SYLLABUS for GEOLOGY 201
Environmental Geology-Spring 2008

***Credits**:* 3.0
Lecture meets: M, W 9:00-9:50 a.m., PSCI 107
Lab meets: Friday, 9:00-10:50 a.m., PSCI 107
Prerequisite: Geol 120

Instructor

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Textbook (required): Environmental Geology, by Carla Montgomery, 8th edition, 2008, McGraw-Hill Higher Education. ISBN: 978-0-07-282691-3.

This course uses **Angel** (https://angel.oneonta.edu/) to transmit information such as the syllabus and lecture schedule, lecture notes, lab exercises, grades on quizzes and exams, and links to online information. You will use your university email ID and password to access course information on Angel.

Course Description (from the Undergraduate Catalog)
GEOL 201 Environmental Geology *3 s.h.* A study of the practical aspects of geology that relate natural processes to man's environment; topics include Environmental Impact Statements, soil properties, ground stability, erosion controls, seismic hazards, solid waste disposal, and surface runoff and flooding.
Prerequisite: GEOL 120. *(LA)*

This course provides an introduction to Environmental Geology, a discipline at the interface of geologic processes (ranging from rivers to earthquakes, soil development to volcanoes) and human interests and activities. Environmental Geology encompasses both an understanding of the geologic framework and of human needs for a functioning and safe environment. So it's not just a course about rocks and dirt and pollution. Rather, we will explore several geologic settings in which both the processes and the rocks have direct bearing on human society. We will investigate how groundwater and pollutants move through the subsurface. We will spend some time focusing on soil erosion, and how humans strongly influence this natural process. This is a long term and significant hazard for humanity, as agriculture depends on productive soils, and civilization rests on a stable food supply. Sediment is a major pollutant in our rivers today. We will follow the eroded sediment to rivers, and spend some time looking into river systems, both from a flood control perspective, as well as from the growing discipline of river restoration and management. We will look into how geology, groundwater, weather and environment conspire to generate landslides. We'll learn how an understanding of these geologic processes leads to solving real world problems. While we will focus on how things work,

we will also place these studies into a larger framework, where several systems interact, which include policy and law. Bring your curiosity, and come prepared to learn!

Course Guidelines

The following list provides a baseline of what is expected from students in this course (quoted section from the list of *Student Responsibilities* approved by SUNY Oneonta).

"In class responsibilities

Students will:

- Attend all classes and arrive punctually.
- If unavoidably late for a class, enter quietly and unobtrusively, and behave in other required ways to minimize distraction.
- Remain alert and attentive during lectures, discussions, and other class/lab activities.
- Avoid unnecessary conversation during lectures, discussions, and other class/lab activities.
- Contribute to class experiences by asking relevant questions, offering relevant examples or views, adequately answering questions posed by others, engaging in critical and independent thought, and challenging both the instructor and the curriculum materials assigned for the course.
- Demonstrate courtesy and respect in dealing with instructors and classmates.
- Recognize and seek to understand diverse points-of-view.

Out-of-class responsibilities

Students will:

- Place academic obligations at the top of the list of college-related priorities.
- Plan to spend 2 to 3 hours out-of-class time in academic study for every one hour of class attendance.
- Thoroughly plan and prepare for classes.
- Notify the instructor in advance, if possible, or in a timely fashion, if unable to attend a class or lab, take a scheduled exam or quiz, submit a scheduled assignment, or remain in the classroom for the entire class meeting because of unavoidable circumstances."
- You are expected to **read each chapter before we cover it in class**. This will allow you to formulate questions concerning material that is not clear, or that you would like to have covered in greater detail. I use lectures to focus on the most important aspects of the topic. I strongly encourage you to ask questions during lecture. There are no 'dumb' or 'stupid' questions. Often the questions you have are shared by others. You should view lectures as the time and place for discussion, and I welcome your thoughts and questions!
- Any reasonable accommodation will be provided for students with physical, sensory, learning, or psychiatric disabilities. Please contact me for assistance as early as possible.
- If English is not your primary language and you would like to have additional time in which to take the exams, let me know. Anyone who needs additional time for the exams will be extended the same courtesy.
- **Turn off cell phones before coming to class!** A ringing (or singing!) phone is almost impossible for others to ignore. Especially the lecturer, who may wander so far off course that everyone will get upset...Of course, medical conditions can override this request.

Grading

Grades will be based on lab exercises, quizzes, midterm exams (2) and a final exam.

Exams. Exam questions will consist of short answer questions. You are expected to absorb content as well as apply what you have learned to solve various problems. The final exam is cumulative. Mid-term exams are not.

Quizzes. There will be 8-10 quizzes administered online on the course website on Angel. There will be no quiz make-ups, unless the student's absence is excusable, as defined by the Student Handbook (www.oneonta.edu/development/huntunion/Student_Handbook.pdf , p. 42). Quizzes will comprise 10-20 true-false, multiple choice, and short answer questions, drawn from lecture and reading materials. Quizzes are designed for you to master basic content.

Labs. The lab will consist of hands-on exercises and field trips. Exercises will be handed in and graded. You will need a scientific calculator, ruler with standard and metric units, pencils, and eraser for lab.

Field trips. There will be a couple field trips in this course which involve short hikes and van rides during the lab period. We will discuss scheduling and participation issues for these field trips early in the course.

Here's the breakdown on grading:

35%	Lab (consisting of lab exercise scores)
10%	Quizzes
30%	Mid-term exams
25%	Final exam
100%	

Final grade assignments will be guided by the standard University curve given below.

Percent	*Grade*	*Percent*	*Grade*	*Percent*	*Grade*	*Percent*	*Grade*
93-100	A	87-89.9	B+	77-79.9	C+	67-69.9	D+
90-92.9	A-	83-86.9	B	73-76.9	C	63-66.9	D
< 60	F	80-82.9	B-	70-72.9	C-	60-62.9	D-

Lecture and Lab Schedule (*this schedule is subject to change if more time is required for some topics*).

Date	*Day*	*Activity*	*Topic/Reading*
Jan 16	W	Lecture	Course Overview
Jan 18	F, 2 Hrs	Lecture	Ch. 2 Rocks and rock properties
Jan 21	M	Lecture	Ch. 12 Weathering
Jan 23	W	Lecture	Ch. 12 Soil characteristics
Jan 25	F, 2 Hrs	LAB	Rock identification; Soil grain size, texture
Jan 28	M	Lecture	Ch. 8 Soil strength and mass movements
Jan 30	W	Lecture	Ch. 8 Slope Processes: From creep to landslides
Feb 1	F, 2 Hrs	LAB	Landslides
Feb 4	M	Lecture	Ch. 8 Factor of Safety
Feb 6	W	Lecture	Ch. 8 Pore fluid pressure, rainfall, and instability
Feb 8	F, 2 Hrs	LAB	Geology and landslides: GIS
Feb 11	M	Lecture	Ch. 8 Landslide mitigation strategies
Feb 13	W	**Exam 1**	

Feb 15	F, 2 Hrs	Lab	Field trip: Landslides (local)
Feb 18-23	**M-F**	**NO CLASS!!**	
Feb 25	M	Lecture	Ch. 12 Agriculture and soil erosion
Feb 27	W	Lecture	Ch. 12 Soil Loss Mitigation strategies
Feb 29	F, 2 Hrs	LAB	Soil Loss and Humans
Mar 3	M	Lecture	Ch. 6 River systems
Mar 5	W	Lecture	Ch. 6 Rivers and Floods
Mar 7	F, 2 Hrs	LAB	Ch. 6 Flood Recurrence
Mar 10	M	Lecture	River stability: meandering rivers
Mar 12	W	Lecture	Channels during floods: Delaware County 2006
Mar 14	F, 2 Hrs	LAB	Field Trip to Ouleout Creek
Mar 17	M	Lecture	Ch. 6 Rivers: Channel Geometry
Mar 19	W	Lecture	Ch. 6 Rivers: Channel Geometry
Mar 21	F, 2 Hrs	LAB	Ch. 6 Channel geometry
Mar 24-28	**M-F**	**NO CLASS**	
Mar 31	M	Lecture	Ch. 6 Rivers: Restoration
Apr 2	W	Lecture	Ch. 6 Rivers: Restoration
Apr 4	F, 2 Hrs	LAB	Stream cross sections at bankfull flow
Apr 7	M	Lecture	Ch. 11 Groundwater flow
Apr 9	W	Lecture	Ch. 11 Groundwater and contamination
Apr 11	F, 2 Hrs	LAB	Field trip to Coal Gas Site, Oneonta
Apr 14	M	Lecture	Intro to glacial environments and stratigraphy
Apr 16	W	Lecture	MGP research, web page development
Apr 18	F, 2 Hrs	LAB	MGP research, web page development
Apr 21	M	Lecture	MGP research, web page development
Apr 23	W	Lecture	MGP research, web page development
Apr 25	F, 2 Hrs	LAB	MGP research, web page development
Apr 28	M	Lecture	MGP research, web page development
Apr 30	W	Lecture	MGP research, web page development
May 2	F, 2 Hrs	LAB	Student Website Presentations
May 5	**M**	**Exam 2**	
May 12	M	Final Exam	8:00-10:30 a.m.

University Schedule for Spring 2008

January 13-15	Sunday - Tuesday	New Student arrival & orientation
January 16	Wednesday	Classes Begin
February 15	Friday	College Closes after the last class
February 25	Monday	Classes Resume
March 21	Friday	College Closes after the last class
March 31	Monday	Classes Resume
May 6	Tuesday	Last day of regular class schedule
May 7	Wednesday	No Classes Study Day
May 8 – 14	Thursday - Wednesday	Finals Week
May 17	Saturday	Commencement

Motivation for the Course: Preparation for a career in Environmental Consulting

"*Environmental consulting firms generally seek to hire employees that like to solve problems. Key skills for a geoscientist to be successful as an environmental consultant are* ***good field observation skills****, a sound* ***grasp of geologic processes****, the ability to* ***quantitatively describe geologic processes, and good communication skills***." (Charles Andrews, Environmental Consultant). **These themes will be emphasized throughout this course!**

Resources

American Association for the Advancement of Science (AAAS) **Atlas of Population and Environment**: http://atlas.aaas.org/ Excellent intro to humans and environment interactions

Soil Loss, Economics, and Politics in Haiti: http://www.globalpolicy.org/security/issues/haiti/2004/0315bleak.htm

Mine Cleanup problems: Upcoming conference: http://www.ngwa.org/DEVELOPMENT/conferences/details/0810025019.aspx