

MSCI / GEOL 215: Coastal Environments of the Southeastern U.S

Spring 2012

GEOL 215 - Coastal Environments of the Southeastern U.S. (=MSCI 215) (3) Coastal zones of South Carolina and neighboring states, including geologic history, geomorphology, stratigraphy, hydrogeology, shoreline processes, environmental issues, and effects of man. Three lecture hours each week plus optional field trip(s). Not available for geology major credit.

Professor: Dr. Subra Bulusu
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Office hours: Tuesday and Thursday 12:30-1:30 PM in EWS 508A or by appointment

Lectures: Tuesday and Thursday 2:00-3:15 PM in PSC# 002.

Objective

Coasts are dynamic systems that change in time scales that can vary from seconds to hundreds and millions of years. This course will examine the "grand-plan" and the physical rules that govern the distribution of coastlines around the globe. Then it will move in looking at shorter time-scales such as sea level rise (thousands of years). Tides and wave controlled processes operate at time scales varying from days to a few seconds. In theory, superimposition of short term processes will lead to the results observed over longer term time-scales. This course will examine the processes themselves as well as the result on the coastal environment (i.e., coastal erosion, movement of barrier islands, shifting of tidal deltas). Hopefully, we will learn how the coastal zone operates and learn to live with it in harmony.

Learning outcome

Students will be able to describe verbally or in writing:

- how coastal environments will change with tides, wave controlled processes and hurricanes.
- about the coastal environment of the Southeastern U.S.
- the fundamental principles of coastal erosion, movement of barrier islands, shifting of tidal deltas
- at least one or two current issues facing the ocean/coastal environment.
- the concept of how the coastal zone operates and learn to live.
- how wind and wave energy affects the coast environment of South Carolina.
- how wind movement creates waves and drives the surface circulation of the oceans.
- Apply the principles and language of the natural sciences and associated technologies to historical and contemporary issues.

Credits: 3 Credit hours

Internet: This course is a web-enhanced course with lectures, quizzes, and other course resources posted on-line Blackboard regularly during the semester. Students will be required to access the class Internet site both prior to and following every lecture.

Attendance Policy

Class attendance is **MANDATORY**. The USC Bulletin for Undergraduate Studies states that absences of more than 10% of the scheduled class sessions is excessive. In lieu of taking roll, I will give several **quizzes** at random times during the course at the before/end of lecture or sometimes takes roll randomly. The points earned from the quizzes will be used as extra credit and added to your final grade. Pop quizzes and EXAMS cannot be made up!!!! No exceptions!!!!

Course Textbook

The primary and most important material is the one available through the instructors Lectures (although they are brief and in order to follow them requires attendance of the lecture). The powerpoint lectures will be available on the blackboard. These lectures were developed following the textbook:

Richard A. Davis Jr., The Evolving Coast , Scientific American Library. However, this is out of print (although some used copies might be found in local bookstores and/or online resellers).

Reference/Suggested:

1. Beaches and Coasts, 2004. Richard A. Davis & Duncan M. Fitzgerald, Blackwell Publishing , 419pp ISBN0-632-04308-3
2. Simon K. Haslett, 2002, Coastal Systems, Routledge. ISBN 0-415-21302-9, 218pp.

Grading

100 points	Test# 1
100 points	Test# 2
100 points	Test# 3
100 points	Final Exam (Optional)

Bonus#1	Assignments/quizzes
Bonus#2	Group presentations (15 min)– 8 students in each group (10 points)
Bonus#3	Attendance to a Marine Science/Geology seminar (5 points) [EOS/Geology Seminars Thursday 3:30-4:30 PM, Marine Science seminars Friday 3-4 PM. There will be a sign-up sheet for the attendance, choose one seminar only]
Bonus#4	Attendance (Absences 0, 1 or 2 Points 5, 3 or 2)

All EXAMS will be multiple choice.

NOTE: Final Exam (Optional) Wednesday May 2, 2012 at 9 AM.

Final Grade is calculated based on the average three tests or the average of the two high scores of the three interim tests and final exam score, and earned bonus points.

Make-up Policies: There will be **NO** make-ups for missed quizzes/Tests/seminar or Final Exam.

Final grades will be based on a grading scale suggested as follows: A \geq 90; B+ = 85-89; B = 78-84; C+ = 72-77; C = 66-71; D+ = 60-65; D = 50-59; and F \leq 49.
(Decimal points are rounded to the nearest integer)

Tentative Schedule Spring 2012

January 10	Lecture 1	Introduction	
January 12	Lecture 2	Costal Environments	
January 17	Lecture 3	Plate Tectonics I	
January 19	Lecture 4	Plate Tectonics II	
January 24	Lecture 5	Coastal classification	
January 26	Lecture 6	Sea Level Rise	
January 31	Lecture 7	Remote Sensing Observations	
February 2	Test# 1 (Multiple Choice 100 points)		
February 7	Lecture 8	Physical Processes	Waves I
February 9	Lecture 9	Physical Processes	Waves II
February 14	Lecture 10	Physical Processes	Tides I
February 16	Lecture 11	Physical Processes	Tides II
February 21	Lecture 12	Special/invited Lecture	
February 23	Lecture 13	Special/invited Lecture	
February 28	Lecture 14	Beaches – Material & Morphology	
March 1	Test#2 (Multiple Choice 100 points)		
March 5-9	Spring Break (NO CLASSES)		
March 13	Lecture 15	Hurricanes I	
March 15	Lecture 16	Hurricanes II	
March 20	Lecture 17	Estuaries I	
March 22	Lecture 18	Estuaries II- Marshes	
March 27	Lecture 19	Barrier Island and Processes	
March 29	Lecture 20	Tidal Inlets	
April 3	Lecture 21	Deltas	
April 5	Lecture 22	Costal Defense Measures	

April 10 Lecture 23 SC Beaches

April 12 Test#3 (Multiple Choice 100 points)

April 17 Lecture 24 Oceans from Space I

April 19 Lecture 25 Review and Preparation for the Final Exam

FINAL EXAM May 2, 2012 at 9 AM (Optional)