

Meetings: TR, 9:30-10:45am (lecture/discussion), Science (S) 165
R, 1:00-2:50pm (lab), S165

Text: *Environmental Geology*, 8th edition (1999), by Edward Keller, published by Prentice Hall.

Instructor: Bill Niemann, Ph.D., P.G., E.I.

Office: 171 Science Building

Office Hours for Students:

- T: 2:00-4:00pm
- W: 9:00-11:00pm, 4:00-5:00pm
- By appointment
- Not a good time: before class

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Course Description

Environmental geology is the application of geologic principles and information to the prevention, prediction and mitigation of environmental problems. This course will survey the major natural geohazards as well as environmental impacts to soil, air and water induced by man's activities.

Relationship of Course to Departmental Goals

This course addresses the major goals of the geology department at Marshall University: getting students to:

- think logically, critically and creatively,
- communicate ideas clearly and effectively in speaking and writing, and
- recognize, analyze, and solve problems utilizing the most appropriate research methods available.

Foundational Knowledge

Foundational knowledge provides a starting vocabulary and base-level understanding of concepts and phenomena in the study of environmental geology. Foundational knowledge students should already have before beginning this course (prerequisites):

1. Basic understanding of plate tectonics, minerals, rocks, surface processes and earth history. (Successful completion of an introductory geology survey course--GLY 110 or 200 or equivalent--should suffice). If you need to review, consult the instructor for appropriate resources.
2. Basic understanding of topographic maps and ability to recognize properties of and identify basic rocks, minerals and fossils. (Successful completion or current enrollment in, an introductory earth materials lab--GLY 201 or equivalent--should suffice). If you need to review, consult the instructor for appropriate resources.
3. Writing skills appropriate for college sophomores. For special help, go to <http://www.marshall.edu/cos/studentresources.asp> and click on *Writing Center*.

Foundational knowledge you are not expected to have before beginning this course:

1. Understanding of advanced concepts and terminology from upper-level geology classes in geomorphology, stratigraphy, structural geology and mineralogy/petrology.

Course Learning Objectives

1. Gain a basic understanding of how the risk posed by hazards is evaluated in both a qualitative and quantitative sense. Given information on probability and severity of a hazard, be able to evaluate the risk.
2. Become familiar with the materials and processes associated with the major natural geohazards: floods, earthquakes, volcanic activity, landslides, and coastal hazards. Be able to discuss the ability to predict and mitigate these hazards.
3. Become familiar with the different environmental and geological media that can be and are affected by man's activities.
4. The types, characteristics, and sources of the major chemical and physical constituents most likely to enter, be present in, and move through environmental media.
5. Be able to discuss the ability to predict and mitigate hazards presented by the presence of harmful constituents in environmental media.
6. The major environmental regulations designed to protect environmental media including typical regulatory enforcement actions that can be taken to require remediation of contaminated media.
7. Political, economic, and emotional dimensions to environmental issues that sometimes overwhelm scientific data and reasoning.
8. *Application* of all of the above to specific problems, sites, or scenarios through assignments given in this course.

Assessment of Learning

The following measures will be used to assess student attainment of the learning objectives listed above:

- Exams (essay, problem-solving, fill-in-the blank, list, etc.),
- Lab exercises,
- Homework assignments (written and problem-based),
- Quizzes.

These methods are consistent with what students will likely be required to do in the future (grad school, professional life) with knowledge and skills gained from this course.

Grading

➤ **Grading scale**

A	=	90-100%	of total points
B	=	80-89%	“ “ “
C	=	70-79%	“ “ “
D	=	60-69%	“ “ “
F	<	60%	“ “ “

➤ **Grade components***

Laboratory (1 credit hour)

Exercises..... 100%

Lecture (3 credit hours)

Exams (3 @ 20%) 60%

Homework..... 30%

Quizzes..... 10%

Total.....100%

*Minor adjustments may be made to the above percentages based on actual number and difficulty of assignments, amount of material covered, time required, etc. All students will be asked for input prior to any such adjustments.

Academic Dishonesty

Neither Marshall University nor this instructor tolerates academic dishonesty including cheating, falsification, plagiarism, bribes, favors and complicity. Students who choose to violate MU's policies on academic dishonesty risk dismissal from the University. Pages 102-106 of the 2009-2010 MU Undergraduate Catalog address the definitions and procedures specified in cases where academic dishonesty is in question.

Policy Statement on Examinations and Assignments including Submittal of Late Work

- **Major Dates:** Missed exams may be made up only if the reason is excused by the academic deans (see Attendance Policy below and pages 124-126 of 2009-2010 MU Undergraduate Catalog).
- In general, the purpose of lab exercises, homework assignments and chapter questions are to expose students to material for the first time and prepare students for the lab final and for exams. Consequently, these assignments are worth a relatively modest weight in terms of the overall grade and will often be scored by use of a $\sqrt{+}$, $\sqrt{}$, or $\sqrt{-}$, indicating above satisfactory (105%), satisfactory (90%) and less than satisfactory (75%), respectively. Significantly incomplete or sloppy work will receive a grade of $\sqrt{-}$ (50%).

Policy Statement (cont.)

- Lab exercises and homework assignments are due at the beginning of the class or lab period on the due date. Late submittals will be penalized 10% the first day and an additional 10% per day (weekdays) for subsequent late days, with a maximum penalty of 50%.
- Credit for in-class quizzes will not be given for unexcused absences (see attendance policy below). In the case of an excused absence (see attendance policy below), a “no grade” (i.e., no credit or penalty) will be assigned or the quiz may be made up by a date mutually agreed upon by the student and instructor.

Attendance Policy

Attendance per se is not part of the course grade. However, quizzes and homework are 40% of the course grade; students will receive zeroes for any quizzes and will incur late penalties (see above) for homework due if they miss class without a valid excuse. For students registered for lab, attendance at all lab meetings is mandatory; in general, lab activities cannot be made up.

- ***Excused absences*** are those necessitated for significant medical or legal reasons, military obligation, jury duty, religious holidays, and university activities excused by the academic deans (see pages 124-126 of 2009-2010 MU Undergraduate Catalog). A student may receive credit, at no penalty, for homework/lab assignments or quizzes missed as a result of an excused absence. The student must consult with the instructor at the first opportunity following the missed class session, and complete the assignment by a reasonable date designated by the instructor. Failure by the student to complete the material by the assigned date will result in a zero for the assignment in question.

Learning Disabled Students

Students who require an alternative learning environment (e.g., additional time for exams), and can document such need, will be accommodated. Such students should inform the instructor of their needs no later than the first week of the semester so that arrangements can be made in advance.

Technology Requirements

Students can access the instructor's web page at <http://www.science.marshall.edu/niemann/>. Important class information may also be communicated to students via their MU e-mail (i.e., [userid@marshall.edu](mailto:user@marshall.edu)) accounts. Students should check their MU e-mail regularly for any class related messages. Basic-function calculators should be brought to class regularly and to all exams.

Electronic Devices

Basically, use common sense and don't be rude. Use of cell phones, PDA's, CD/MP3 players, etc. in class is strictly prohibited. During class such devices must be kept out of sight in a pocket, backpack, etc. *Cell phones must be set to silent mode. With the exception of basic-function calculators, use of any electronic devices during an exam will be considered evidence of cheating.* Cell phones may not be used as calculators on exams.

**GLY 456: ENVIRONMENTAL GEOLOGY
SCHEDULE—SPRING 2010**

Week No.	Day/Date	Format	Topic	Assignment
1	T Jan 12 R Jan 14	Lecture Lecture	Introduction Environ. Hazards and Risk	Syllabus Ch.4: 85-97
	R Jan 14	Lab	Risk Characterization	Handout
2	T Jan 19 R Jan 21	Lecture Lecture	Hazards and Risk Rivers and Flooding	Ch.13: 349-350, 368-369 Ch. 5: 105-129
	R Jan 21	Lab	Rivers and Flooding	Handout
3	T Jan 26 R Jan 28	Lecture Lecture	Rivers and Flooding Earthquake Hazards	Ch. 5: 105-129 Ch. 7: 172-203
	R Jan 28	Lab	Earthquake Hazards	Handout
4	T Feb 2 R Feb 4	Lecture Lecture	Earthquake Hazards Volcanic Hazards	Ch. 7: 172-203 Ch. 8: 213-230
	R Feb 4	Lab	Soil*	Handout
5	T Feb 9 R Feb 11	Lecture Lecture	Volcanic Hazards / Review	Ch. 8: 213-230 Ch. 4- 5, 13, 7-8 (review)
	R Feb 11	Lab	EXAM 1	
6	T Feb 16 R Feb 18	Lecture Lecture	Environ. Media: Soil Environ. Media: Soil	Ch. 3: 69-83
	R Feb 18	Lab	Open	
7	T Feb 23 R Feb 25	Lecture Lecture	Soil Erosion / Sediment Pollution	Handout
	R Feb 25	Lab	Suspended Sediment I	Handout
8	T Mar 2 R Mar 4	Lecture Lecture	Environ. Media: Soil Environ. Media: Water	Ch.3: 69-83 Ch. 10: 269-289
	R Mar 4	Lab	Suspended Sediment II	Handout

