

Earth's Environmental Systems: Physical Geography

GEOLOGY 110

Fall 2018

Mon & Wed - 2:00-3:20 p.m.

Office- McStreet Hall 215

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Preamble

The Earth is an extraordinarily diverse and dynamic place. Questions such as ‘why is it so awfully humid in Williamsburg during August?’, ‘why is Hawaii being smothered by lava?’, ‘from where does my drinking water come?’, and ‘is the climate changing?’ come readily to those with a curiosity about the world around them. The goal of this course is to help you develop the ability to better understand the workings of the Earth’s environmental systems. These skills include scientific observation, data interpretation, and the ability to think both quantitatively and critically. You are expected to develop an understanding and familiarity with earth processes and materials. These skills are not purely academic, as many of society's most pressing environmental problems require sound and nimble scientific reasoning. This course requires effort, but there is a reward- an understanding of the planet that you inhabit and perspective on the role that humans play on Earth.

Course Outline

<u>Week</u>	<u>Date</u>	<u>Topics & Assignments</u>	<u>Course Readings</u>
1	Aug 29	<i>A Bright Blue Ball Spinning: Earth as a Planet</i>	Ch. 1
2	Sept 3-5	<i>Getting Oriented: Spatial Thinking on Earth</i> <i>Our Place in the Sun: Global Energy Systems</i>	Intro- pg. 30 Ch. 2
3	Sept 10-12	<i>Of What is the World Made? Earth Materials</i> <i>Timely Tales: Dating from a Geologic Perspective</i>	Ch. 11 Bonus Reading # 1
4	Sept 17-19	<i>The Fire Within: Magma & Volcanoes</i> <i>Standing on Shaky Ground: Earthquakes</i>	Ch. 11 - 12
5	Sept 24-26	<i>What’s on the Inside? The Earth’s Interior</i> <i>Making Mighty Mountains: Plate Tectonics Introduced</i> <i>Problem Set #1 due Mon., Sept 24th</i>	Ch. 17, 18, 19 Bonus Reading # 2
6	Oct 1-3	<i>Don’t Call it Dirt: Weathering & Soils</i> <i>Water, Water Everywhere: The Hydrologic System</i>	Ch. 10, 13
7	Oct 8-10	<i>Drainage Basins: Streams & Rivers</i> <i>The Mid-Term Exam, Wed., Oct. 10th</i>	Ch. 14, 15
	Oct 13-16	Fall Break	
8	Oct 17	<i>Water Flowing Underground: Groundwater</i>	Ch. 14
9	Oct 22-24	<i>The Surf’s Up & Rising: Coastal Systems & Coastal Erosion</i>	Ch. 16

10	Oct 29- 31	<i>The Sky Above: Breath in the Atmosphere</i> <i>Problem Set #2 due Mon., Oct 29th</i>	Ch. 3, 4 Bonus Reading # 3
11	Nov 5-7	<i>When it Rains It Pours: The Basics of Weather</i>	Ch. 4, 5
12	Nov 12-14	<i>Rotten Weather: Hurricanes, Hailstorms, & Haboobs</i>	Ch. 5, 6
13	Nov 19	<i>From Weather to Climate: The Geography of Climate</i>	Ch. 7
	Nov 21-25	Thanksgiving Break	
14	Nov 26-28	<i>Nothing Ever Stays the Same: Changing Climate</i> <i>A River Runs Through It Project due Friday, Nov 30th</i>	Ch. 7 Bonus Reading # 4
15	Dec 3-5	<i>Getting Energized: Energy & the Future</i>	Bonus Reading # 5

Final Exam: Friday, December 14th @ 2 p.m.

Grading-

Mid-Term Exam	18%	Problem Sets	20%
Final Exam	37%	A River Runs Through It Project	10%
In-Class Activities	5%	Out-of-Class Exercises	10%

In-Class Activities- I want this class to be more than lecture, so during almost every class there will be some type of in-class exercise/activity. Activities are designed to get you thinking and make you an active participant in learning. Some of the questions/exercises will be similar to those on problem sets/exams. Many times the work will be fun, and sometimes collected.

Problem Sets- You'll complete **two** problem sets assigned during the semester. Problems are quantitative and will be hours of fun. Part of doing science requires quantitative thinking. By the end of the semester, I want you to be more comfortable and confident with your problem solving abilities. Start working on the problems early and come to the help sessions or drop by my office if you have questions.

A River Runs Through It Project- Towards the end of the semester you'll research a drainage basin (watershed) of your own choosing. You'll explore how that drainage system is influenced by earth systems (underlying geology, hydrology, climate, etc.). Additionally, you'll make connections between the drainage basin and its human history and the region's modern environment. The final product will be a digital poster, for all to see.

Out-of-Class Exercises- This class meets on Mondays and Wednesdays, leaving a large time gap between our classes. To fill that gap there will be some out-of-class exercises (homework), designed to keep you thinking and studying the Earth.

Textbook- Strahler, 2013, *Physical Geography*: - Assigned readings should be read during the week in which the material will be discussed. This a reasonably well-written textbook, read it to enhance your understanding of the Earth's environmental systems.

Help Sessions- I will conduct approximately bi-weekly help sessions at 7 p.m. on Mondays in Room 230, McStreet Hall. You should come to the help sessions if you have questions about lecture, discussions, problem sets, or the textbook.

Web Resources- I will post much, but not all, of the course materials on Blackboard- <http://blackboard.wm.edu/> These will include class powerpoints, links to website, assignments, answers keys, and ancillary readings.

Office Hours- My formal office hours are **Tuesday from 1:00 to 4:00 p.m.** Come see me with questions. If this time does not work for your schedule, send me an email and we'll work something out to meet at another time.

Our Class Community- I welcome the broad range of backgrounds that W&M students bring to this course. It's our individual and collective responsibility to create a respectful, cooperative, and inclusive classroom environment for everybody, regardless of race, ethnicity, nationality, culture, religion, political beliefs, gender, gender identity / expression, sexual orientation, age, disability, or marital, parental or veteran status.