Syllabus

Instructor Information

Enabled: Statistics Tracking

Instructor Contact Information: Dr. Mark D. Uhen; Office location, 277A Research Hall; Office Hours, 10:30-11:30 Mondays or by appointment; email: muhen@gmu.edu; phone; 703-993-5264.

Office Hours will be held via Zoom: https://gmu.zoom.us/j/92435960938

History of Life

Enabled: Statistics Tracking

<table>
<thead>
<tr>
<th>Title</th>
<th>History of Life</th>
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</thead>
<tbody>
<tr>
<td>Author</td>
<td>Richard Cohen</td>
</tr>
<tr>
<td>ISBN</td>
<td>9781119482215</td>
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<tr>
<td>Publisher</td>
<td>Wiley</td>
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<tr>
<td>Binding</td>
<td>Available new, used, or digital</td>
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<td>Type</td>
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<tr>
<td>Price</td>
<td>$38.75</td>
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<td>Required</td>
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GEOL 134: Evolution & Extinction

Enabled: Statistics Tracking

GEOL 134: Evolution & Extinction
STUDENT RESPONSIBILITIES

The course will be delivered using Blackboard Collaborate. To access lectures, click Collaborate, then Course Room, the Course Room.

Lectures are generally recorded. To access recorded lectures, click Collaborate, then click on the three lines in the upper left corner. The recordings are listed there.

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.

Group study and note taking: Students in the class will be divided into 4 groups. One group will be responsible for posting notes from the class Lecture Notes Blackboard wiki before the next class period. All members of each group will be expected to contribute. Students are encouraged to use their group to study for quizzes and exams. Additional assignments may also involve group activity.

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. Qu
exams are closed book and your answers must be your own.

Students are expected to respectful of the instructor and each during class. Demonstrate that respect by please, not talking 0 during class, turning off your cell phone and instant messaging class, and trying not to disturb class if you enter late or leave e

If you are a student with a disability and you think that you nee academic accommodations, contact the Office of Disability Ser 703-993-2472 or ods@gmu.edu immediately if you have not al done so. All academic accommodations must be arranged thr office. You must then bring the accommodation recommendation instructor(s) immediately.

LEARNING OBJECTIVES

**Critical Thinking:** Develop your ability to comprehend and an: scientific concepts, and to critically evaluate scientific ideas.

**Topical Comprehension:** Give you a basic understanding of: of Earth, the history of life on Earth, and how geological proces: interact with biological processes over the history of the earth.

**Scientific Communication:** Develop your skills in communica scientific ideas in a clear and concise manner that demonstra comprehension of scientific topics.

GRADING

Graded items will be presented in the Recitation section over the of the semester. These graded items will consist of: quizzes, w assignments, discussions, and the class project (Virtual Museum regular exams will be given during the lecture period plus a final during the scheduled final exam period. The final exam is cum Your grade will be calculated as follows: Participation: 10%, Vi Museum: 15%, Quizzes + Assignments: 20% Exam 1 + Exam Final Exam: 20%.

Quizzes and assignments will be graded on a scale from 1-10. lowest of your quizzes + assignments will be dropped from the calculation. If you miss a quiz or fail to hand in an assignment, receive a zero for that quiz or assignment. Assignments turnec be graded 10% lower for each day that they are late. Assignm
in more than 1 week after the due date will receive a zero. Do not expect that a make-up exam will be given if you miss an exam. If classes (or 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.

General grade scale: A: 90-100 pts; B: 80-89 pts; C: 70-79 pts; D: 60-79 pts; F: 0-59 points.

Assignments must be turned in electronically via Blackboard. Written assignments must be submitted in either: plain text (.txt), Word (.doc or .docx), or PDF (.pdf) formats. File names for each assignment should follow this format: Assignment X Lastname.doc. Where X is the assignment number and Lastname is your last name. Failure to use this format may result in not receiving a grade in a timely fashion.

LESSONS

**Introduction & Origin of the Earth**

Reading: *Origin and Evolution of Earth*, Question 1, pp. 7-18

**Note Taking Group 1**

**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/191

January 24, 2022
09:30 AM - 10:20 AM

**Geologic Time**

Reading: *Understanding Geologic Time*

**Note Taking Group 2**

Video on absolute dating: https://www.youtube.com/watch?v=8QnsA_1pEd8

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_338358

January 26, 2022
09:30 AM - 10:20 AM

**Origins and deep time**

Reading: *Origin and Evolution of Earth*, Question 2, pp. 18-27

**Note Taking Group 3**

Fossil of the Day: *Pikaia*

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

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

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Topic</th>
<th>Note Taking Group</th>
<th>Reading</th>
<th>Extra Videos</th>
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<td><a href="https://en.wikipedia.org/wiki/Palaeocastor">https://en.wikipedia.org/wiki/Palaeocastor</a></td>
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<td>January 31, 2022</td>
<td>09:30 AM - 10:20 AM</td>
<td>Origin of Life &amp; Precambrian Life</td>
<td>1</td>
<td>Reading: Origin and Evolution of Earth, Question 3, pp. 27-34</td>
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<td>Fossil of the Day: Titanoboa</td>
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<td>February 2, 2022</td>
<td>09:30 AM - 10:20 AM</td>
<td>Geological and Biological processes</td>
<td>2</td>
<td>Reading: Origin and Evolution of Earth, Question 8, pp. 84-94</td>
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<td>Fossil of the Day: Dunkleosteus</td>
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<td>February 4, 2022</td>
<td>09:30 AM - 10:20 AM</td>
<td>Early Paleozoic earth history</td>
<td>3</td>
<td>Reading: Paleozoic (Cambrian, Ordovician, Silurian, Devonian)</td>
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<td>Fossil of the Day: Uintatherium</td>
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February 7, 2022  
09:30 AM - 10:20 AM  
Late Paleozoic Earth History  

Reading: Paleozoic (Carboniferous, Permian)  

Note Taking Group 4  
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  

February 9, 2022  
09:30 AM - 10:20 AM  
Evolution  

Reading: http://evolution.berkeley.edu/evolibrary/article/0_0_0/evo_02  

Note Taking Group 1  
Fossil of the Day: Mesosaurus  
https://en.wikipedia.org/wiki/Mesosaurus  
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36324

February 11, 2022  
09:30 AM - 10:20 AM  
Colonial Life  

Reading: Cowen, Chapters 4 & 5  

Note Taking Group 2  
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/  

February 14, 2022  
09:30 AM - 10:20 AM  
Exam 1 Review  

Reading: Review Exam 1 readings and notes  

Note Taking Group: 3  

February 16, 2022  
09:30 AM - 10:20 AM  
Exam 1  

Reading: Review Exam 1 readings and notes  

February 18, 2022  
09:30 AM - 10:20 AM  
Mesozoic earth history  

Reading: Mesozoic (Triassic, Jurassic, Cretaceous)  

Note Taking Group 4  
Fossil of the Day: Carcharocles megalodon  
https://en.wikipedia.org/wiki/Megalodon
February 21, 2022
09:30 AM - 10:20 AM
Brachiopoda

Reading: Cowen, Chapter 5

Note Taking Group 1
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

February 23, 2022
09:30 AM - 10:20 AM
Marine to Terrestrial transitions (and vice versa)

Reading: Read *The Origin of Tetrapods* and *The Evolution of Whales* on the Understar website; Cowen Chapter 8

Note Taking Group 2
Fossil of the Day: *Odontochelys*
https://en.wikipedia.org/wiki/Odontochelys
https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=137151

February 25, 2022
09:30 AM - 10:20 AM
Fossils and Fossilization

Reading: http://www.ucmp.berkeley.edu/paleo/fossilsarchive/

Note Taking Group 3
Fossil of the Day: *Machimosaurus*
https://en.wikipedia.org/wiki/Machimosaurus
https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=38341

February 28, 2022
09:30 AM - 10:20 AM
Mesozoic Life

Reading:

Note Taking Group 4
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/

March 2, 2022
09:30 AM - 10:20 AM
Recovery from mass extinctions

Reading: *How to survive a mass extinction*
Note Taking Group 1
Fossil of the Day: *Diplocaulus*


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

March 4, 2022
09:30 AM - 10:20 AM
Molluscs

Reading: Cowe, Chapter 5; http://www.ucmp.berkeley.edu/taxa/inverts/mollusca/molluscan.htm

Note Taking Group 2
Fossil of the Day: *Campanile giganteum*. Links here:
https://en.wikipedia.org/wiki/Campanile_giganteum
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=107040

March 7, 2022
09:30 AM - 10:20 AM
Echinoderms

Reading: Cowe, Chapter 5; http://www.ucmp.berkeley.edu/echinodermata/echinoso.html

Note Taking Group 3
Fossil of the Day: *Edrioasteroidea*: *Isorophus cincinnatiensis*
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=30777
https://www.myfossil.org/featured-fossil-edrioasteroids-of-cincinnati/
http://www.ordovicianatlas.org/atlas/echinodermata/edrioasteroidea/isorophida/isorophidae/isorophus/

March 9, 2022
09:30 AM - 10:30 AM
Evolution and Society

Reading: *Science, Evolution, and Creationism*

Note Taking Group 4
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-cetacean

March 11, 2022
09:30 PM - 10:20 PM
Cenozoic earth history

Reading: Cenozoic (Paleogene, Neogene)

Note Taking Group 1
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/

March 21, 2022
09:30 AM - 10:20 AM
Arthropods
<table>
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<tr>
<th>Date</th>
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| March 23, 2022      | 09:30 AM - 10:20 AM | Fossil of the Day: *Anomalocaris*  
https://en.wikipedia.org/wiki/Anomalocaris  
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=7370  
https://www.youtube.com/watch?v=ice47loNmsc  
**Evolution of Earth's climate**  
*Origin and Evolution of Earth*, Question 7, pp. 71-86 |
| March 25, 2022      | 09:30 AM - 10:20 AM | Fossil of the Day: *Notharctus*  
https://en.wikipedia.org/wiki/Notharctus  
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40764  
primates/ |
| March 28, 2022      | 09:30 AM - 10:20 AM | Fossil of the Day: *Eusthenopteron*  
https://en.wikipedia.org/wiki/Eusthenopteron  
https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=34918  
http://digimorph.org/specimens/Eusthenopteron_foordi/  
**Vertebrates (through early tetrapods)** |
| March 30, 2022      | 09:30 AM - 10:20 AM | Exam 2 Review  
**Reading**: Review Exam 2 readings and notes |
| April 1, 2022       | 09:30 AM - 10:20 AM | Fossil of the Day: *Brachyrhinodon*  
https://en.wikipedia.org/wiki/Brachyrhinodon  
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=37813  
**Vertebrates (Amniota)**  
**Reading**: Cowen, Chapter 9 |
|                    |                 | Note Taking Group 2  
Note Taking Group 3  
Note Taking Group 4  
Note Taking Group 1 |
| Reading: Cowen, Chapter 5; [http://evolution.berkeley.edu/evolibrary/article/arthropods](http://evolution.berkeley.edu/evolibrary/article/arthropods) |
April 4, 2022
09:30 AM - 10:20 AM
Dinosauria

Reading: Cowen, Chapter 12 & 16

Note Taking Group 3
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

April 6, 2022
09:30 AM - 10:20 AM
Plate Tectonics & Evolution

Reading: Prothero, Chapter 9; Biogeography: Wallace and Wegener

Note Taking Group 4
Fossil of the Day: Mesosaurus
https://en.wikipedia.org/wiki/Mesosaurus
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36324

April 8, 2022
09:30 AM - 10:20 AM
Mammalia

Reading: Cowen, Chapter 15 & 17

Note Taking Group 1
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

April 11, 2022
09:30 AM - 10:20 AM
Mammalia (continued)

Reading:

Note Taking Group 2
Fossil of the Day: Uintatherium
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40606

April 13, 2022
09:30 AM - 10:20 AM
Nature and quirks of the fossil record

Reading: Tahnukos 2009

Note Taking Group 3
Fossil of the Day: Squalodon
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36852

April 15, 2022
09:30 AM - 10:20 AM
Mammalia (continued)
Reading: Uhen 2007

Note Taking Group 4
Fossil of the Day: *Icaronycteris*
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40632

April 18, 2022
09:30 AM - 10:20 AM
_Cenozoic Marine Radiations_

Reading: Uhen 2007

Note Taking Group 1
Fossil of the Day: *Enaliarctos*
https://en.wikipedia.org/wiki/Enaliarctos
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36916

April 20, 2022
09:30 AM - 10:20 AM
_Taphonomy_

Reading: Behrensmeyer 1984

Note Taking Group 2
Fossil of the Day: *Daimonelix* (trace fossil from *Palaeocastor*)
https://en.wikipedia.org/wiki/Palaeocastor
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=209187
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=41553
https://www.youtube.com/watch?v=tdffOsc8_7k

April 22, 2022
09:30 AM - 10:20 AM
_Paleobotany_

Reading: http://www.ucmp.berkeley.edu/IB181/VPL/Dir.html

To be clear, don't do the labs at the link, just read the background information about plant evolution.
Note Taking Group 3
Fossil of the Day: *Archaeopteris*
https://en.wikipedia.org/wiki/Archaeopteris
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=249678

April 25, 2022
09:30 AM - 10:20 AM
_Human Evolution_

Note Taking Group 4
Fossil of the Day: *Homo*

April 27, 2022
09:30 AM - 10:20 AM
Human Evolution

Reading: Human Evolution Evidence; Cowen, Chapters 19 & 20

Note Taking Group 1
Fossil of the Day: Homo floresiensis

https://humanorigins.si.edu/evidence/human-fossils/species/homo-floresiensis

April 29, 2022
09:30 AM - 10:20 AM
Pleistocene and Human Impacts

Reading: Pleistocene, Barnosky et al. 2011, Origin and Evolution of Earth, Question 7, Cowen, Chapter 21

Note Taking Group 2
Fossil of the Day: Mammutus
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/191

May 2, 2022
09:30 AM - 10:20 AM
TBA

Note Taking Group 3

May 4, 2022
09:00 AM - 10:20 AM
Final Exam Review

Reading: Review all readings and notes

Note Taking Group 4

May 6, 2022
09:30 AM - 10:20 AM
Final Exam

Reading: Review all previous exams, readings, and notes.

The Exam will remain open from 7:30am to 7:30pm on Monday, May 3, 2021. 2 hours 45 minutes to complete the exam. You must be done by 7:30pm, so please plan accordingly. I will be present in the Course Room in Collaborate from 7:30 am the scheduled time for the exam if you have any questions.

May 16, 2022
07:30 AM - 10:15 AM