

Edit Mode is: **ON****Fall 2021 Vertebrate Paleontology (GEOL-334-001, GEOL-534-001, BIOL-334-001)**

Syllabus

Syllabus

Build Content

Assessments

Tools

Partner Content

**Instructor Information****Vertebrate Palaeontology**

Enabled: Statistics Tracking



Title	Vertebrate Palaeontology
Author	Michael J. Benton
ISBN	978-1-118-40684-7
Publisher	John Wiley&Sons, Incorporated
Publication Date	October 20, 2014
Binding	Trade Paper
Type	Print
Price	\$99.95
Required	

**Vertebrate Paleontology, GEOL/BIOL 334 Lecture**

Enabled: Statistics Tracking

Vertebrate Paleontology, GEOL/BIOL 334 Lecture
STUDENT RESPONSIBILITIES

Students are expected to have read the syllabus and be familiar with expectations, due dates for assignments, and dates and times for quizzes and exams. The

syllabus will be posted on the Blackboard system and students are expected to pay attention to any changes that are made over the course of the semester.

Classroom health and safety:

- All students taking courses with a face-to-face component are required to follow the university's public health and safety precautions and procedures outlined on the university Safe Return to Campus webpage (<https://www2.gmu.edu/safe-return-campus>). Similarly, all students must also complete the Mason COVID Health Check daily. Only students who receive a "green" notification from the the Mason COVID Health Check are permitted to attend class face-to-face. If you suspect that you are sick or have been directed to self-isolate, please quarantine or get testing. Faculty are allowed to ask you to show them that you have received a Green notification and are thereby permitted to be in class.
- Students are required to follow Mason's current policy about facemask-wearing. As of August 11, 2021, all community members are required to wear a facemask in all indoor settings, including classrooms. **An [appropriate facemask](#) must cover your nose and mouth at all times in our classroom.** If this policy changes, you will be informed; however, students who prefer to wear masks either temporarily or consistently will always be welcome in the classroom.

Group study and note taking: Students in the class will be divided into several groups. Each day of lecture, one group will be responsible for posting notes from lecture to the class Lecture Notes wiki before the next class

period. All members of each group will be expected to contribute to each posting. Students are also encouraged to use their group to study for quizzes and exams. Additional assignments may also involve group activity.

Use of Electronics: Students are not allowed to record lectures or to use cameras or phones to take photos of lecture slides. Students are also not allowed to take notes using a computer or other device during lectures. Studies have shown that taking notes with a pen and paper yields significantly more retention of material vs. taking notes on a computer, so this policy is designed to help students learn. Exceptions may be made for students with accommodations from the Office of Disability Services (see below). Students are expected to keep devices on silent and put away during lecture.

Communication: Students are expected to check their Mason email and the Blackboard system regularly for information about the course. Students are expected to have read the syllabus and be familiar with expectations, due dates for assignments, and dates and times for quizzes and exams. The syllabus, including the schedule is posted on Blackboard and students are expected to pay attention to any changes that are made over the course of the semester. Failure to be aware of information posted to a student's Mason email account or on Blackboard is not a valid excuse for missing assignments, assignment instructions, tests, presentations or student responsibilities of any kind.

This course operates under the rules of the [George Mason University Honor System and Code](#). Please be familiar with the code. Quizzes and exams are closed

book and your answers must be your own.

Students are expected to respectful of the instructor and each other during class. Demonstrate that respect by please, not talking out of turn during class, turning off your cell phone and instant messaging during class, and trying not to disturb class if you enter late or leave early.

If you are a student with a disability and you think that you need academic accommodations, contact the [Office of Disability Services](#) at 703-993-2472 or ods@gmu.edu immediately if you have not already done so. All academic accommodations must be arranged through that office. You must then bring the accommodation recommendations to your instructor(s) immediately.

LEARNING OUTCOMES



This class is taught as Students as Scholars Scholarly Inquiry course, which means that you will be learning about the process of conducting research in vertebrate paleontology through reading assignments, a class project, lab activities, and other writing and presentation assignments. In particular, the class project will concentrate on how to form a testable hypotheses and what you will need to do to test this hypothesis. We will also stress how to find, evaluate, and use academic literature throughout the class. Through this process, you will learn both what we know about particular vertebrate fossils, but also what we still have yet to discover, and how much research there is still yet to do in this field. Specifically, you'll meet the following learning outcomes:

- Follow ethical principles in vertebrate paleontology and science in general
- Apply appropriate scholarly conventions when writing or performing data collection and analysis
- Develop your ability to comprehend and analyze scientific concepts, and to critically evaluate ideas
- Give you a better understanding of how vertebrates have evolve in a geological context
- Develop your skills in presenting scientific ideas in a clear and concise manner
- Develop analytical skills in paleontology

Students as Scholars is Mason's initiative to give students the opportunity to conduct undergraduate research. Check out [OSCAR.gmu.edu](https://oscar.gmu.edu) or stop by the Office of Student Scholarship, Creative Activities, and Research to learn about the many other programs they offer students. I'll also be sharing additional research opportunities (particularly in my own lab) as I hear about them, and I will be happy to meet with you if you have additional questions.

GRADING

Every week at least one, perhaps more than one, graded item will be due. Please make sure to check the Assignments section of Blackboard so that you know what is due when. These graded items will consist of: quizzes, written assignments, papers, and exams. Your grade will be calculated as follows:

Quizzes + assignments: 20%, Exam 1 + Exam 2 30%: Final Exam: 15%, Presentation/Paper: 15%, Lab: 15%, Participation: 5%

If you miss a quiz or fail to hand in an assignment, you will receive a zero for that quiz or assignment, but the lowest of your quizzes + assignments will be automatically dropped from the grade calculation. Format for the paper and

presentation will be discussed in class, and exemplar papers are available in the Course Content section of Blackboard. The final exam will include questions on material presented since the last test, as well as comprehensive questions from the entire semester.

Your participation grade will be based on your interactions in class and more importantly, your contributions to the lecture notes Wiki, and other on-line course interactions. The Wiki tracks how many times you edit it, and what percentage of the material you edit. Thus, the more of the information you enter and edit, the better your participation grade will be. This is designed to not only encourage you to post lecture notes, but to actively add to the lecture notes, and to encourage you to edit what notes others post. This is also to discourage you from relying on one active member of your group to post all of the notes for your group.

If you enter an exam late, you may do so only before the first person leaves the exam. You will not be allowed to take the exam after the first person has left the exam after completion. Do not expect that a make-up exam will be given if you miss an exam. If classes (or just this class) are cancelled on the day of an exam, the exam will be given on the next scheduled class day when classes are in session.

Grade scale: A: 90-100 pts; B: 80-89 pts; C: 70-79 pts; D: 60-79 pts; F: 0-59 points. Plusses and minuses will be assigned within each letter category.

Any assignment may be turned in late up until the last day of class, but 10% of the possible points will be taken off for every day it is late. You will receive a zero for work not completed by the last day of class.

All students will be required to write a final paper on a genus of fossil vertebrate. The paper will be a review paper 10-15 pages long. You will be expected to choose a topic for your paper by mid-term, and review that topic with the instructor. You will need to do your own research on your chosen topic, and properly cite proper scientific sources of information. Students will present their papers in a 15-20 minute presentation in lab during the last two weeks of the semester.

LESSONS

***** Introduction *****

Reading Assignment: <http://www.agiweb.org/news/evolution/foreword.html>

Note Taking Group A

Fossil of the Day: *Mammuthus*

<https://en.wikipedia.org/wiki/Mammoth>

https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=43266

<http://www.earthtimes.org/scitech/yuka-ice-age-elephant-mammuthus-primigenius/1914/>

August 23, 2021

12:00 PM - 01:15 PM

***** Vertebrate Paleontology Research *****

Reading Assignment: Uhen & Pyenson, 2011

Note Taking Group B

Fossil of the Day: *Triceratops*

https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=38862

<https://en.wikipedia.org/wiki/Triceratops>

https://www.si.edu/object/triceratops-horridus-marsh-1889:nmnhpaleobiology_3383580

August 25, 2021

12:00 PM - 01:15 PM

***** Vertebrate Origins *****

Reading Assignment: Benton Chapter 1

Note Taking Group C

Fossil of the Day: *Pikaia*

<https://en.wikipedia.org/wiki/Pikaia>

https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=34105

<https://burgess-shale.rom.on.ca/en/fossil-gallery/view-species.php?id=101&ref=i&>

August 30, 2021

12:00 PM - 01:15 PM

***** Vertebrate Paleontology Basics *****

Reading Assignment: Benton Chapter 2

Note Taking Group A

Fossil of the Day: *Daimonelix* (trace fossil from *Palaeocaster*)<https://en.wikipedia.org/wiki/Palaeocaster>https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=209187https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=41553https://www.youtube.com/watch?v=tdfFoSC8_7k**September 1, 2021****12:00 PM - 01:15 PM******* **Systematics** *****Reading Assignment: <http://www.ucmp.berkeley.edu/clad/clad4.html>

Note Taking Group B

Fossil of the Day: *Titanoboa*<https://en.wikipedia.org/wiki/Titanoboa>https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=179038<https://www.smithsonianmag.com/science-nature/how-titanoboa-the-40-foot-long-snake-was-found-115791429/>**September 8, 2021****12:00 PM - 01:15 PM******* **Early Paleozoic Fishes** *****

Reading Assignment: Benton Chapter 3

Note Taking Group C

Fossil of the Day: *Dunkleosteus*<https://en.wikipedia.org/wiki/Dunkleosteus>https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=34328<https://www.cmnh.org/dunk>**September 13, 2021****12:00 PM - 01:15 PM******* **Phylogenetic Reconstruction** *****Reading Assignment: <http://www.ucmp.berkeley.edu/clad/clad4.html>

Note Taking Group A

Fossil of the Day: *Uintatherium*<https://en.wikipedia.org/wiki/Uintatherium>https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40606**September 15, 2021****12:00 PM - 01:15 PM******* **Early Tetrapods & Amphibians** *****

Reading Assignment: Benton Chapter 4

Note Taking Group B

Fossil of the Day: *Tiktaalik*

<https://en.wikipedia.org/wiki/Tiktaalik>
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=77132
<https://www.youtube.com/watch?v=yvDQCa7rlel>

September 20, 2021
12:00 PM - 01:15 PM

***** **Evolution of Early Amniotes** *****

Reading Assignment: Benton Chapter 5

Note Taking Group C

Fossil of the Day: *Mesosaurus*

<https://en.wikipedia.org/wiki/Mesosaurus>
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36324

September 22, 2021
12:00 PM - 01:15 PM

***** **Exam I** *****

All material from the start of class to date will be covered.

September 27, 2021
12:00 PM - 01:15 PM

***** **Populations & Species** *****

Reading Assignment: http://evolution.berkeley.edu/evolibrary/article/evo_40; Via 2009

Note Taking Group A

Fossil of the Day: *Hydrodamalis gigas*

https://en.wikipedia.org/wiki/Steller%27s_sea_cow
https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=53136
https://animaldiversity.org/accounts/Hydrodamalis_gigas/

September 29, 2021
12:00 PM - 01:15 PM

***** **Triassic Tetrapoda & Post-Devonian Fishes** *****

Reading Assignment: Benton parts of chapters 6, 7, 8

Note Taking Group B

Fossil of the Day: *Carcharocles megalodon*

<https://en.wikipedia.org/wiki/Megalodon>
https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=202672
<https://extinctmonsters.net/2013/09/09/the-calvert-marine-museums-big-foam-shark/>

October 4, 2021
12:00 PM - 01:15 PM

***** **Growth & Form** *****

Reading Assignment: [Foote & Miller Chapter 2](#)

Note Taking Group C

Fossil of the Day: *Machimosaurus*

<https://en.wikipedia.org/wiki/Machimosaurus>
https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=38341
<https://www.nationalgeographic.com/news/2016/01/160111-ancient-crocodile->

[marine-largest-paleontology/](#)

October 6, 2021

12:00 PM - 01:15 PM

***** **Class Project** *****

Note Taking Group A

Fossil of the Day: *Diplocaulus*

<https://en.wikipedia.org/wiki/Diplocaulus>

https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=37264

October 12, 2021

12:00 PM - 01:15 PM

***** **Turtles, Marine Reptiles, Crocodiles & Pterosaurs** *****

Reading Assignment: Benton Chapter 8

Note Taking Group B

Fossil of the Day: *Odontochelys*

<https://en.wikipedia.org/wiki/Odontochelys>

https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=137151

<https://www.sciencemag.org/news/2008/11/sea-change-turtle-origins>

October 13, 2021

12:00 PM - 01:15 PM

***** **Diversification & Extinction** *****

Reading

Assignment: http://evolution.berkeley.edu/evolibrary/news/061101_diversity;

Ricklefs 2009

Note Taking Group C

Fossil of the Day: *Squalodon*

<https://en.wikipedia.org/wiki/Squalodon>

https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36852

October 18, 2021

12:00 PM - 01:15 PM

***** **Dinosauria I** *****

Reading Assignment: Benton Chapter 8

Note Taking Group A

Fossil of the Day: *Allosaurus*

<https://en.wikipedia.org/wiki/Allosaurus>

https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=38590

<https://www.youtube.com/watch?v=YSGdowqESaQ>

October 20, 2021

12:00 PM - 01:15 PM

***** **Dinosauria II** *****

Reading Assignment: Benton Chapter 8

Note Taking Group B

Fossil of the Day: *Brontosaurus*

<https://en.wikipedia.org/wiki/Brontosaurus>

https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=52983

<https://www.scientificamerican.com/article/the-brontosaurus-is-back1/>

October 25, 2021

12:00 PM - 01:15 PM

Smithsonian Field Trip

[Check out the virtual tours!](#) Be sure to visit [Deep Time](#), [Human Origins](#), and [Sant Ocean Hall](#)s for all of the great fossils on display.

***** **Aves** *****

Reading Assignment: Benton Chapter 9

Note Taking Group C

Fossil of the Day: *Waimanu*

<https://en.wikipedia.org/wiki/Waimanu>

https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=139506

<https://fossilpenguins.wordpress.com/2010/01/30/waimanu-the-first-penguin/>

October 27, 2021

12:00 PM - 01:15 PM

***** **Exam II** *****

All material since Exam I to date will be covered.

November 1, 2021

12:00 PM - 01:15 PM

***** **Lepidosauria and Mammal-Like Reptiles** *****

Reading Assignment: Benton parts of Chapters 8 & 10

Note Taking Group A

Fossil of the Day: *Brachyrhinodon*

<https://en.wikipedia.org/wiki/Brachyrhinodon>

https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=37813

November 3, 2021

12:00 PM - 01:15 PM

***** **Mammalia I** *****

Reading Assignment: Benton Chapter 10

Note Taking Group B

Fossil of the Day: *Morganucodon*

<https://en.wikipedia.org/wiki/Morganucodon>

https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=39753

https://evolution.berkeley.edu/evolibrary/news/190502_mammals_chewing

November 8, 2021

12:00 PM - 01:15 PM

***** **Mammalia II** *****

Reading Assignment: Benton Chapter 10

Note Taking Group C

Fossil of the Day: *Coryphodon*<https://en.wikipedia.org/wiki/Coryphodon>https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40574<https://lemur.duke.edu/fossil-fridays-coryphodon/>**November 10, 2021****10:30 AM - 11:45 AM******* **Paleoecology** *****Reading Assignment: [Foote & Miller Chapter 9](#)

Note Taking Group A

Fossil of the Day: *Icaronycteris*<https://en.wikipedia.org/wiki/Icaronycteris>https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40632**November 15, 2021****12:00 PM - 01:15 PM******* **Mammalia III** *****

Benton Chapter 10

Note Taking Group B

Fossil of the Day: *Notharctus*<https://en.wikipedia.org/wiki/Notharctus>https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40764<https://www.thirteen.org/programs/your-inner-fish/your-inner-fish-program-human-hand-gift-ancient-primates/>**November 17, 2021****12:00 PM - 01:15 PM******* **Marine Mammalia** *****

Reading Assignment: Uhen 2007, Uhen 2010

Note Taking Group C

Fossil of the Day: *Basilosaurus*<https://en.wikipedia.org/wiki/Basilosaurus>https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36681<https://statesymbolsusa.org/symbol/alabama/state-dinosaur-or-fossil/basilosaurus-cetoides>**November 22, 2021****12:00 PM - 01:15 PM******* **Final Paper Presentations** *****

Note Taking Group A

Each student will have 15 minutes to present their final paper/project to the class. I will post an order for the presentations here before the day of presentations. Presentations will continue into lab to ensure all students get to present.

Order of Presentation:

Coleman Shaffer

Grace Loonam

Zachary Tredwell

Quentin Jamison

Taylor Smith

Parker Niccum

Joseph Conaty

Laura Nicholson

Holden Drum

Em Herman

Nick Brand

Abby Glass

Andrew Levy

November 29, 2021**12:00 PM - 01:15 PM********* Human Evolution *******

Reading Assignment: Benton Chapter 11

Note Taking Group B

Fossil of the Day: *Homo floresiensis*https://en.wikipedia.org/wiki/List_of_human_evolution_fossils<https://humanorigins.si.edu/evidence/human-fossils/species/homo-floresiensis>**December 1, 2021****12:00 PM - 01:15 PM********* Final Exam *******

Covers all material from the entire semester.

Final exam will be available from 10:30 am to 10:30 pm on December 14. Dr. Uhen will be in the Blackboard Collaborate classroom during the posted exam time to answer questions. It is STRONGLY recommended that you take the exam during the posted exam time for this reason.

December 13, 2021**10:30 AM - 01:15 PM**