

Physical Geology - Geology 101

Instructor - Dr. Arlo Weil

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Official office Hours - Open Door Policy

Lab Instructor - Katherine Marengo; Park Science room 194

Class meeting time - Mon, Wed, and Fri 11:00 to 12:00 am; Location - Park Science 25

Course Web Page: <http://www.brynmawr.edu/geology/101/>

Required reading: *Essentials of Geology; third edition*, by Stephen Marshak

Grading:

• Three one-hour exams	~45%
• Homework exercises	~5%
• Lab assignments	~45%
• One topical geology review project	~5%
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	Total 100%

Class Objective: At the end of our 15-week time together, my goal is that all class participants will have a fundamental understanding of how the Earth works, why it works the way it does, and how this great big blue-green ball we inhabit is able to sustain us.

Topics of discussion will include, but are not limited to, an understanding of geologic time, how our planet came to be, the physical processes that are, and were, active in forming our planet, the influences we have on the well-being of our planet, and lastly what as scientists and “earthlings” do we still not fully understand about our planet.

Ultimately, I hope that this class inspires you to become keen observers of the planet on which you live, as well as provide you with the intellectual foundation to be able to think about and answer many diverse questions concerning our planet.

For Example:

- What is Geology and why is it so important?
- What is our role as stewards of the Environment?
- Why do Natural Disasters occur in the places they do?
- Why are mountains shaped the way that they are?
- Why is the Pacific Ocean where it is? Will it always be there?
- Why are the Great Plains so flat and the Rocky Mountains so high?
- Have the Appalachians always been here?
- And much much more

My Learning Goals for YOU:

- Gain a foundational understanding of how the earth was formed, how old the earth is, and what the earth is made of.
- The ability to describe a variety of common Geologic features/systems.
- The ability to conceptualize deep time.
- The ability to extrapolate surface observations into the subsurface.
- A foundational understanding of the hydrologic cycle and its major interacting systems - including, the oceanic, river, glacial and atmospheric systems.

- A foundational understanding of plate tectonics and the main geologic features found at active plate boundaries.
- A foundational knowledge of the three main rock groups (igneous, metamorphic and sedimentary), their classifications and their genesis.
- A basic understanding of the global distribution of natural hazards (e.g., volcanic, earthquakes, landslides), and why a particular hazard is more likely to occur at place A than at place B.
- A basic understanding of the important forcing agents that control short-term and long-term climate variability.

Homework: A short topical assignment will be occasionally given out to the class. All assignments are required and are due the following WEEK - NO EXCEPTIONS!!!!!!

Field Trip: A one-day field trip is **REQUIRED** that will focus on local geology. **If you do not come on the field trip you will not receive a grade for the class!!** The field trip date is prescheduled and is Saturday, October 23rd. The field trip is **FUN!!!!** **If you know you can't participate on this trip then maybe you should consider another geology intro class.**

Exams: Three exams will be given throughout the semester as a means of assessing your progress and understanding of the material covered in lecture. Test format will be short answer and essay.

Labs: Weekly labs are an important aspect of learning in the course. Labs meet once a week for three hours. The lab portion of this class is independently instructed by Dr. Katherine Marengo, though the content is meant to overlap directly with what is being discussed in the classroom. You will receive a detailed syllabus from Dr. Marengo during the second week of class - your first lab meeting.

Poster: Week 12 lab (the week of November 15 - 19) will be dedicated to presenting a poster to the class on a research topic of your choosing. A handout on the guidelines for organizing and laying out your poster will be given out later during the term.

Physical Geology -101 Calendar

Dates	Subject	Reading	Lab
Week 1 Aug 30 – Sept 3	<ul style="list-style-type: none"> • Planet Earth • Other Planets • Cosmology 	<ul style="list-style-type: none"> • Prelude • Chap 1 	<ul style="list-style-type: none"> • No Lab
Week 2 September 6 - 10	<ul style="list-style-type: none"> • The Interior of the Earth • Tectonics 	<ul style="list-style-type: none"> • Chap 2 	<ul style="list-style-type: none"> • Topographic Maps
Week 3 September 13- 17	<ul style="list-style-type: none"> • Tectonics Continued • Minerals and Rock Groups 	<ul style="list-style-type: none"> • Chap 2 • Chap 3 	<ul style="list-style-type: none"> • Tectonics
Week 4 September 20 - 24	<ul style="list-style-type: none"> • Rocks • Igneous Rocks 	<ul style="list-style-type: none"> • Inter. A • Inter. C • Chap 4 	<ul style="list-style-type: none"> • Geologic Structures
Week 5 Sept 27 – October 1	<ul style="list-style-type: none"> • Weathering • Sedimentary Rocks 	<ul style="list-style-type: none"> • Inter. B • Chap 6 	<ul style="list-style-type: none"> • Minerals
Week 6 October 4 - 8	<ul style="list-style-type: none"> • Metamorphic Rocks • Volcanic Processes 	<ul style="list-style-type: none"> • Chap 7 • Chap 5 	<ul style="list-style-type: none"> • Rocks
Week 7 October 11 - 15	FALL VACATION		
Week 8 October 18 - 22	<ul style="list-style-type: none"> • Earthquakes • Structural Geology 	<ul style="list-style-type: none"> • Chap 8 • Inter. D • Chap 9 	<ul style="list-style-type: none"> • Geologic Mapping
October 23rd	<i>~~~~~VALLEY FORGE FIELD TRIP~~~~~</i>		
Week 9 October 25 - 29	<ul style="list-style-type: none"> • Geologic Time • Hydrologic Cycle 	<ul style="list-style-type: none"> • Chap 10 • Inter. F 	<ul style="list-style-type: none"> • Valley Forge Project
Week 10 November 1 - 5	Geological Society of America National Meeting	Catch Up	
Week 11 November 8 - 12	<ul style="list-style-type: none"> • River Systems • Landslides and Mass Movements 	<ul style="list-style-type: none"> • Chap 14 • Chap 13 	<ul style="list-style-type: none"> • Landslides and Mass Movements
Week 12 November 15 - 19	<ul style="list-style-type: none"> • Groundwater • Oceans 	<ul style="list-style-type: none"> • Chap 16 • Chap 15 	<ul style="list-style-type: none"> • Poster Presentation
Week 13 November 22 - 26	<ul style="list-style-type: none"> • Glaciers <p style="text-align: center;">Thanksgiving Vacation</p>	<ul style="list-style-type: none"> • Chap 18 	<ul style="list-style-type: none"> • No Lab
Week 14 Nov 29 – December 3	<ul style="list-style-type: none"> • Climate and our Future • Global Change 	<ul style="list-style-type: none"> • Chap 19 	<ul style="list-style-type: none"> • Earth Resources
Week 15 December 6 - 10	<ul style="list-style-type: none"> • Resources 	<ul style="list-style-type: none"> • Chap 12 	<ul style="list-style-type: none"> • The Big Picture
Week 16 December 13 - 17	EXAM WEEK		