We Read Them?; **Homework 1 due**	
	Feb. 3 Lecture	Pages in the Book of Time: The Geologic Record	How do rocks form? How do they record past environments?
	Feb. 5 Lecture	Clocks in the Rocks: Reading Geologic Time	How do we tell geologic time?
III	Feb. 9	**Discussion:** The Scale of Geologic Time in-class activity; **Homework 2 due**	
	Feb. 10 Lecture	Bones in the Stones & Shells in the Shales: Fossils and Fossilization	What are fossils, and how do they form?
	Feb. 12 Lecture	"What is It?": Identifying Fossils and the Nature of Species	How do we identify fossils? What are species?

IV	Feb. 16	**Discussion:** Platform Presentations overview; Guide to making PowerPoints; **Homework 3 due**	
	Feb. 17 Lecture	Descent with Modification: Natural Selection & the Fossil Record	What is evolution?
	Feb. 19 Lecture	Tempo & Mode: Macroevolution & the Fossil Record	How do new species form?
V	Feb. 23	**Discussion:** Midterm I Review, part 1; **Homework 4 due**	
	Feb. 24 Lecture	The Tree of Life: Reconstructing the Evolutionary History of Life	How do we reconstruct how species are related to one another? How does the fossil record document the rise of major groups and the origins of new traits?
	Feb. 26 Lecture	Climate Emergencies Past & Present: The PETM and the Anthropocene Contrasted	What do ancient events show about the effects of climate change on the living world?
VI	Mar. 2	**Discussion:** Midterm I Review, part 2; **Homework 5 due**	
	Mar. 3 Lecture	Awful Changes: Mass Extinctions	What are extinctions and mass extinctions?
	Mar. 4-5	**Midterm Exam I online**	Covers 1/27 to 2/26
	Mar. 5 Lecture	First Impressions to Shell Games: The Garden of Ediacara & the Cambrian Explosion	What were the first animals like? Why did animals start growing shells?
VII	March 9	**Discussion:** Presentations Part I; **Final Presentation PowerPoints due for all students**	
	March 10 Lecture	Under Paleozoic Waves: Marine Evolution and Extinctions in the Paleozoic Era	How did the marine life of the Paleozoic Era change over time?
	March 12 Lecture	Land Ho! The Conquest(s) of Land	What were the stages in rise of life on land?
SPRING BREAK	March 16-20	**SPRING BREAK**	
VIII	March 23	**Discussion:** Presentations Part II	

	March 24 Lecture	The Great Dying: The Permo-Triassic Mass Extinction	What caused the Permo-Triassic mass extinction?
	March 26 Lecture	"Fearfully Great Lizards": The Rise of the Dinosaurs	How did dinosaurs become so successful?
IX	March 30	**Discussion:** Presentations Part III; **Homework 6 due**	
	March 31 Lecture	"Behold the Mighty Dinosaur": Gigantism, Ontogeny, and Dinosaur Paleoecology	How did giant size and large clutch size affect dinosaur ecosystems?
	April 2 Lecture	Feathered Dragons: Dinosaurs and the Origin of Birds	How did birds evolve from (other) dinosaurs, and how did they learn to fly?
X	April 6	**Discussion:** Midterm II Review, Part 1; Details of Team Project; **Homework 7 due**	
	April 7 Lecture	In the Shadow of the Dinosaurs: Flowers, Insects, Mammals, and the Cretaceous Terrestrial Revolution	How did the modern terrestrial community arise?
	April 9 Lecture	Earth's Worst Day Ever: The Cretaceous/Paleogene Mass Extinction	What caused the Cretaceous/Paleogene mass extinction?
XI	April 13	**Discussion:** Midterm II Review, Part 2; **Homework 8 due**	
	April 14 Lecture	Home of the Range: Mammalian Diversification in the Late Cenozoic	How did mammals respond to a cooler, drier, grassier world?
	April 14-15	**Midterm Exam II online**	Covers 3/3 to 4/9
	April 16 Lecture	The Scatterlings of Africa: The Origins of Humanity	Where, and from what, did humans evolve? What were proto-humans like?
XII	April 20	**Discussion:** Paleontology and the "Grey Literature"	
	April 21 Lecture	Last Man Standing: The Rise of *Homo sapiens*	What makes our species unique, and what happened to our closest kin?
	April 23 Lecture	Out of Eden: The Spread of *Homo sapiens*	How did humanity spread around the world?

XIII	April 27	**Discussion:** Team Project Workshopping; Midterm Exam III Review, part 1; **Smithsonian Field Trip Report due**	
	April 28 Lecture	The Call of Distant Mammoths: The Pleistocene Megafaunal Extinctions	What happened to the Pleistocene megafauna?
	April 30 Lecture	The Sixth Extinction: The Holocene Extinctions & Modern Defaunations	How does the fossil record inform us about the on-going modern extinctions (and how to respond to it)?
XIV	May 4	**Discussion:** Midterm Exam III Review, part 2; **Homework 9 due**	
	May 5 Lecture	The Earth After Us: The Fossil Record of the Anthropocene and Beyond	What will we leave behind in the fossil record?
	May 7 Lecture	What Good is the Fossil Record? The Public and the Prehistoric Past	What good is the fossil record?
	May 7-8	**Midterm Exam III online**	Covers 4/14 to 5/7
Final Exam Season	May 12 10:30 am-12:30 pm TWS 0320	**Team Project Showcase**	

Note: This is a tentative schedule, and subject to change as necessary – monitor the course ELMS page for current deadlines. In the unlikely event of a prolonged university closing, or an extended absence from the university, adjustments to the course schedule, deadlines, and assignments will be made based on the duration of the closing and the specific dates missed.

Participation

- Given the interactive style of this class, attendance will be crucial to note-taking and thus your performance in this class. Attendance is particularly important also because class discussion will be a critical component for your learning.
- Each student is expected to make substantive contributions to the learning experience, and attendance is expected for every session.
- Students with a legitimate reason to miss a live session should communicate in advance with the instructor, except in the case of an emergency.
- Students who miss a live session are responsible for learning what they miss from that session.
- Additionally, students must complete all readings and assignments in a timely manner in order to fully participate in class.
- Since we have the Questions of the Day each lecture, you should have a smartphone, tablet, or laptop available when you are in class. However, during classtime, please refrain from email, social media, online shopping, streaming videos, and other such communication outside the scope of the course, or from

working on material for other courses. In other words, please restrict your computer use to the activities of THIS class.

- 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.

Resources & Accommodations

Accessibility and Disability Services

The University of Maryland is committed to creating and maintaining a welcoming and inclusive educational, working, and living environment for people of all abilities. The University of Maryland is also committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the University, or be subjected to discrimination. The Accessibility & Disability Service (ADS) provides reasonable accommodations to qualified individuals to provide equal access to services, programs and activities. ADS cannot assist retroactively, so it is generally best to request accommodations several weeks before the semester begins or as soon as a disability becomes known. Any student who needs accommodations should contact me as soon as possible so that I have sufficient time to make arrangements.

For assistance in obtaining an accommodation, contact Accessibility and Disability Service at 301-314-7682, or email them at adsfrontdesk@umd.edu.

Emergency Preparedness

Emergencies on campus can happen at any time. To prepare, visit prepare.umd.edu or use the emergency symbol in the UMD App to review information. Resources for persons with disabilities are available on the emergency preparedness page of the ADA Coordinator's website.

Student Resources and Services

Taking personal responsibility for your own learning means acknowledging when your performance does not match your goals and doing something about it. I hope you will come talk to me so that I can help you find the right approach to success in this course, and I encourage you to visit **UMD's Student Academic Support Services website** to learn more about the wide range of campus resources available to you.

In particular, everyone can use some help sharpening their communication skills (and improving their grade) by visiting **UMD's Writing Center** and schedule an appointment with the campus Writing Center.

You should also know there are a wide range of resources to support you with whatever you might need (**UMD's Student Resources and Services website** may help). If you feel it would be helpful to have someone to talk to, visit **UMD's Counseling Center** or **one of the many other mental health resources on campus**.

Basic Needs Security

If you have difficulty affording groceries or accessing sufficient food to eat every day, or lack a safe and stable place to live, please visit **UMD's Division of Student Affairs website** for information about resources the campus offers you and let me know if I can help in any way.

Veteran Resources

UMD provides some additional supports to our student veterans. You can access those resources at the office of Veteran Student life and the Counseling Center. Veterans and active-duty military personnel with special

circumstances (e.g., upcoming deployments, drill requirements, disabilities) are welcome and encouraged to communicate these, in advance if possible, to the instructor.

Notice of Mandatory Reporting

Notice of mandatory reporting of sexual assault, sexual harassment, interpersonal violence, and stalking: As a faculty member, I am designated as a "Responsible University Employee," and I must report all disclosures of sexual assault, sexual harassment, interpersonal violence, and stalking to UMD's Title IX Coordinator per University Policy on Sexual Harassment and Other Sexual Misconduct.
If you wish to speak with someone confidentially, please contact one of UMD's confidential resources, such as CARE to Stop Violence (located on the Ground Floor of the Health Center) at 301-741-3442 or the Counseling Center (located at the Shoemaker Building) at 301-314-7651.
You may also seek assistance or supportive measures from UMD's Title IX Coordinator, Angela Nastase, by calling 301-405-1142, or emailing titleIXcoordinator@umd.edu.
To view further information on the above, please visit the Office of Civil Rights and Sexual Misconduct.

Course Evaluation

Please submit a course evaluation through Student Feedback on Course Experiences in order to help faculty and administrators improve teaching and learning at Maryland. All information submitted to Course Experiences is confidential. Campus will notify you when Student Feedback on Course Experiences is open for you to complete your evaluations at the end of the semester. Please go directly to the Student Feedback on Course Experiences to complete your evaluations. You may access the evaluation reports for courses for which 70% or more students submitted their evaluations.

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