GEO 101N.02: Introduction to Physical

Marc S. Hendrix
University of Montana - Missoula
Geosciences 101 (section 2) – *Introduction to Physical Geology* – Syllabus
Spring Semester, 2016
Professor Marc S. Hendrix, CHCB 359, marc.hendrix@umontana.edu, cell = 406-544-0780

**Class meeting times:** Monday, Wednesday, Friday 2:10-3:00 p.m.
January 23 – May 5, inclusive (except holidays)
**Hendrix Office Hours:** Monday, Wednesday – 1:00-2:00 p.m. or by appointment

**Class Holidays (no meeting):** February 20 (Monday, Presidents Day), March 20-24 (Spring Break vacation)

**Final Exam:** Wednesday, May 10, 3:20-5:20 p.m.

**GEO101/section 2 note:** Although another section of Geosciences 101 is being taught MWF 9:10-10:00 a.m., that section is not interchangeable with this section. The lecture, reading material, and class content will differ between the two sections, and the exams for each section will not be shared and are not interchangeable.

**Moodle Web Site:** Aside from lectures, Hendrix office hours, and scheduled appointments, formal communications relative to class content and announcements will be handled through the course moodle page and the UM email system. UM policy requires that all electronic communications (i.e., email) take place via the UM email server, so please use your UM email account when contacting Prof. Hendrix about this course.

**Course Grading System:** Final grades for this course will be based solely on the following:

Attendance required: Physical attendance of each lecture is required. Attendance will be taken at the beginning of every lecture via iclicker. You are permitted to miss three (3) lectures without any penalty, but for each lecture absence beyond three, you will need a written excuse from your doctor or must have a family emergency about which you have notified Professor Hendrix. Unexcused absences will negatively affect your i-clicker score (see below).

20%: iclicker questions during each lecture: Each lecture, three iclicker questions will be posed for credit. The lowest total iclicker scores for three (3) different lectures will be dropped and will not count against your final grades, including unexcused absences resulting in an i-clicker score of zero.

25%: Midterm Exam 1: Date
25% Midterm Exam 2: Date
30% Final Exam, Wednesday, May 10, 3:20-5:20 pm

Each midterm exam will consist of 50 multiple choice questions. The final exam will consist of 75 multiple choice questions. Examples of prior GEO 101 exams by Hendrix will be made available on the course moodle website.

One extra credit option will be available. This option is an all-day geology field trip to be held in April on a Saturday to be determined. By attending and participating in this field trip, you will be eligible for adding a cumulative 5% points to your final course grade.

**Course Book:** This course will utilize the textbook *Earth2* by Hendrix and Thompson. The bookstore anticipates having this book in stock by the end of the first week of classes. In addition, the book is also available at Amazon.com.

In addition to course content delivered via lectures, you are responsible for keeping up with the assigned reading. Much of the detailed course content is contained in the textbook, so it will be very important that you make full use of the text. Exam questions will be derived both from the lecture material and the textbook.
Weekly Course Schedule:

Weekday/Date: Lecture/discussion topic

**Assigned Reading**

**Week 1**
Monday, January 23: Course introduction, Earth Systems
Wednesday, January 25: Rates of change, threshold and feedback effects
Friday, January 27: Mineral definition, chemistry, crystalline structures

Chapter 1: Earth Systems

**Week 2**
Monday, January 30: Mineral physical properties, classes, beneficial and harmful minerals
Wednesday, February 1: Rock Cycle, igneous rocks
Friday, February 3: Sedimentary Rocks

Chapter 2: Minerals

**Week 3**
Monday, February 6: Metamorphic Rocks
Wednesday, February 8: Earth history and geologic time
Friday, February 10: Unconformities, absolute geologic time, geologic time scale

Chapter 3: Rocks

**Week 4**
Monday, February 13: Minerals and mining
Tuesday, February 14: 7-9pm – optional review - midterm exam 1
Wednesday, February 15: Energy resources - fossil fuels
Thursday, February 16: 7-9pm – optional review – midterm exam 2
Friday, February 17: Midterm Exam 1, Chapters 1-5

Chapter 4: Geologic Time

**Week 5**
Monday, February 20: **NO CLASS** – Presidents Day Weekend
Wednesday, February 22: Alfred Wegener, continental drift, tectonic plate anatomy
Friday, February 24: Why plates move, plate movement and surface topography and climate

Chapter 5: Geologic Resources

**Week 6**
Monday, February 27: Earthquake waves,
Wednesday, March 1: Earthquake waves,
Friday, March 3: Earthquake damage, prediction, and mitigation

Chapter 6: Plate Tectonics

**Week 7**
Monday, March 6: Magma formation and behavior
Wednesday, March 8: Plutons and other igneous bodies
Friday, March 10: Volcanoes and volcanic eruptions

Chapter 7: Earthquakes and Earth's Structure

**Week 8**
Monday, March 13: Geologic structures
Wednesday, March 15: Tectonic settings of mountains
Friday, March 17: Mechanical vs. chemical weathering

Chapter 8: Volcanoes and Plutons

**Chapter 9: Mountains**

**Chapter 10: Weathering, Soils and Erosion**
Week 9
Monday, March 20: NO CLASS – Spring Break
Wednesday, March 22: NO CLASS – Spring Break
Friday, March 24: NO CLASS – Spring Break

Week 10
Monday, March 27: Soils and soil formation
Tuesday, March 28: 7-9pm – optional review - midterm exam 2
Wednesday, March 29: Mass wasting
Thursday, February 30: 7-9pm – optional review – midterm exam 2

Friday, March 31: Midterm 2, Chapters 1-10 (emphasis Ch. 6-10)

Week 11
Monday, April 3: Lakes, wetlands
Wednesday, April 5: Groundwater
Friday, April 7: Hot springs and geysers

Week 12
Monday, April 10: Dams, diversions, and water politics
Wednesday, April 12: Water pollution
Friday, April 14: Glacial movement, glacial erosion

Week 13
Monday, April 17: Glacial deposition, Earth's glaciations
Wednesday, April 19: Why do deserts exist? Water and deserts
Friday, April 21: Wind erosion, desertification

Week 14
Monday, April 24: Earth's oceans and their origin
Wednesday, April 26: Seafloor features
Friday, April 28: Continental margins

Week 15
Monday, May 1: Seawater, tides, and ocean currents
Wednesday, May 3: Emergent and submergent coastlines
Friday, May 5: Catch up and review

Monday, May 8 7-9 p.m. - optional review of course material to date, CHCB 304
Wednesday, May 10, 3:20-5:20 p.m. FINAL EXAM, cumulative – covers all course content, Chapters 1-16