

# Geology 101 - THE EARTH

## Spring 2009

time: MWF 9:05-9:55 AM  
place: Hasbrouck Lab 124  
instructor: Professor Steven Petsch  
office: Morrill IV-South, Room 265  
office hours: Monday 10:00-11:00 AM, or by appointment  
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### **TEXTS:**

1. *Exploring Geology* 1<sup>st</sup> edition, by Reynolds, Johnson, Kelly, Morin, Carter. (**required**)
2. *Laboratory Manual in Physical Geology*, by AGI/NAGT, Richard Busch, Editor. (**required**)

Textbooks are available at the UMass Textbook Annex

### **PHYSICAL GEOLOGY AS A GENERAL EDUCATION COURSE:**

Welcome to The Earth. This is our home planet. This is where we live. We should understand **how** the Earth functions, **how** it is changing, and **how** its features shape human society. The goal of this course is to inspire interest and understanding of the features and processes that shape our global physical landscape on this rocky, watery sphere that is our home in the universe. You should leave this course with greater understanding about the age and composition of the earth, environments in which different rocks are found, processes that shape our landscape, and how these influence and shape our lives.

You have enrolled in a general education course designed to inform you about the features and functions of this planet. **You can expect** to become better at observing the world around you, at understanding of geological processes that shape our landscapes, at applying logic to natural phenomena, and at recognizing that geologic distributions of natural resources and hazards plays a large role in human society. Class meetings will be interactive, with numerous in-class activities. **You are expected** to maintain regular attendance, keep up with readings, complete in-class exercises and activities, hand in all assignments, and participate in discussions.

The **required one-day field trip** will travel a cross section through the Berkshires, which are one of the world's best-studied mountain belts. We will be outside all day, traveling by van to several distinct stops, nose on the rocks, gaining understanding about the rocks and landscape of Western Massachusetts. The **Report** on the Berkshire field trip is an answer sheet that you fill in during the trip and turn in at the end of the field trip.

**ATTENDANCE ON THE FIELD TRIP IS REQUIRED TO PASS THIS COURSE**, so please adjust your schedule now. The trip is offered two times during the semester: April 11 and April 19. You will need to sign up ahead of time for one of these trips to reserve your seat. Space is limited to 50 persons per trip. There is no make-up for this field trip

## **CLASS SCHEDULE:**

The class schedule is subject to changes, depending on snow days, how long it takes for us to discuss topics, etc.

**The dates of the mid-term examinations are fixed;** material covered on these exams will be adjusted accordingly.

<b>No.</b>	<b>Day</b>	<b>Date</b>	<b>Subject</b>	<b>Chapter</b>
1	M	Jan 26	Investigating Geologic Questions – part I	Ch 2
2	W	Jan 28	Investigating Geologic Questions – part II	Ch 2
3	F	Jan 30	Plate Tectonics – part I	Ch 3
4	M	Feb 2	Plate Tectonics – part II	Ch 3
5	W	Feb 4	Earth Materials – part I	Ch 4
6	F	Feb 6	Earth Materials – part II	Ch 4
7	M	Feb 9	Igneous Environments – part I	Ch 5
8	W	Feb 11	Igneous Environments – part II	Ch 5
9	F	Feb 13	Volcanoes and Volcanic Hazards – part I	Ch 6
	M	Feb 16	<b>(Holiday – President’s Day- no classes)</b>	---
10	W	Feb 18	Volcanoes and Volcanic Hazards – part II	Ch 6
11	F	Feb 20	Sedimentary Environments – part I	Ch 7
12	M	Feb 23	Sedimentary Environments – part II	Ch 7
13	W	Feb 25	<b>MIDTERM EXAM 1</b>	<b>Ch 2-7</b>
14	F	Feb 27	Rock Deformation and Metamorphism – part I	Ch 8
15	M	March 2	Rock Deformation and Metamorphism – part II	Ch 8
16	W	March 4	Geologic Time – part I	Ch 9
17	F	March 6	Geologic Time – part II	Ch 9
18	M	March 9	Geologic Time – part III	Ch 9
19	W	March 11	Seafloor and Continental Margins – part I	Ch 10
20	F	March 13	Seafloor and Continental Margins – part II	Ch 10
		March 16-20	<b>Spring Recess (no class)</b>	---
21	M	March 23	Mountains, Basins and Continents – part I	Ch 11
22	W	March 25	Mountains, Basins and Continents – part II	Ch 11
23	F	March 27	Earthquakes and Earth’s Interior – part I	Ch 12
24	M	March 30	Earthquakes and Earth’s Interior – part II	Ch 12
25	W	April 1	Earthquakes and Earth’s Interior – part III	Ch 12
26	F	April 3	<b>MIDTERM EXAM 2</b>	<b>Ch 8-12</b>
27	M	April 6	Climate and Weather – part I	Ch 13
28	W	April 8	Climate and Weather – part II	Ch 13
29	F	April 10	Climate and Weather - part III	Ch 13
---	<b>Sat</b>	<b>April 11</b>	<b>All day field trip to the Berkshires. Every student must go on this trip - either on this date or Sunday, April 19th</b>	---
30	M	April 13	Glaciers and Sea Level – part I	Ch 14
31	W	April 15	Glaciers and Sea Level – part II	Ch 14
32	F	April 17	Weathering, Soils and Unstable Slopes – part I	Ch 15
---	<b>Sun</b>	<b>April 19</b>	<b>All day field trip to the Berkshires. Every student must go on this trip - either on this date or Saturday, April 11th</b>	---
33	M	April 20	<b>(Holiday - Patriots Day)</b>	---
34	T	April 21	Weathering, Soils and Unstable Slopes – part II	Ch 15
35	W	April 22	Rivers and Streams – part I	Ch 16
36	F	April 24	Rivers and Streams – part II	Ch 16
37	M	April 27	Water Resources – part I	Ch 17
38	W	April 29	Water Resources – part II	Ch 17
39	F	May 1	<b>MIDTERM EXAM 3</b>	<b>Ch 13-16</b>
40	M	May 5	Energy and Mineral Resources – part I	Ch 18
41	W	May 6	Energy and Mineral Resources – part II	Ch 18
42	F	May 8	The Carbon Cycle – part I	handouts
43	M	May 11	The Carbon Cycle – part II	handouts

## **COURSE GRADE:**

3 Midterm Exams (each worth 10%):	30 %
Cumulative Final Exam	15 %
Weekly News & In-Class Exercises	20 %
Weekly labs	25%
Berkshire Field Trip and Report	10 %
<b>Total</b>	<b>100%</b>

Each hour exam treats a separate block of material. Note the final exam is cumulative and *will cover material from the entire semester.*

## **WEEKLY NEWS & IN-CLASS EXERCISES**

There are two components to weekly in-class activities and assignments you are expected to hand in each week. Together, these total 20% of your cumulative grade, and you must attend class to hand in these assignments.

- (1) The Earth Sciences are very well represented in the news media. One goal of this course is to inform your ability to appreciate and understand current events that are impacted by geology. Each week, you will be asked to read any news sources you would like, and to prepare a short (1-2 paragraph) summary of news you have found that relates to the Earth Sciences. These summaries will be handed in each Friday, and graded. You must attend class to hand in these summaries. As an opportunity for **extra credit**, you will also be invited at the end of each Friday's lecture to report to the class on news and current events that contain Earth Sciences content.
- (2) Additional in-class exercises and activities will be offered during lectures at least once each week. In-class exercises will be started and completed within the one-hour lecture. There are no make-ups for in-class activities, and no assignments can be handed in for grading after that class has ended.

## **MAKE-UP POLICY ON EXAMS:**

This syllabus is provided so you can plan your semester accordingly. Please do not miss any exams. BUT, things happen ...

A student may miss one exam – and will need to make up the exam **within one week of the scheduled exam date.** Contact Prof. Petsch immediately once you have missed an exam. After three days, the exam score will be recorded as zero. Any subsequent missed exams will receive a zero grade. There is no make-up exam for the Final Exam.

## **CLASS MEETINGS:**

This course is an introduction to the processes that result in the materials, structure and evolution of the earth. Attendance in class is expected and essential. Exams will stress concepts developed in class meetings. Also, attendance is required to receive credit for in-class exercises.

## **LABORATORY SECTIONS:**

**First LAB begins Monday, Feb. 2.**

Go to your 1<sup>st</sup> lab section to obtain a syllabus and schedule for the labs and lab field trips. There will be exercises and assignments to be handed in during each laboratory session throughout the semester. Get to know your Graduate Teaching Assistant well. Locate her/his office in the department as soon as possible and know the office hours, whether or not you have problems. On field trips, wear boots and warm clothing; you will be going outside. In the event of steady rain/snow, indoor labs will be held.

**THERE ARE NO SCHEDULED MAKE-UPS FOR LAB FIELD TRIPS. IF YOU MISS A FIELD TRIP LAB DURING YOUR ASSIGNED PERIOD, IT IS YOUR RESPONSIBILITY TO ATTEND ANOTHER LAB AND COORDINATE THE WORK DONE WITH YOUR LAB INSTRUCTOR!**