

**MARINE SCIENCE/GEOLOGY 215
COASTAL ENVIRONMENTS OF THE SOUTHEASTERN U.S.**

BULLETIN INFORMATION

MSCI 215 = GEOL 215 Coastal Environments of the Southeastern U.S (3 credit hours)

Course Description:

Coastal zones of South Carolina and neighboring states, including geologic history, geomorphology, stratigraphy, hydrogeology, shoreline processes, environmental issues, and effect of man. Three lecture hours each week plus optional field trips. Not available for marine science major credit.

Note: MSCI/GEOL 215L is a completely separate course. Students can be enrolled in MSCI/GEOL 215 without being enrolled in MSCI/GEOL 215L.

SAMPLE COURSE OVERVIEW

This introductory course will explore the coastlines involving geomorphological, hydrological, sedimentological, ecological, and societal phenomena. Students will learn about the fundamental processes and landforms found within the coastal zone and the impacts of human activity and natural disasters. Case studies will be presented throughout the semester that highlight the coastal zones of the southeast United States, defined here as North and South Carolina, Georgia, and the east coast of Florida.

ITEMIZED LEARNING OUTCOMES

Upon successful completion of Marine Science 215, students will be able to:

1. Identify the features of coastal environments and continental margins and relate the structures observed to the theories of their origin
2. Identify and describe coastal processes and landforms that influence the southeast United States
3. Formulate hypotheses and analyze and interpret environmental data
4. Evaluate the scientific evidence for both natural and human-induced climate change and evaluate the impact of climate change on coastal ocean systems with respect to society
5. Identify the causes of marine pollution and environmental degradation, and understand the problems associated with containment and alleviation
6. Describe the importance of the coastal zone to environmental and economic systems
7. Identify and describe past and future impacts of natural disasters on coastal systems

SAMPLE REQUIRED TEXTS/SUGGESTED READINGS/MATERIALS

Due to the specialized nature of this course, there is no textbook. Relevant URL's will be provided in lecture. Several books that are used for generating lecture that maybe helpful are:

1. Bird, E. 2008. *Coastal Geomorphology: An Introduction*. New Jersey: John Wiley & Sons Inc.

2. Clayton, T.D. Taylor, Jr., L.A., Cleary, W.J., Hosier, P.E., Graber, P.H.F., Neal, W.J., and Pilkey, O.H. 1992. *Living with the Georgia Shore*. Durham: Duke University Press.
3. Hayes, M.O. and Michel, J. 2008. *A Coast for All Seasons: A Naturalist's Guide to the Coast of South Carolina*. Columbia: Pandion Books.
4. Lennon, G., Neal, W.J., Bush, D.M., Pilkey, O.H., Stutz, M. and Bullock, J. 1996. *Living with the South Carolina Coast*. Durham: Duke University Press.
5. Masselink, G. and Hughes, M.G. 2003. *Introduction to Coastal Processes and Geomorphology*. New York: Oxford University Press.
6. Park, D. (ed). 1989. *Waves, Tides and Shallow-Water Processes*. London: The Open University.

SAMPLE ASSIGNMENTS AND/OR EXAM

This course includes the following means of evaluating student performance and comprehension of the material:

1. **Examinations:** There will be three, non-cumulative exams with objective questions (multiple-choice, true/false, and diagram identification/data interpretation). Multiple choice and true false questions are designed to evaluate your understanding of basic terminology, principles covered in the lectures, and relationships between the coastal environment and society (Carolina Scientific Literacy L01 and L03). Diagram identification and data interpretation are formulated to test your ability to make conclusions based on the information provided (Carolina Scientific Literacy L02). Review sheets will be distributed. Even though Exam 3 is not cumulative, it will be given during the final exam period.
2. **Quizzes:** Six short answer quizzes will be given throughout the semester. In class quizzes will be based on higher order concepts presented during the previous class and are designed to evaluate your ability to formulate arguments based on available data and to evaluate relationships between the coastal environment and society. These quizzes will be unannounced, distributed at the beginning of lecture.
3. **Extra Credit:** Toward the end of the semester an extra credit assignment will be offered. The purpose of the extra credit is for students to demonstrate that they are observing the coastal environments of the southeast United States from scientific/management perspectives. To earn extra credit, students will obtain and annotate an image of a beach located from the southeast United States. The annotations shall include the image source, geographic location, and descriptions explaining the likely processes that formed the beach and associated landforms. All possible anthropogenic influences on the beach must also be noted. Students may earn up to two points added to their final course grade.

SAMPLE COURSE OUTLINE WITH TIMELINE OF TOPICS, READINGS/ASSIGNMENTS, EXAMS/PROJECTS

Class 1: Course Introduction

- Class 2:** Coastal Environments
- Class 3:** Plate Tectonics
- Class 4:** Coastal Classifications
- Class 5:** Coastal Classifications
- Class 6:** Sea Level Change
- Class 7:** Sea Level Change
- Class 8:** Wave Generation and Energy
- Class 9:** Nearshore Wave Motion and Currents
Exam 1 Review
- Class 10:** **Exam 1**
- Class 11:** Waves
Return Exam 1
- Class 12:** Waves
- Class 13:** Tides
- Class 14:** Inlets of the US Southeast
- Class 15:** Estuaries
- Class 16:** Wetlands
- Class 17:** Sandy Coasts
- Class 18:** Sandy Coasts
Exam 2 Review
- Class 19:** **Exam 2**
- Class 20:** Beach-Dune Interactions and Beach Classifications
Return Exam 2
- Class 21:** Wind Blown Sand Transport

- Class 22:** Coastal Dunes
- Class 23:** Severe Weather (Tropical Storms)
- Class 24:** Severe Weather (Hurricanes)
- Class 25:** Coral Reefs
- Class 26:** Coral Reefs
- Class 27:** Coastal Management
- Class 28:** Coastal Management
Exam 3 Review

Final (Exam 3) according to University final exam schedule -