EES majors studying the 'great unconformity' in Southington, CT

Dynamic Earth EES101

Spring 2016

Welcome to Dynamic Earth. In this course we will explore the natural processes that lead to disasters such as earthquakes, tsunamis, volcanic eruptions, and floods. These very processes also create things of beauty and may even make life itself possible.

During the semester you will make observations and interpretations of geologic processes ranging in scale from the global pattern of mountain ranges to the atomic structure of minerals, and in time from billions of years of Earth history to the few seconds it takes for a fault to slip during an earthquake. You will quantify magnitudes, rates, and equilibrium conditions for many of these processes using publicly available data as well as measurements you make yourself.

After the course your view of the world around you will have changed. The landscape you hike across, the rocks you drive by on the highway and the view out an airplane window will all tell you stories of the processes that formed them. When you hear of the next natural disaster you will understand the natural processes that caused it and be able to critically evaluate the media reports. Finally you will have gained basic observational and analysis skills that will apply to whatever endeavors you choose to pursue in the future.

Instructor:

Dr. Phil Resor presor@wesleyan.edu 860-685-3139

Office Hours (ESC441): Mon 3:00-4:00 pm, Thu 1:30-2:30, or by appointment

Course Assistants:

Jess Brennan jbrennan@wesleyan.edu

John Hossain j21hossain@gmail.com

Class Meetings:

Monday 1:10-2:30 ESC 405

Wednesday 1:10-4:00 lab (405) or field

Please bring a calculator, ruler, and protractor to class.

Course Materials:

- The required text is *Earth: Portrait of a Planet* (5th ed.) by Stephen Marshak
- Additional readings will be distributed as pdf files on Moodle

Assignments:

Class Attendance: Hands-on activities are a critical component of the course. Attendance in class is therefore required. *If you must miss class please contact me* ***in advance*** *to make alternative arrangements.* Please make every effort to arrive on time.

Reading: Textbook reading assignments are on the class schedule. These assignments should be completed before class so that you can contribute to class discussions and activities. Not all material in the readings will be covered in class and visa versa. Additional topical reading assignments will be made throughout the semester. Online quizzes will help assess your comprehension of reading material.

In-Class Activities and Homework: We will undertake a number of activities both in and outside of class. These activities are an important part of the learning process. I encourage you to work collaboratively in and out of class. Please note your partners on all assignments and be aware that you alone are responsible of the work that you turn in. Collaboration means working together, not taking another's results.

Moodle: There will be a discussion forum for each week's topic on Moodle. Feel free to post questions/answers to keep the course discussion alive between classes.

Exams: There will be two midterms and a cumulative final exam.

Final Project: You will create a poster presentation that introduces the geology of a site that interests you. Topics due 3/30. Final project due 5/4.

All due dates are on the schedule. Late assignments will be penalized 10% and will only be accepted within one week of the original due date.

Grading:	Exercises	30%
	Quizzes	5%
	Midterms	20%
	Geo Guide	25%
	Final Exam	20%

Students with Disabilities:
Wesleyan University is committed to ensuring that all qualified students with disabilities are afforded an equal opportunity to participate in and benefit from its programs and services. To receive accommodations, a student must have a documented disability as defined by Section 504 of the Rehabilitation Act of 1973 and the ADA Amendments Acto of 2008, and provide documentation of the disability. Since accommodations may require early planning and generally are not provided retroactively, please contact Disability Resources as soon as possible.

If you believe that you need accommodations for a disability, please contact Dean Patey in Disability Resources located in North College, room 021, or call 860-685-5581 for an appointment to discuss your needs and the process for requesting accommodations.

Gus Seixas '10 on the Hualapai limestone, Lake Meade, AZ

Dynamic Earth EES101
Schedule -- Spring 2016

Date	Topic	Reading	Assignment
Week 1	**Welcome to Planet Earth/Tectonics**		
Mon, Jan 25	Introduction to Earth	EPP* Ch. 1	
Wed, Jan 27	Discovering Plate Boundaries	EPP Ch. 2,3	Plate Tectonics†
Week 2	**Plate Tectonics and Earth Materials**		
Mon, Feb 1	Plate Boundaries Around the World	EPP Ch. 4	
Wed, Feb 3	Minerals	EPP Ch. 5	Minerals†
Week 3	**Rock cycle I: Building the Crust**		
Mon, Feb 8	Igneous Rocks	EPP Int. A, Ch. 6	
Wed, Feb 10	Volcanoes	EPP Ch. 9	Volcano†
Week 4	**Mountains and Earthquakes**		
Mon, Feb 15	Mountain Building	EPP Ch. 8, 11	
Wed, Feb 17	Earthquake cycle	EPP Ch. 10, Int. D	Earthquakes†
Week 5	**Earth's Thermostat: Radiation**		
Mon, Feb 22	**Midterm (weeks 1-4)**		
Wed, Feb 24	Earth's effective temperature and radiation balance		
Week 6	**Earth's Thermostat: Atmosphere**		
Mon, Feb 29	Atmosphere and energy flows	EPP Ch. 20	
Wed, Mar 2	Atmospheric circulation and capstone		Climate†
Mar 5 – Mar 20	*Spring Break*	*Spring Break*	
Week 7	**Rock Cycle II: Weathering and Soils**		
Mon, Mar 21	Finding geoscience information		
Wed, Mar 22	Weathering and erosion: Tombstone walking field trip	EPP Int. (A), B, C	Weathering†
Week 8	**Landscapes I: Sediments, Slopes and Rivers**		
Mon, Mar 28	Hydrologic Cycle: Rivers and Floods	EPP Int. F, Ch. 17	Rivers and Sediments†
Wed, Mar 30	Ravine walking field trip		*Geoguide Topics Due*
Week 9	**Landscapes II: Oceans and Coasts**		
Mon, Apr 4	Oceans and Sediments	EPP Ch. 18	
Wed, Apr 6	Field trip to Griswold Point		*The Beach*
Week 10	**Oceans and Climate**		
Mon, April 11	**Midterm (weeks 5-9)**		
Wed, April 13	Ocean Circulation		Oceans†
Week 11	**Deep Time and Earth Evolution I: Pz**		
Mon, April 18	Deep Time	EPP Ch. 7, Int. E, Ch. 12	
Wed, April 20	Virtual field trip to the Grand Canyon	EPP Ch. 13.1-13.6, 21	Grand Canyon†
Week 12	**Dinosaurs in our Back Yard: Mz-Cz**		
Mon, April 25	Geology of CT	EPP Ch. 22	
Wed, April 27	Hartford Basin Field Trip	EPP Ch. 13.7-13.8	*Jurassic*
Week 13	**Humans as Geologic Agents**		
Mon, May 2	Energy Resources and Humans Impacts	EPP Ch. 14, 23	
Wed, May 4	Dynamic Earth Poster Session		*Geoguides Due*
Tue, May 10	**Final Exam**	**9-12 am**	

* Earth Portrait of a Planet, By Steve Marshak, Ch. = chapter, Int. = Interlude.
† Assignments are due the following week at the beginning of Wednesday's class
Assignments in italics are due on that day