Department of Geology

Winter Term 2014

Instructor: Lawrence D. Lemke
Office: 0224 Old Main  Phone: 313-577-6412
Email: ap3968@wayne.edu  Office Hours: Tu/Th 1:30-2:00 p.m. and by appt.

Supplemental Instruction: Ashley Reibel  ef3357@wayne.edu

Class Times and Location
Lecture: Tuesday and Thursday, 11:45 am – 1:15 pm  Room 1107  Old Main
Lab: Drop in Tuesday-Friday each week (see syllabus page 4 for hours/details)  Room 0307  Old Main

General Information
This course fulfills the General Education Requirement for a Physical Science (PS) with a Laboratory. Both the lecture and the laboratory must be taken simultaneously. There are no exceptions to this rule. Laboratory policies are elaborated on the final page of this syllabus.

Required Texts
1. Understanding Earth, Grotzinger and Jordan, 6th ed. with GeoPortal access (bundled at bookstore)

Purpose
Geology is the scientific study of Planet Earth. It involves the observation and interpretation of processes that form and change our world. Some of these processes, such as earthquakes, tsunami, or volcanic eruptions, proceed rapidly – often with catastrophic consequences. Others, such as erosion or mountain building can progress so slowly that their results are scarcely noticeable over a human lifetime. Each of these processes, however, can exert a profound influence on human activities and can, in turn, be influenced intentionally or unintentionally by human activities.

The objectives of this course are to:
(1) provide students with a basic working knowledge of earth materials and geologic history;
(2) inform students about significant earth processes and the interaction of primary Earth systems;
(3) prepare students for responsible participation in societal, political, and economic decision-making involving stewardship of the earth’s environment and natural resources.

After successfully completing GEL 1010, students should be able to:
1. view the Earth as a dynamic system of integrated processes including Plate Tectonics, the Rock Cycle, and the Hydrologic Cycle, operating in the context of geologic time.
2. identify common rock forming minerals.
3. classify and explain the differences among igneous, metamorphic, and sedimentary rocks.
4. explain the fundamentals of plate tectonic theory and relate earthquakes, volcanoes, continents, oceans, and structural deformation of rocks to plate tectonics.
5. summarize relative and numerical dating techniques and arrange major events in Earth history along the geologic time scale.
6. describe components of the hydrologic cycle, including groundwater occurrence and flow.
7. identify the main constituents of the Earth’s atmosphere and articulate the role it plays in weathering and climate.
8. describe surficial Earth processes including weathering, erosion, and soil formation.
9. identify the origins and categorize natural resources as renewable or nonrenewable.
10. discuss the natural and anthropogenic drivers of global climate change.
**Student Responsibilities:**

It is the responsibility of students to:

- uphold academic integrity in all activities.
- attend classes regularly and punctually – we will begin and end class on time.
- complete reading assignments prior to class and actively participate in class discussions.
- adhere to university policies on attendance, withdrawal, and other special procedures.
- notify the instructor promptly of any circumstances that prevent the student from completing any required assignment or exam.

**Note:** The use of cell phones, personal computers, or other wireless electronic devices is not permitted during class. Please come to class prepared to engage with your instructor and fellow students!

**Examinations**

Examinations will assess student mastery of material covered in lectures, laboratories, and assigned readings. In general, exam questions will emphasize material discussed in lectures (therefore lecture attendance is expected) but students are nevertheless responsible for material covered in all assigned readings. Test questions will consist of multiple choice, true or false, and short answers. Make-ups can be scheduled for mid-term exams, provided that the instructor is notified of conflicts in advance. Make-up exams are generally more difficult than regularly scheduled exams, however. The final exam is scheduled as designated in the WSU Schedule of Classes for this term. No other time will be available, and no exceptions will be made for conflicts such as student travel plans.

All examinations are closed-note and closed-book. During exams, you must do your own work. Talking or discussion is not permitted during the exams, nor may you compare papers, copy from others, or collaborate in any way. Any unauthorized collaborative behavior during the examinations will result in failure of the exam (a zero score for the exam). Repeated episodes of cheating will result in a course grade of ‘F’ and the initiation of University disciplinary action under section 10.1 of the WSU Student Code of Conduct. Any disputes that cannot be resolved using syllabus guidelines will be resolved by the University Student Code of Conduct.

**Grading**

Course grades will be determined by a weighted average of the following:

- GeoPortal Activities: 10%
- Exam I: 20%
- Exam II: 20%
- Final Exam (Comprehensive): 25%
- Laboratory: 25%

Attendance in Lecture is not required, however the instructor may take class participation into account when assigning final grades for students whose average score sits on the borderline between two grades. Attendance is required in Lab each week. If you miss four or more labs, you will receive a grade of “F” for the course. A grade of "I" will not be given under any circumstances in accordance with departmental policy. Exam scores will be posted on the course Blackboard website.

**Academic Early Assessment and Student Support**

Wayne State requires that all courses taught at the 1000-level include a means of assessing student progress no earlier than the fourth week and no later than the sixth week of classes. The first midterm exam will serve as the Early Assessment tool for this course. Students are encouraged to participate in support services designed to help them achieve academic success in lower level courses. Supplemental Instruction is available for GEL 1010 students (details will be announced in class) and free tutoring may be available through the Academic Success Center in the David Adamany Undergraduate Library.

**Special Assistance**

If you have a documented disability that requires accommodations, you will need to register with Student Disability Services (SDS) for coordination of your academic accommodations. The SDS office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TDD only). Once your accommodations are in place, I will be glad to meet with you privately during my office hours to discuss your individual needs.
# Winter 2014 Course Outline

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topics</th>
<th>Readings*</th>
<th>Lab Topics**</th>
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<tbody>
<tr>
<td><strong>Plate Tectonics and Earth Materials (Rocks and Minerals)</strong></td>
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<tr>
<td>1</td>
<td>Introduction/Overview; Earth System/Scientific Method</td>
<td>Chap 1</td>
<td>(No lab first week of classes)</td>
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<td>2</td>
<td>Continental Drift/Plate Tectonics</td>
<td>Chap 2</td>
<td>Lab 1: Overview (week of Jan 14)</td>
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<td>3</td>
<td>Atoms, Elements, Minerals; Igneous Rocks and Volcanoes</td>
<td>Chaps 3, 4 (+12)</td>
<td>Lab 9: Plate Tectonics</td>
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<td>4</td>
<td>Weathering; Sedimentation and Sedimentary Rocks</td>
<td>Chaps 5 (+16)</td>
<td>Lab 2: Minerals</td>
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<td>5</td>
<td>Metamorphism and Meta Rocks, Review; <strong>Exam 1 (2/7)</strong></td>
<td>Chap 6</td>
<td>Lab 3: Magmatism and Igneous Rocks</td>
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<td><strong>Earth History and Earth Processes</strong></td>
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<td>6</td>
<td>Rock Deformation and Geologic Time</td>
<td>Chaps 7, 8</td>
<td>Lab 4: Sediments and Sedimentary Rocks</td>
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<td>7</td>
<td>Earth History and Continents</td>
<td>Chaps 8, 10</td>
<td>Lab 5: Metamorphism and Metamorphic Rocks</td>
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<td>8</td>
<td>Earthquakes and The Earth’s Interior</td>
<td>Chaps 13, 14</td>
<td>Lab 6: Topographic Maps, Aerial Photographs and Remote Sensing</td>
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<td>9</td>
<td>Review; <strong>Exam 2 (3/7)</strong></td>
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<td>Lab 7: Crustal Deformation and Geologic Structures</td>
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<td>***** SPRING BREAK *****</td>
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<td><strong>Earth Resources and Human/Earth Environmental Interactions</strong></td>
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<td>10</td>
<td>Streams and Floods; Hurricane Katrina; The Hydrologic Cycle</td>
<td>Chap 17, 18</td>
<td>Lab 8: Environmental Geology</td>
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<td>11</td>
<td>Groundwater; Glaciers and Glaciations</td>
<td>Chap 21</td>
<td>Lab 10: Surficial Processes and Landforms</td>
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<td>12</td>
<td>Energy and the Environment</td>
<td>Chap 23</td>
<td>Lab 13: Groundwater</td>
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<td>13</td>
<td>Hydraulic Fracturing; Global Warming</td>
<td>Chap 15</td>
<td>Lab 11: Geology of Michigan</td>
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<td>14</td>
<td>Climate Change Review</td>
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<td>Lab 12: Virtual Field Trip</td>
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**FINAL EXAM:** Friday, April 25th, 10:40 am – 1:10 pm


### Examination Schedule

**Exam 1** (Chapters 1-6, 12, 16) – Thursday, February 6
**Exam 2** (Chapters 8, 15-19) – Thursday, March 6
Last Day to Withdraw from Classes: Saturday, March 22nd

**Final Exam** (Comprehensive) – Friday, April 25th at 10:40 am in Room 1107 Old Main

**Note:** The instructor reserves the right to modify the course content and schedule as the semester progresses in order to take into account changing needs of the students and instructors, weather-related closures, power outages, or any other unforeseen circumstances.
Department of Geology

GEL 1010 Laboratory

**General.** The GEL 1010 lab uses computer-assisted learning so that students can work at their own pace. The labs can be done anytime during the hours of operation. **One lab must be completed each week.**

**Purpose.** The purpose of the laboratory is to give students "hands-on" experience with geologic subject matter. The lab explores Earth materials (e.g. minerals, rocks, and fossils), and employs various tools used by geologists to study the Earth (e.g. maps, aerial photographs). Generally, each laboratory consists of a PowerPoint presentation followed by exercises, experiments or demonstrations.

**Location.** The lab is located in 0307 Old Main Building. The lab is on the basement level at the west end of the building facing Warren Ave.

**Procedure.** There are 13 labs; the first lab begins during the second week of class. You must have a lab manual in order to begin the first lab. A different lab is to be done each week -- only the lab offered during that particular week may be completed. **There are no make-up labs.** The laboratory assistants are there to help you with all aspects of each lab. They are responsible for enforcing all of the rules of operation. You must present your WSU One Card to the lab assistant each week before you begin (your ID will be returned at the end of the lab). Bring your lab manual each week. The labs are designed to take an average of 3 hours per week. You can work in the lab anytime it is open; however, each lab must be completed by Friday of the week it is assigned.

**Normal Hours of Operation**

<table>
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<tr>
<th>Day</th>
<th>Time</th>
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<tr>
<td>Tuesday:</td>
<td>1:00 - 4:30 p.m. &amp; 7:00-10:30 p.m.</td>
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<td>Wednesday:</td>
<td>11:00 a.m. - 9:30 p.m.</td>
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<tr>
<td>Thursday:</td>
<td>10:30 a.m. - 10:30 p.m.</td>
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<tr>
<td>Friday:</td>
<td>10:30 a.m. - 5:30 p.m.</td>
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**Grading.** Each lab is completed by taking a 20-question quiz. Your lowest lab quiz grade will automatically be dropped. Your grade is computed on the basis of the other 12 labs. The average of your 12 quiz grades determines your lab grade, which is then factored into your overall course grade. If you miss one lab, that is the grade that will be dropped. If you miss more than one lab, the first lab you missed will be dropped, and the others will count as 0%. **If you miss four or more labs -- you will fail the course.** There are no exceptions to this rule.

*Note: The last quiz is given 30 minutes before the lab closes each day -- no exceptions.*

**Cheating.** All laboratory quizzes are administered closed-book and closed-note. Talking or discussion is not permitted during the quizzes. Students may not compare papers, copy from others, or collaborate with others in any way during quizzes. Any deviation from these guidelines will result in: (1) failure of the quiz (a zero score for the exam that will not be dropped from the final lab average), and (2) reporting of the names of any and all students involved to the WSU Student Conduct Officer. A second episode of cheating will result in failure of the course and the initiation of disciplinary action under the WSU Student Code of Conduct. The removal of any PowerPoint presentations (or portions thereof) from the Geology 1010 lab (using cameras, data storage devices or any other means), will result in penalties up to and including failure of the entire course. Students are cautioned that repeated disciplinary action can lead to consequences as severe as suspension or expulsion under this policy.

**Other Rules of Operation.** No food, drinks, or visitors (e.g. children) are allowed in the lab. Cell phones and other electronic devices may not be used in the lab. Any problems with laboratory assignments or procedures should be directed to your professor or the Lab Supervisor (Mr. Lowrie).

**Special Assistance.** Any student needing special assistance will be accommodated. Please notify your professor or the Laboratory Supervisor (Mr. Lowrie) as soon as possible.