SYLLABUS

GEOL 1305 -- Environmental Geology
Fall 2011

Class Times: 11 – 12:20 Monday & Wednesday
Office Hours: Monday & Wednesday 12:30 pm – 1:50 pm
Tuesday & Thursday 11:00 – 12:20 pm
Office: 213: Phone: 664-2981, Ext. 3049; recowart@coastalbend.edu

Instructor: Dr. Richard E. Cowart

Semester Hours: 3

Textbook: Environmental Geology, 9th edition, Carla W. Montgomery

Course Website: CBC Blackboard and McGraw Hill Website as listed in textbook.

Course Outline:
This course is an overview of the earth’s natural dynamics and the relationship of human impact on eco systems, air, water, and soil. The study of Earth processes including: ecosystem dynamics, major categories of pollution, pollution sources, and treatment technologies, with emphasis on the factors relating to generating, handling, storing, and disposing of hazardous wastes.

Course Objectives:
1. The student will gain a basic understanding of the physical processes of the earth and earth dynamics.
2. The student will develop an understanding of the impact of human activities on the environment.
3. The student will recognize the major categories of air and water pollutants.
4. The student will be familiar with the major energy resources of the earth.
5. The student will be able to define the major rock minerals groups found on the earth.
6. The student will develop an understanding of the processes involved in volcanoes, plate tectonics, and earthquakes.
7. The student will be familiar with basic coastal zone processes as well as geology and climate.
8. The student will be able to define stream and flooding processes.

Teaching Methods:
Lectures
Classroom discussions
Reading assignments

Evaluation Methods:
1. Exams (4) 90%
   NOTE: The lowest exam grade will be replaced with the final exam grade. Student will be exempt from the final if each major exam grade is equal to or greater than a score of 90%.

2. Attendance / Participation 10%
ATTENDANCE POLICY
Class attendance is mandatory and roll will be taken at the beginning of each class meeting. If a student misses 4 classes, they may be dropped from the course and a grade of "Q" given. A student is considered absent if they are not present when roll is taken. If you know in advance that you will miss a class, please contact the instructor.

STUDENT CONDUCT & DISRUPTIVE BEHAVIOR
As stated in the Student Handbook, “All students shall obey the law, show respect for properly constituted authority, and observe correct standards of conduct”. Examples of prohibited acts on college property are:

- Scholastic dishonesty (“cheating”) and Plagarism
- Interference with teaching responsibilities through disorderly conduct or disruptive behavior
- Engaging in any obscene, profane, reckless, destructive, or unlawful course of action.

Any student that fails to observe the correct standards of conduct outlined in the student handbook may be told to leave the class and will receive an absence for that day. Any student with chronic misbehavior will be dropped from the class.

Excessive talking between students during the course of the lecture is considered disruptive behavior and the students involved can be instructed to leave the class. Chronic excessive talking can result in the students involved being dropped from the class.

Any student caught cheating on an exam will receive an immediate zero on that exam. Any student caught assisting another student with his or her exam will also receive an immediate zero on that exam.

NON-APPROVED ELECTRONIC DEVICES
Non-approved electronic devices are any and all electronic devices that the instructor has not approved for use in the classroom. This includes, but is not limited to, cell phones, iPods, laptop computers, and recorders. If you have any questions as to the acceptability of an electronic device in the classroom, ask the instructor. Some instructors do allow the use of computers and recorders.

All non-approved electronic devices must be turned off while the student is in class. Cell phones may be set to vibrate if the student is expecting an important call and the instructor has approved it before class begins. Students using non-approved electronic devices may be asked to leave the classroom and receive an absence for the class.

The use of any non-approved electronic device during an exam will be considered cheating, and the student will receive a zero on that exam.

GRIEVANCE PROCEDURE
Our primary concern is that all students are provided with a productive learning environment in which there is mutual respect. We believe the most productive learning environment is one in which the students feel comfortable enough to freely ask questions and exchange ideas. If you are ever harassed or insulted by another student, bring it to the instructor’s attention immediately.

If at any time during the semester you have a complaint or "point of concern", notify the instructor immediately. If you do not feel that the situation can be resolved after bringing it to the instructors attention, you are encouraged to contact the Chairperson of the Science Division at Coastal Bend College, or the Academic Director.
Miscellaneous Rules:
1. I respectfully request that all electronic devices be turned off during the lecture period. This includes cell phones, pagers, handheld palm devices and any other potentially distracting device. Cell phones must be turned off and inaccessible during exams. Texting, emailing and similar activities will not be tolerated during lecture or lab. Student in violation of this will be asked to leave the class immediately.

2. Class will start promptly at posted times and according to the clock in the classroom. The door will be locked shut at the start of class at the end of the first week of classes. Students arriving after roll call will be counted absent.

3. I encourage students to utilize the internet site for this textbook along with the Campus Connect online material. There are many study hints and self evaluation tests available at this site.

4. Lecture exams cannot be made up if you miss the assigned time for such test. If you miss one the above then you must contact me regarding the situation. If at all possible call me prior to missing the exam for possible alternatives.

5. No extra credit work will be allowed for this course.

6. Students with special needs or disabilities, as outlined in the student handbook, may request assistance from the counseling center or the instructor. CBC strives to accommodate special needs for its students.

Course Content:
Chapter 1: Overview of our Planetary Environment
   - The planets
   - The geologic perspective
   - Geology in the scientific method
   - Earth cycles and systems
   - Nature and growth rates of populations: causes and consequences \ doubling time
   - Impacts of the human population
   - Farmland and food supply
   - Population and nonfood resources

Chapter 2: Rocks and Minerals- A first look
   - Atoms, elements, isotopes, ions, and compounds
   - Minerals
   - Rocks

Chapter 3: Plate Tectonics
   - Plate Tectonics-general principles
   - Plate movements
   - Type of plate boundaries
   - How far, how fast, how long, how come?
   - Plate Tectonics and the rock cycle

Chapter 4: Earthquakes Basic Theory
   - Basic Theory
   - Related hazards and their reduction
   - Earthquake control?
   - Seismic waves and earthquake severity
   - The earthquake prediction and forecasting
   - Earthquake awareness, public response

Chapter 5: Volcanoes
   - Magma sources and types
   - Hazards related to volcanoes
   - Kinds and locations of volcanic activity
   - Present and future volcanic hazards

Chapter 6: Streams and flooding
   - Hydrologic cycle
   - Flooding
   - Streams and their features
   - Strategies for reducing flood hazards
Chapter 7: Coastal Zones and Processes
Nature of the coastline Emergent & Submergent Coastlines
Coastal erosion, sediment, deposition and transport Difficult coastal environments
Costs of construction & reconstruction in high energy environments

Chapter 9: Geology and climate: Glaciers, deserts, and global climate trends
Glaciers and glacial features Wind and its geologic impacts
Deserts and desertification Global climate, past and future

Chapter 10: Water as a resource
The global water budget Fluid storage and movement: porosity and permeability
Subsurface waters Aquifer Geometry
Consequences of groundwater withdrawal
Other impacts of urbanization on groundwater systems
Water quality Water use, water supply, extending the water supply

Chapter 13: Energy resources- Fossil Fuels
Oil and natural gas Supply and demand for oil and natural gas
Oil spills Environmental impacts of coal use Oil shale, tar sand

Chapter 14: Energy resources- Alternative sources
Nuclear power: Fission and Fusion Solar energy
Geothermal power, hydropower, tidal power, wind energy, biomass

Chapter 15: Waste Disposal
Solid waste Municipal waste
Reducing waste volume Liquid waste disposal
Sewage treatment Radioactive wastes

Chapter 16: Water pollution
General principles Industrial pollution
Organic matter Agricultural pollution Groundwater pollution

Chapter 17: Air Pollution
Atmospheric Chemistry: Cycles & Residence times Costs of Air Pollution
Types and sources of Air Pollution Air Pollution controls