

GEOL/MSCI 502 – Principles of Coastal Geomorphology

Lecture: Tu, Th 2:00-3:15, CLS 102

Lab: W 4:00-7:00, EWS104

This class combines lessons in geologic and earth surface processes, and mechanics to understand the development and stability of coastal landscapes. Our time scale of interest ranges from fractions of seconds to eons, and our spatial scale of interest ranges from mm to hundred of kilometers.

Instructor: Raymond Torres, EWS 315A
Office Hours: Tu, Th, 3:15-5:00
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Teaching Asst. Jessica Chassereau, EWS 315
Office hours TBA

Textbook: Coasts: Form, Process and Evolution, 2002, by Collin D. Woodroffe, Cambridge University Press. Required readings include nearly the entire book.

Grading:	Midterm 1	(W, Sept 14)	15%
	Midterm 2	(Th, Oct 13)	15%
	Homework		10%
	Final Exam	(Wed, Dec. 7, 2pm)	15%
	Quizzes and Lab Exercises		15%
	Presentations (Grad and Undergrad)		15%
	Fieldtrips		10%
	Attendance		5%

Fieldtrips. There are two required fieldtrips and one optional. Trip 1 to the headwaters of the Saluda River is Sept.16-18. We will be camping and this trip is required. Trip 2 is October 18-23 to coastal Maine, more info TBA. This is an optional trip over fall break. People who go on the trip will have an optional final exam. Trip 3 is required, Nov. 18-19 to the SC coast; we will stay in dorms.

Undergrad Presentation: Undergrads are required to get discharge, suspended sediment and current data from the USGS website, and tide data from NOAA at the mouth for the following rivers: the Neuse in NC, the Santee in SC and the Altamaha in GA. Other information on land use and geographic information related to land use in each watershed is also needed. These data will be compiled and presented to highlight controls on sediment flux to the ocean presentations on Nov. 16. More info to follow.

Grad students will have extra exam questions and are required to give two presentations. The first presentation and 10 page summary of work (in a paper style format) will be based on the individual's research (or literature review if you just arrived). The second presentation will be on a set of papers on the theoretical development of coasts (Wolinsky, 2009; and Wolinsky and Murray, 2009). For #2 groups will be assigned by Torres and each group is responsible for presentation of one of the papers. The purpose of this presentation is not just a recitation of what is written, you are required to explain the governing equations and, as applicable, to bring in outside resources to convey the main points. Grad Presentation 1: 1-page outline due Sept. 1; written summary due Oct. 4; presentation due Oct. 12. Grad Presentation 2: Initial screening by Torres Nov. 16, presentation to class on Nov. 30

All exams will be closed book and closed notes. The exams will have some combination of multiple choice, fill-in, and essay questions. The exam material will come from the combined lecture and readings, and homework and labs. The final will have the same format but with more material and it will be cumulative. Note the lab

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grade is not a separate grade. Your lab grade will be averaged with the lecture grade as shown above.

Early or late exams can be arranged ONLY if you notify Professors Torres in writing (email is sufficient) **at least 7 days prior to the exam date**. Make up exams, late homework and late lab assignments will only be permitted with a note from the doctor or the undertaker. Missed, but excused exams, quizzes or homework must be made up within two weeks of the scheduled due date. It is up to you to make these arrangements with Professor Torres to get your work done within the two week time interval.

IF YOU FEEL THAT ANY OF YOUR WORK WAS MARKED UNFAIRLY AND YOU DESERVE MORE POINTS YOU MUST RESOLVE THE DISCREPANCY WITHIN TWO WEEKS OF THE DUE DATE OR EXAM/QUIZ DATE. AFTER THAT NO GRADE CHANGES WILL BE GRANTED. FOR THE FINAL YOU WILL HAVE ONE WEEK TO REQUEST A REVIEW.

Homework assignments are due at the start of lecture. Lab attendance is **mandatory**. Lab work must be turned in at the end of lab. **No unexcused late homework or laboratory exercises will be accepted.** YOU HAVE TWO WEEKS FROM THE DUE DATE TO TURN IN ASSIGNMENTS THAT ARE LATE BECAUSE OF ILLNESS OR FAMILY MATTERS (as long as you have a note). All homework assignments should be neat and legible. If I cannot read your answer you won't get credit. Final grades will be based on STRAIGHT PERCENTAGES, 90 - 100% = A, 80 - 89% = B, 70 - 79% = C, 60 - 69% = D and < 60% = F. If you are curious about how your are doing in class just add up the number of points you earned, divide by the total, multiply by 100% and check with above.

Topics Covered and Readings:

Finish the following reading assignments before the date shown:

Date	Topic	Reading	Homework (TBA)
Aug. 25	Human impacts on the coast	1-34	
Sept. 1	Geological Setting	35-89	
Sept. 13	Coastal Processes	90-142	
Sept. 29	Rocky Coasts	143-187	
Oct. 13	Beach and Barrier Coasts	248-320	
Nov. 8	Deltas and Estuaries	321-374	
Nov. 22	Muddy Coasts	378-433	
Nov. 30	Morphodynamics	434-474	

Finally, you can augment your class notes with my power point lectures. However, I will only give you the power point slides after you show me the notes you have taken in class. I will not be giving out power point slides within three days of an exam. So if you want the slides see me during office hours with your notes and a thumb drive. You are not allowed to copy or give to others any part of the slides I give you.

Learning Outcomes

By the end of the term, successful students should be able to do the following:

- Describe the different parts of the coastal environment, how they interact, relative rates of interaction, and controls on transport rates.
- Describe the interactions between rivers and coastal processes.
- Identify the reservoirs of coastal materials and transport processes.
- Identify coastal landscape features and their development.
- Explain the concepts of Earth surface process ↔ form
- Apply mass balance concepts to understand erosion of landscapes.