Course Description:

Lecture:
This course will investigate the history of the Earth and its life over the last 4.6 billion years. To aid this investigation, we will apply geologic principles, earth materials, depositional environments, stratigraphy, the geological timescale, plate tectonics, and evolutionary theory.

Laboratory:
This laboratory will consist of exercises designed to complement lecture material. Using the lab book assigned, we will explore Historical Geology in greater detail. We will use stratigraphic methods, geologic maps and fossils as evidence of Earth's past, present and perhaps even future.

Learning Objectives:

At the end of the course the student should be able to:
- Recognize basic depositional environments and their place in geologic history.
- Understand the importance of plate tectonics in the context of depositional environments and evolution.
- Understand stratigraphy and the geologic time scale.
- Be able to understand evidence of evolution throughout geologic history including the significance of mass extinctions.
- Understand historical sea level variation as recognized in strata.

Skills:

At the end of the course you should have acquired the following skills:
- The ability to recognize and scientifically categorize fossils to the class and occasional order level.
- The ability to recognize unconformities and their significance in a stratigraphic profile.
- The ability to relatively date strata using stratigraphic position, faunal succession and indicator beds.
- The ability to correlate strata throughout time and distance.
General Course Information:
Attending all lectures is highly recommended. There will be several quizzes to gauge how well you understand the material as well as a two exams and a cumulative final. The lecture material will be posted on the web page, but there will be other items discussed that will not appear in the power points. The labs all require attendance for completion. The materials used must remain within the laboratory and may not be taken away for make-up purposes.

Homework:
Homework will account for 20% of your overall grade. Most of the homework will come directly from the text. Other assignments will be given during class. Late assignments will not be accepted.

Attendance:
Attendance is mandatory for all labs, and exams. Except in the case of personal illness or a death in the immediate family, both of which must be substantiated, the student MUST seek prior approval from the instructor for a quiz absence. An unexcused absence will result in a grade of zero for the quiz that was missed.

Text:
Lecture:

Lab:

Web Pages:
Professor’s page—leading to power points: http://faculty.uml.edu/lweeden/EarthLife.htm

Contacting the Instructor:
Office hours are by appointment. Professor Weeden can be reached by phone at extension 4-3344 and email at Lori_Weeden@uml.edu.

Grading Policy:
Your grades will be determined as follows:

Lecture:
Completed Time Scale 5%
Homework 20%
Exam I (Chapters: 1, 5, 6, & 7) Oct 6 25%
Exam II (Chapters: 11 - 15) Nov 14 25%
Final Exam (cumulative) 25%

Laboratory:
Weekly Lab Exercises: 80%
Cumulative Lab Practicum 20%

*We will be going over homework in class the day it is due. Late assignments will not be accepted.
### Lecture Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Assignment</th>
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<tbody>
<tr>
<td>Sept 3</td>
<td>The Earth as a System</td>
<td>Read Ch 1: pp:1-5, 8-12, 19-23; RQ: 1, 2, 6, 7, 9 &amp; 11 Due: Sept 10.</td>
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<td>Sept 8</td>
<td>Sedimentary Environments</td>
<td>Read Ch 5; RQ: 1 – 12 Due: Sept 17</td>
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<tr>
<td>Sept 15</td>
<td>Correlation &amp; Dating Rock Record</td>
<td>Read Ch 6; RQ: 1 – 12 Due: Sept 24</td>
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<tr>
<td>Sept 22</td>
<td>Evolution and the Fossil Record</td>
<td>Read Ch 7; RQ: 1 – 10 Due: Oct 1</td>
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<tr>
<td>Sept 29</td>
<td>Hadean &amp; Archean Eons</td>
<td>Read Ch 11; RQ: 1 – 11 Due Oct 8</td>
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<tr>
<td>Oct 6</td>
<td>Proterozoic Eon</td>
<td>Exam I Oct 6 (Ch 1,5,6,&amp;7) Read Ch 12 RQ: 1 – 11 Due: Oct 17</td>
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<td>Oct 15</td>
<td>Early Paleozoic World</td>
<td>Read Ch 13; RQ: 1 – 10 Due: Oct 24</td>
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<td>Oct 20</td>
<td>Middle Paleozoic World</td>
<td>Read Ch 14; RQ: 1 – 10 Due: Oct 31</td>
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<tr>
<td>Oct 27</td>
<td>Late Paleozoic World</td>
<td>Read Ch 15; RQ: 1 – 10 Due: Nov 7</td>
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<tr>
<td>Nov 3</td>
<td>Early Mesozoic Era</td>
<td>Exam II Nov 3 (Ch 11 – 15) Read Ch 16; RQ: 1 – 11 Due: Nov 14</td>
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<td>Nov 10</td>
<td>The Cretaceous World</td>
<td>Read Ch 17; RQ: 1 – 10 Due: Nov 21</td>
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<tr>
<td>Nov 17</td>
<td>The Paleogene World</td>
<td>Read Ch 18; RQ: 1 – 11 Due: Dec 1</td>
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<tr>
<td>Nov 24</td>
<td>The Neogene World</td>
<td>Read Ch 19; RQ 1 – 10 Due: Dec 8</td>
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<tr>
<td>Dec 1</td>
<td>Finish Neogene World</td>
<td>Turn in completed time scale with significant events. Due Dec 10.</td>
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<td>Dec 8</td>
<td>Review for Final Exam</td>
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### Laboratory Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Sept 9</td>
<td>Exercise 1: Relative Dating and Unconformities</td>
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<tr>
<td>Sept 16</td>
<td>Exercise 4: Depositional Environments</td>
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<tr>
<td>Sept 23</td>
<td>Exercise 5: Stratigraphy</td>
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<td>Sept 30</td>
<td>Exercise 6: Physical Correlation</td>
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<td>Oct 7</td>
<td>Exercise 7: Facies Relationships and Sea-Level Change</td>
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<tr>
<td>Oct 14</td>
<td>Exercise 8: Fossils and Fossilization</td>
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<tr>
<td>Oct 21</td>
<td>Exercise 10: Patterns of Evolution</td>
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<td>Oct 28</td>
<td>Exercise 12: Index Fossils and Depositional Sequence</td>
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<td>Nov 4</td>
<td>Exercise 15: Paleozoic Orogenies of Ancestral North America</td>
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<td>Nov 11</td>
<td>Veteran’s Day – no lab this week</td>
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<tr>
<td>Nov 18</td>
<td>Exercise 16: Cordilleran Orogeny</td>
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<tr>
<td>Nov 25</td>
<td>Exercise 17: Cenozoic Geology</td>
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<td>Dec 2</td>
<td>Laboratory Final Exam</td>
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November 2nd we will be participating in a day-long field trip to The Harvard Museum of Natural History as well as hiking through the Nashoba and Merrimack Terrane. Please plan accordingly.