

GEOLOGY 132: Geologic Hazards and Resources
SYLLABUS FOR FALL SEMESTER 2007

Course Number: Geology 132-01 (4573): 3 credit hours

Time and Place: TTH 11:00-12:20 AMLDB 213

Instructor Information: Dr. Charles Shaw
B.A. Geology, Univ. of New Hampshire
M.S. Ph.D. Geology, Brown University

Contact Information: Office: Room 314, Lee Drain Building (LDB)
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Text: Geologic Hazards and Resources eBook. 1st Ed., Netoff, D. I., Baldwin, C., Cooper, B., Degenhardt, J. J., and Solum, J. P., 2007. The Start Group.

Supplementary Readings: Lab manual (required for GEL 112): Geologic Hazards and Resources. Netoff, D. I., Baldwin, C., Cooper, B., and Torrez, B., 2006. The Start Group.

Geology and the Environment. 4th Ed., Pipkin, B. W., Trent, D. D. and Hazlett, R., 2005. Thompson Learning, Inc., Brooks/Cole.

Any additional reference material will be distributed in class.

Supplies: Scantron test forms (100-question version 882ES), notebook, pen, pencil, calculator.

Course Description: An introduction to the interrelationship between humans and the geologic environment. This includes the potential hazards posed by geologic processes, and the planning that needs to be done to avoid or lessen their impact. The course focuses on geologic materials, resources, and processes, and how they affect people and the environment. Specific topics include geologic hazards related to volcanism, landslides, subsidence, collapse, floods, earthquakes, and coastal processes. Geologic resources such as minerals, energy and water will also be discussed.

Course Objectives: The goal is to enable the student to: 1) demonstrate an awareness of the interaction between geologic materials, resources, processes, and human activities; 2) propose ways of solving related environmental problems; and 3) analyze specific earth hazards and recommend ways of coping with them through recognition of their potential, predicting their occurrence, and in some cases, controlling them.

Methods of Instruction: Lectures for this course will be delivered by means of PowerPoint presentations and an occasional video. They will be scheduled to coincide as closely as possible

to activities that are undertaken in lab (GEL 112). **It is my intent to make the PowerPoint lectures available on the Blackboard course website.**

Grading Criteria: Grading will be based on a total of six (6) quizzes given throughout the semester (5 regular quizzes and one final quiz). *Your final grade in the course will be calculated based on the average of 5 quiz grades: the four highest grades from quizzes 1 – 5, plus your grade on the final quiz (#6).* In other words, **you must take all six quizzes** but may choose to drop the lowest of the first five quiz grades. The final (6th) quiz will be given during the regularly scheduled final exam period. No extra credit. The lab grade (in GEL 112) is independent of the grade you receive in this lecture.

Quizzes: Quizzes will be objective in nature (i.e., multiple choice format) and require a Scantron 882E form. They may vary in length, but they will generally include approximately 50 questions. Quizzes that are not objective in nature will likely involve short essay questions or mathematical/analytical problems. Quiz questions are based on the material discussed in lectures as well as the assigned reading.

Grading Scale: A = 90-100% B = 80-89% C = 70-79% D = 60-69%

If, at the end of the semester, you are within 1% point of the next higher grade, I will *consider* raising your grade if:

- You did not have more than 1 (unexcused) absence
- You came to class on time and paid attention in class (I'll know who you are)
- You made at least one exam grade equal to the desired final grade and/or you showed significant improvement

Attendance and Make-up Policies: The SHSU Undergraduate Catalog states that "Regular and punctual attendance is expected for each student at Sam Houston State University." Accordingly, the University requires each instructor to keep a record of student attendance. Attendance for this course will be taken at the beginning of the hour based on a seating chart and/or initialed roster. In order for an absence to be excused, **some form of documentation MUST be provided.**

1. In addition to the required attendance policy, it is necessary that you please come to class on time. Tardy students disrupt the class and adversely affect the presentation of information, as well as other activities. *Please note that tardies may be counted as absences.* This class operates under the premise that an important part of the learning process takes place in the lecture portion of the course. Therefore, class attendance and participation are strongly encouraged.

The University allows nine class hours of absence without penalty (6 T-day classes or 9 M-day classes). No excuses are required. However, absences in excess of nine will result in course failure – no exceptions. Consequently, I will not grade quizzes of students who have exceeded the absence limit.

2. Make-up exercises and exams will only be allowed with my approval. If you know beforehand that you will be unable to take an exam on the day it is scheduled, you must take the exam *ahead* of schedule.
3. Conduct: Any individual action that is perceived to be detrimental to the learning environment of the class will receive one warning. Any subsequent disruption will result in the student being dropped permanently from the course. Disruptions include such things as *excessive talking, excessive tardies, sleeping in class, leaving during lecture*, etc.

Academic Honesty:

All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.

Students are encouraged to study in groups to prepare for exams. However, “group effort” is definitely not permitted when taking exams! This will result in an automatic zero on a test and possible action at the departmental level.

VISITORS IN THE CLASSROOM: *Unannounced visitors to class must present a current, official SHSU identification card to be permitted in the classroom. They must not present a disruption to the class by their attendance. If the visitor is not a registered student, it is at the instructor's discretion whether or not the visitor will be allowed to remain in the classroom.*

Americans with Disabilities Act: *SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Counseling Center and talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. Note: No accommodation can be made until you register with the Counseling Center. Therefore, any student seeking accommodations should go to the Counseling Center and Services for Students with Disabilities in a timely manner and complete a form that will grant permission to receive special accommodations.*

Special Circumstances: If unusual circumstances arise during the semester, such as a medical problem, death in the family, etc., that adversely affects your attendance **PLEASE discuss this with me immediately and provide documentation**. Under these conditions, I will gladly do my best to accommodate your situation by excusing absences, allowing late work to be turned in within a reasonable time period, and so on. However, if you wait until after-the-fact, at the end of the semester, **I will not retroactively make accommodations and I never give extra credit assignments to make up for grade deficiencies of any type.**

COURSE CONTENT

* This schedule is subject to change at any time based on class progress.

WEEKS 1-2

Overview and Course Introduction

- History and Causes of Environmental Problems
- Earth Materials – minerals, rocks, surficial deposits, bedrock
- Earth Processes – internal vs. surface

NO CLASS: Labor Day Holiday - Monday 9/03

WEEK 3

Earth Processes

- Continental Drift and Plate Tectonic Theory

QUIZ #1

WEEK 4

Volcanoes

- Nature of, causes, morphology
- Types and Distribution
- Hazards and Mitigation
- Video – Mt. St. Helens

QUIZ #2

WEEKS 5-6

Landslides

- Types and Causes
- Risk Assessment and Prediction
- Prevention and Control

Subsidence, Collapse and Expansive Soils

- Distribution and Cause
- Hazards and Mitigation

QUIZ #3

WEEKS 7-8

Flooding

- Drainage Basins
- Basin Hydrology
- The Issue of Dams
- Stream Channels, Landforms
- Types of Floods
- Mitigation of Flood Hazards

QUIZ #4

WEEKS 9-10

Earthquakes

Nature and Causes

Distribution

Earthquake Scales – Richter, Mercalli, Moment Magnitude

Hazards and Mitigation

Video

QUIZ #5

WEEKS 11-12

Coastal Hazards

Coastal Processes and Landforms

Types of Coasts

Erosional Hazards

Depositional Hazards

Mitigation – Case Study Galveston

WEEK 13

Earth Resources – Water

Surface Water

NO CLASS: Thanksgiving Holidays - Wed 11/21 – Fri 11/23

WEEKS 14-15

Earth Resources – Water cont.

Case Study – large dams

Ground Water

Fluid Flow in Porous Rock – Darcy's Law

Evapotranspiration

Case Study – Ogallalla Aquifer

WEEK 16

Review

FINAL EXAM (Tuesday, December 11, 8:00 to 10:00 AM)