

GEOLOGY 201

Environmental Geology

Spring 2010

Credits: 3.0; CRN: 102

Lecture meets: MW, 9:00-9:50 a.m., 205 Science 1

Lab meets: W, 10:11:50 a.m., 205 Science 1

Prerequisite: Geol 120

Instructor: Les Hasbargen Office: 219 Science 1 Ph. 607-436-2741

Email: hasbarle@oneonta.edu

Office hours: M,T,Th: 11:00-11:50 a.m.

Personal web site: <http://employees.oneonta.edu/hasbarle/index.html>

Textbook (required): *Environmental Geology: principles and practice*, Bell, F. G., 1998, Blackwell Publishing, ISBN: 0-86542-875-1.

Additional Resources: American Association for the Advancement of Science (AAAS)

Atlas of Population and Environment: <http://atlas.aaas.org/> Excellent introduction to human/environment interactions.

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)

Course Overview. 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. 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 focus on soil erosion, and how humans strongly influence this natural process. Soil loss is a long term and significant consideration for humanity, as agriculture depends on productive soils, and civilization is built on a stable food supply. We will look into how geology, groundwater, weather and human activity conspire to generate landslides. Geology provides both a source of energy, and potential solution to greenhouse gas accumulation in the atmosphere. We'll explore these pressing issues, which are playing out in our own backyard in upstate New York. Interactions between rocks and rivers provide the backdrop for understanding floods and stream restoration. We'll learn how an understanding of 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.

What you should learn and develop from this course. The main goal is for you to learn how to collect and analyze information in the framework of geological processes and human needs. Thus, you will develop observation and descriptive skills; analytical skills; specific information about soils and erosion, floods, sediment mobility, and stream restoration; an appreciation for hazard and risk assessment, and issues related to energy extraction from geologic deposits.

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!**

Course Activities and Grading

Grades will be based on lab exercises, oral presentations, 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 and multiple choice 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 possibly field trips (weather permitting). You are encouraged to work in small groups (2-3 people per group) for lab exercises, and you may hand in a single report for your group. You will need a scientific calculator, ruler with standard and metric units, pencils, and eraser for lab.

Oral Presentations. Throughout the semester you will be assigned to small groups to work on a problem together. You will then present your findings to the class using a powerpoint presentation. Presentations will range from 10 to 20 minutes, depending on the exercise. Exercises which involve a presentation or write-up will be graded by a rubric, where separate aspects of the exercise will receive a mark ranging from excellent to no credit. Each aspect will have a weight (content and analysis is more important than spelling, for instance). Aspects of an exercise might include grammar, scientific writing style, content, analytical treatment, overview of the problem, summary of the project, recommendation for action, and the like. Grades for rubric-assessed exercises will be rescaled to the standard university curve and combined with other components of your course grade as below.

Here’s the breakdown on grading:

- 15% Lab Exercises
- 10% Quizzes
- 25% Mid-term exams

15% Oral Presentations
 35% Final exam
 100%

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

<i>Percent</i>	<i>Grade</i>	<i>Percent</i>	<i>Grade</i>	<i>Percent</i>	<i>Grade</i>	<i>Percent</i>	<i>Grade</i>
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). Note, on Wednesdays we meet for 3 hours!

<i>Date</i>	<i>Day</i>	<i>Read</i>	<i>Topic</i>
Jan 20	W	Ch 12	Rocks and Rock Properties
Jan 25	M	Ch 4	Landslides
Jan 27	W	Ch 4	Landslide online exercise
Feb 1	M	Ch 4	Landslide mapping: Seepage, rocks, tell-tale signs
Feb 3	W	Ch 4	Landslide management and mitigation
Feb 8	M	Ch 10	Soil erosion
Feb 10	W	Ch 10	Soil Erosion: Humans and Soil Erosion
Feb 15	M		Student reports: Case studies of soil erosion
Feb 17	W		Student reports: Case studies soil erosion
Feb 22/24	M/W		NO CLASSES!! Spring Break
Mar 1	M	Ch 5	Rivers and Floods
Mar 3	W	Ch 5	Stream flow record analysis: RI and GIS
Mar 8	M	Ch 5	Stream Restoration
Mar 10	W		Case Study of Stream Restoration
Mar 15	M		Exam 1
Mar 17	W	Ch 1	Environmental Assessments & Impact Statements
Mar 22	M	Ch 1/Handout	Geology and Natural Gas Development
Mar 24	W	Handout	Risk assessment and gas drilling: SGEIS
Mar 29	M		Assessing SGEIS
Mar 31	W		Student Reports on SGEIS
Apr 5/7	M/W		NO CLASSES!! Spring Break
Apr 12	M	Ch 13	Mining Wastes
Apr 14	W	Ch 13	Mining Wastes
Apr 19	M	Ch 9	Groundwater movement and contamination
Apr 21	W	Ch 9	Case study: Neahwa Park
Apr 26	M	Handout	Geophysics and contamination
Apr 28	W	Handout	Neahwa Park geophysics
May 3	M		Exam 2
May 5	W		Work on Presentations
May 10	M		Student Presentations
May 12	W		Student Presentations
May 17	M		Final Exam, 8:00-10:30 a.m.

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.

Emergency Evacuation/Shelter-in-Place Procedures

In the event of an emergency evacuation (i.e. fire or other emergency), classes meeting in Science I are directed to **reassemble at Chase Gymnasium** so that all persons can be accounted for. Complete details of the College's emergency evacuation, shelter-in-place, and other emergency procedures can be found at <http://www.oneonta.edu/security> .

Course Guidelines and Expectations for Students

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 and other communication devices during class!** Your class time is meant for focused learning, and out of class distractions must be left outside...Of course, medical conditions can override this requirement.

College Calendar, Spring 2010

January 17-19	Sunday-Tuesday	New student arrival & orientation
January 20	Wednesday	Classes begin
February 19	Friday	College closes after last class
March 1	Monday	Classes resume
April 2	Friday	College closes after last class
April 12	Monday	Classes resume
May 12	Wednesday	Study Day
May 13-19	Thursday-Wednesday	Finals
May 22	Saturday	Commencement

Final Exam Week Class Schedule, May 13–19, 2010

During the last week of the semester, day classes will meet for 2 1/2 hour periods according to the schedule below.

These periods are to be used for instruction and/or examination.

Date and Time	Thursday May 13	Friday May 14	Monday May 17	Tuesday May 18	Wednesday May 19
8:00 am–10:30 am	10 Tu Th	10 MWF	9 MWF	8 Tu Th	8 MWF
11:00 am–1:30 pm	4 Tu Th	2 MWF	1 MWF	2 Tu Th	3 MWF
2:00 pm–4:30 pm	12 Tu Th		12 MWF		11 MWF