Instructor Information

Enabled: Statistics Tracking

Instructor Contact Information: Dr. Mark D. Uhen; Office location, 3414 Exploratory 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/6898465135?pwd=Y2FRWWY0WStGbzVZOUlEVDIQReIzZ09

Location and Time: Exploratory Hall 1309, Monday, Wednesday and Friday, 9:30-10:20 am.

History of Life

Enabled: Statistics Tracking

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<thead>
<tr>
<th>Title</th>
<th>History of Life</th>
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<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>
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</tr>
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GEOL 134: Evolution & Extinction

STUDENT RESPONSIBILITIES

Students are expected to have read the syllabus and be familiar with expectations, due dates for assignments, and dates and times for 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 lecture to the class Lecture Notes Blackboard wiki before the next class period. All members of each group will be expected to contribute. Students are also 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 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 the Blackboard system 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 respect 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.
LEARNING OBJECTIVES

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

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

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

GRADING

Graded items will be presented in the Recitation section over the course of the semester. These graded items will consist of: quizzes, written assignments, discussions, and the class project (Virtual Museum). Two regular exams will be given during the lecture period plus a final exam during the scheduled final exam period. The final exam is cumulative. Your grade will be calculated as follows: Participation: 10%, Virtual Museum: 15%, Quizzes + Assignments: 20%, Exam 1 + Exam 2: 35%, Final Exam: 20%.

Quizzes and assignments will be graded on a scale from 1-10. The lowest of your quizzes + assignments will be dropped from the grade calculation. If you miss a quiz or fail to hand in an assignment, you will receive a zero for that quiz or assignment. Assignments turned in late will be graded 10% lower for each day that they are late. Assignments turned 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 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.

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 25, 2021
09:30 AM - 10:20 AM
Geologic Time

Reading: *Understanding Geologic Time*

Note Taking Group 3

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-mash-1889:nmnhpaleobiology_33

January 27, 2021
09:30 AM - 10:20 AM
Origins and deep time

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

Note Taking Group 2

Fossil of the Day: *Pikaia*
https://en.wikipedia.org/wiki/Pikaia
https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=34105

January 29, 2021
09:30 AM - 10:20 AM
Sediments & Sedimentary Rocks

Reading: *Sedimentary Rocks*

Note Taking Group 1

Extra Videos:

- Rock Cycle
- Sedimentary Rocks
- Earth's inner structure
- Plate Tectonics

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
February 1, 2021
09:30 AM - 10:20 AM
*Origin of Life & Precambrian Life*

Reading: *Origin and Evolution of Earth*, Question 3, pp. 27-34

Note Taking Group 3
Fossil of the Day: *Titanoboa*
https://en.wikipedia.org/wiki/Titanoboa
https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=179038

February 3, 2021
09:30 AM - 10:20 AM
*Geological and Biological processes*

Reading: *Origin and Evolution of Earth*, Question 8, pp. 84-94

Note Taking Group 2
Fossil of the Day: *Dunkleosteus*
https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=34328
https://www.cmnh.org/dunk

February 5, 2021
09:30 AM - 10:20 AM
*Early Paleozoic earth history*

Reading: *Paleozoic* (*Cambrian, Ordovician, Silurian, Devonian*)

Note Taking Group 1
Fossil of the Day: *Uintatherium*
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40606

February 8, 2021
09:30 AM - 10:20 AM
*Late Paleozoic Earth History*

Reading: *Paleozoic* (*Carboniferous, Permian*)

Note Taking Group 3
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=yvDQCa7rleI

February 10, 2021
09:30 AM - 10:20 AM
*Evolution*

Reading: http://evolution.berkeley.edu/evolibrary/article/0_0_0/evo_02
Note Taking Group 2
Fossil of the Day:  *Mesosaurus*
https://en.wikipedia.org/wiki/Mesosaurus
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36324

February 12, 2021
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 15, 2021
09:30 AM - 10:20 AM
*Exam 1 Review*

Reading: Review Exam 1 readings and notes

Note Taking Group: 3

February 17, 2021
09:30 AM - 10:20 AM
*Exam 1*

Reading: Review Exam 1 readings and notes

February 19, 2021
09:30 AM - 10:20 AM
*Mesozoic earth history*

Reading:  *Mesozoic* (Triassic, Jurassic, Cretaceous)

Note Taking Group 1
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/

February 22, 2021
09:30 AM - 10:20 AM
*Brachiopoda*

Reading: Cowen, Chapter 5

Note Taking Group 2
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 24, 2021
09:30 AM - 10:20 AM
**Marine to Terrestrial transitions (and vice versa)**

Reading: Read [The Origin of Tetrapods](https://en.wikipedia.org/wiki/The_Origin_of_Tetrapods) and [The Evolution of Whales](https://en.wikipedia.org/wiki/The_Evolution_of_Whales) on the Understanding Evolution website; Cowen Chapter 8

Note Taking Group 1

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

**February 26, 2021**
09:30 AM - 10:20 AM

**Fossils and Fossilization**

Reading: [http://www.ucmp.berkeley.edu/paleo/fossilsarchive/](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

**March 1, 2021**
09:30 AM - 10:20 AM

**Mesozoic Life**

Reading:

Note Taking Group 1

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 3, 2021**
09:30 AM - 10:20 AM

**Recovery from mass extinctions**

Reading: [How to survive a mass extinction](https://www.scientificamerican.com/article/how-to-survive-a-mass-extinction/)

Note Taking Group 3

Fossil of the Day: *Diplocaulus*
https://paleobiodb.org/classic/basicTaxonInfo?taxon_no=37264

**March 5, 2021**
09:30 AM - 10:20 AM

**Molluscs**

Reading: Cowne, Chapter 5; [http://www.ucmp.berkeley.edu/taxa/inverts/mollusca](http://www.ucmp.berkeley.edu/taxa/inverts/mollusca)

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 8, 2021
09:30 AM - 10:20 AM
**Echinoderms**

Reading: Cowen, Chapter 5; http://www.ucmp.berkeley.edu/echinodermata/echin

Note Taking Group 1

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/

March 10, 2021
09:30 AM - 10:30 AM
**Evolution and Society**

Reading: *Science, Evolution, and Creationism*

Note Taking Group 3

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

March 12, 2021
09:30 PM - 10:20 PM
**Cenozoic earth history**

Reading: *Cenozoic* (Paleogene, Neogene)

Note Taking Group 2

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 15, 2021
09:30 AM - 10:20 AM
**Arthropods**

Reading: Cowen, Chapter 5; http://evolution.berkeley.edu/evolibrary/article/arthr

Note Taking Group 1

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

March 17, 2021
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<td><em>Origin and Evolution of Earth</em>, Question 7, pp. 71-86</td>
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[https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40764](https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40764)  
| March 19, 2021 | 09:30 AM - 10:20 AM | **Vertebrates (through early tetrapods)** |
| Reading: Cowen, Chapter 9 | Note Taking Group 2 | Fossil of the Day: *Tiktaalik*  
[https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=77132](https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=77132)  
[https://www.youtube.com/watch?v=yvDQCa7rle](https://www.youtube.com/watch?v=yvDQCa7rle) |
| March 22, 2021 | 09:30 AM - 10:20 AM | **Exam 2 Review** |
| Reading: Review Exam 2 readings and notes | Note Taking Group 1 | |
| March 24, 2021 | 09:30 AM - 10:20 AM | **Exam 2** |
| Reading: Review Exam 2 readings and notes | Note Taking Group 1 | |
| March 26, 2021 | 09:30 AM - 10:20 AM | **Vertebrates (Amniota)** |
| Reading: Cowen, Chapter 9 | Note Taking Group 2 | Fossil of the Day: *Brachyrhинodon*  
[https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=37813](https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=37813) |
| March 29, 2021 | 09:30 AM - 10:20 AM | **Dinosauria** |
| Reading: Cowen, Chapter 12 & 16 | Note Taking Group 3 | Fossil of the Day: *Allosaurus* |
March 31, 2021  
09:30 AM - 10:20 AM  
**Plate Tectonics & Evolution**  
Reading: Prothero, Chapter 9; [Biogeography: Wallace and Wegener](https://en.wikipedia.org/wiki/Biogeography:Wallace_and_Wegener)  
Note Taking Group 1  
Fossil of the Day: *Mesosaurus*  
[https://en.wikipedia.org/wiki/Mesosaurus](https://en.wikipedia.org/wiki/Mesosaurus)  
[https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36324](https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36324)  

April 2, 2021  
09:30 AM - 10:20 AM  
**Mammalia**  
Reading: Cowen, Chapter 15 & 17  
Note Taking Group 2  
Fossil of the Day: *Morganucodon*  
[https://en.wikipedia.org/wiki/Morganucodon](https://en.wikipedia.org/wiki/Morganucodon)  
[https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=39753](https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=39753)  
[https://evolution.berkeley.edu/evolibrary/news/190502_mammals_chewing](https://evolution.berkeley.edu/evolibrary/news/190502_mammals_chewing)  

April 5, 2021  
09:30 AM - 10:20 AM  
**Mammalia (continued)**  
Reading:  
Note Taking Group 3  
Fossil of the Day: *Uintatherium*  
[https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40606](https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40606)  

April 7, 2021  
09:30 AM - 10:20 AM  
**Nature and quirks of the fossil record**  
Reading: Tahnukos 2009  
Note Taking Group 1  
Fossil of the Day: *Squalodon*  
[https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36852](https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=36852)  

April 9, 2021  
09:30 AM - 10:20 AM  
**Mammalia (continued)**  
Reading: Uhen 2007  
Note Taking Group 2
Fossil of the Day: *Icaronycteris*  
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=40632

April 12, 2021  
09:30 AM - 10:20 AM  
Cenozoic Marine Radiations

Reading: Uhen 2007

Note Taking Group 3

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

April 14, 2021  
09:30 AM - 10:20 AM  
Taphonomy

Reading: Behrensmeyer 1984

Note Taking Group 1

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 16, 2021  
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 2

Fossil of the Day: *Archaeopteris*  
https://en.wikipedia.org/wiki/Archaeopteris  
https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=249678

April 19, 2021  
09:30 AM - 10:20 AM  
Human Evolution

Note Taking Group 1

Fossil of the Day: *Homo*
April 21, 2021  
09:30 AM - 10:20 AM  
**Human Evolution**  
Reading:  [Human Evolution Evidence](https://en.wikipedia.org/wiki/List_of_human_evolution_fossils); Cowen, Chapters 19 & 20  
Note Taking Group 2  
Fossil of the Day: *Homo floresiensis*  
[https://humanorigins.si.edu/evidence/human-fossils/species/homo-floresiensis](https://humanorigins.si.edu/evidence/human-fossils/species/homo-floresiensis)  

April 23, 2021  
09:30 AM - 10:20 AM  
**Pleistocene and Human Impacts**  
Note Taking Group 3  
Fossil of the Day: *Mammuthus*  
[https://en.wikipedia.org/wiki/Mammoth](https://en.wikipedia.org/wiki/Mammoth)  
[https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=43266](https://www.paleobiodb.org/classic/basicTaxonInfo?taxon_no=43266)  

April 26, 2021  
09:30 AM - 10:20 AM  
**TBA**  

April 28, 2021  
09:00 AM - 10:20 AM  
**Final Exam Review**  
Reading: Review all readings and notes  
Note Taking Group 3  

April 30, 2021  
09:30 AM - 10:20 AM  
**Final Exam**  
Reading: Review all previous exams, readings, and notes.  
May 3, 2021  
07:30 AM - 10:15 AM