GEO 201 01, Geologic Evolution of North America 
Spring Semester 2020 syllabus

Lecture:  Monday, Wednesday, and Friday; 11:00 to 11:50 AM; CHCB # 304

Laboratory:  Tuesday; 11:00 AM to 12:50 PM; CHBC # 348

Professor:  Marc S. Hendrix; office hours are from 1:00 to 2:00 PM on Monday and Wednesday; other times by appointment.  Office is CHCB # 359; phone 243-5278; marc.hendrix@umontana.edu

Teaching Assistant:  Andrew Keene: Office hours are Tuesday and Thursday 1-2PM. CHCB316; andrew.keene@umontana.edu


Course Outcomes:  This course has the following learning outcomes:

1) a basic understanding of the evolution of the Earth System through time, including Earth’s geosphere, atmosphere, hydrosphere, and biosphere and the interactions among these systems.

2) a more specific understanding of the evolution of the North American continent through geologic time, particularly as regards major geologic events including but not limited to orogenic activity, major transgressions and regressions, and changes in paleoclimate.

3) knowledge of the age and distribution of major metamorphic, igneous, and sedimentary provinces in North America

4) a basic knowledge of the concepts and methods geoscientists use to interpret the sedimentary rock record, including correlation techniques, sequence stratigraphy, biostratigraphy, chemostratigraphy, and sequence stratigraphy.

5) a basic understanding of the evolution of life on Earth, focused in particular on North American fossil sites and the North American fossil record.

Prerequisites:  Students must have completed one of the following courses as a prerequisite: GEO101, GEO103, GEO105 or GEO107.

Lecture, attendance, and format:  Attendance is required.  Ideas and materials are presented in the lectures that are not covered in the course text.  Students will be held accountable for all ideas and materials covered in the text and presented in lecture.  The format is a mix of traditional lecture style and interactive discussion.
Laboratory attendance: Attendance is required. Laboratories are interactive and graded. All lab exercises are due at the beginning of Friday morning lecture during the week the exercise is assigned, except for exercises that are two weeks long (#3 and #8) which are due the second Friday at the beginning of class.

Field Trip: There is a required Saturday field trip on April 4th. We will leave from the south side of CHCB at 9:00 AM and return by ~ 5:30 PM.

Article Reports: Six (6) article reprints from the American Scientist (the magazine of Sigma Xi, the Scientific Research Society) are posted on Moodle. You are required to read two (2) of them and write a review/report about the article content and what you learned and new perspectives gained. Each report should be two (2) typed pages, double spaced, with one-inch margins using Times New Roman 12-point font. The first report is due on February 7 and the second is due on April 10. Reports will be assessed based on their content, grammar, and spelling.

Moodle Supplement: Lecture PowerPoints and American Scientist articles, and any supplemental assigned reading will be posted on Moodle.

Lecture, Text, Assigned Reading, and Content:

Part 1: Materials, Processes, and Principles

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/13</td>
<td>Earth as a System</td>
<td>1</td>
</tr>
<tr>
<td>1/15</td>
<td>Minerals and Rocks</td>
<td>2</td>
</tr>
<tr>
<td>1/17</td>
<td>Diversity of Life</td>
<td>3</td>
</tr>
<tr>
<td>1/20</td>
<td>No Class – MLK Day</td>
<td></td>
</tr>
<tr>
<td>1/22</td>
<td>continued</td>
<td></td>
</tr>
<tr>
<td>1/24</td>
<td>Environments and Life</td>
<td>4</td>
</tr>
<tr>
<td>1/27</td>
<td>Sedimentary Environments</td>
<td>5</td>
</tr>
<tr>
<td>1/29</td>
<td>continued</td>
<td></td>
</tr>
<tr>
<td>1/31</td>
<td>First Exam</td>
<td></td>
</tr>
<tr>
<td>2/3</td>
<td>Correlation and Dating of the Rock Record</td>
<td>6</td>
</tr>
<tr>
<td>2/5</td>
<td>continued – First article report due</td>
<td></td>
</tr>
<tr>
<td>2/7</td>
<td>Organic Evolution</td>
<td>7</td>
</tr>
<tr>
<td>2/10</td>
<td>continued</td>
<td></td>
</tr>
</tbody>
</table>

Part 2: The Story of the Earth

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/12</td>
<td>Plate Tectonics</td>
<td>8</td>
</tr>
<tr>
<td>2/14</td>
<td>Tectonics and Mountain Chains</td>
<td>9</td>
</tr>
<tr>
<td>2/17</td>
<td>No Class – Presidents Day</td>
<td></td>
</tr>
<tr>
<td>2/19</td>
<td>continued</td>
<td></td>
</tr>
<tr>
<td>2/21</td>
<td>Chemical Cycles</td>
<td>10</td>
</tr>
<tr>
<td>2/24</td>
<td>continued</td>
<td></td>
</tr>
<tr>
<td>2/26</td>
<td>Second Exam</td>
<td></td>
</tr>
</tbody>
</table>
2/28  The Hadean and Archean record of N. America  Chapter 11
3/2  continued
3/4  The Proterozoic record of N. America  Chapter 12
3/6  continued
3/9  Early Paleozoic record of N. America  Chapter 13
3/11  continued
3/13  continued
3/16  No Class – Spring Break
3/18  No Class – Spring Break
3/20  No Class – Spring Break
3/23  Middle Paleozoic record of N. America  Chapter 14
3/25  continued
3/27  continued
3/30  Third Exam
4/1  Late Paleozoic record of N. America  Chapter 15
4/3  continued
4/6  continued – Second article report due
4/8  Early Mesozoic record of N. America  Chapter 16
4/10  continued
4/13  The Cretaceous record of N. America  Chapter 17
4/15  continued
4/17  continued
4/20  The Paleogene record of N. America  Chapter 18
4/22  continued
4/24  The Neogene record of N. America  Chapter 19
4/27  continued
4/29  The Holocene record of N. America  Chapter 20
5/1  continued

Monday, May 4  Final Exam  10:10 AM to 12:10 PM

Laboratory Exercises (all on Tuesday 11AM-12:50PM; exercises are due one week later)

1/14  Relative Dating and Unconformities  Exercise 1
1/21  Analysis of Sedimentary Rocks  Exercise 3
1/28  Analysis of Sedimentary Rocks  Exercise 3
2/4  Fossils and Fossilization  Exercise 8
2/11  Fossils and Fossilization  Exercise 8
2/18  Evidence of Evolution  Exercise 9
2/25  Depositional Environments  Exercise 4
3/3  Stratigraphy  Exercise 5
3/10  Physical Correlation  Exercise 6
3/17  No Lab – Spring Break
3/24  Facies Relationships and Sea-Level ...  Exercise 7
3/31  Index Fossils and Depositional Sequences  Exercise 12
Course Grade: Individual exam letter grades and final letter grades will be based on the following percentages of correct responses: 100-90% A, 89-80% B, 79-70% C, 69-60% D, 59% and below F. Plus and minus scores will be assigned to letter grades following university guidelines. All exams, laboratory exercises, article reports, and the field trip will be counted in determining the final grade in the course. The weighting to determine the final letter grade is as follows:

% of Final Grade
24 Laboratory Exercises (12 at 2% each)
06 Field trip (required)
10 Article reports (2 required at 5% each)
12 First exam
12 Second exam
12 Third exam
24 Final exam
100 Total %

Exams: All exams except the final exam will be given during the scheduled class period. The days that they occur are marked in bold face type. Midterm exams will be comprehensive, but will focus on the course material covered since the last midterm. Failure to take a midterm exam at the scheduled time will result in a grade of zero (0), unless prior arrangements are made with the professor or a signed medical excuse from the attending physician is presented to the professor.

The final exam is comprehensive, and the exam period will last for two (2) hours. It is scheduled for Monday, May 4, 2020, from 10:10 AM to 12:10 PM. Failure to take a final exam at the scheduled time will result in a grade of zero (0), unless prior arrangements are made with the professor or a signed medical excuse from the attending physician is presented to the professor.

Exam questions types are true or false, fill in the blank, matching, short answer/essay, diagram and graph analysis, and short problem solving.

LABORATORY EXERCISES: All laboratory exercises are graded. Each exercise counts at 2% of your final grade. Each exercise must be turned in at the beginning of Friday morning lecture each week to receive credit.

STUDENT CONDUCT CODE: Please be familiar with the UM Student Conduct Code. The Student Conduct Code can be found on the Vice President for Student Affairs website is http://www.umt.edu/student-affairs/community-standards/Student%20Conduct%20Code%20-%20FINAL%20-%208-24-18.pdf

Course Accommodations (DSS): Students with disabilities will receive reasonable accommodations in this course. To request course modifications, please contact me as soon as
possible. I will work with Disability Services in the accommodation process. For more information, visit the Disability Services website (https://www.umt.edu/dss/) or call 406.243.2243 (Voice/Text).