

**GEOL 33400  
PGEOG 70156  
EES 79903**

**Coastal Geomorphology: The Study of Beaches & Coasts**

Tuesday/Thursday: 1610 - 1725  
Hunter North 1022 & Hunter North 1090B

**Instructor:** Frank Buonaiuto  
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**Phone:** (212) 650-3092  
**Office Hours:** Tuesday 1730 – 1900 (or by appointment)

**Course Description:** This course introduces students to the broad field of coastal geology and coastal dynamics. Lectures and assigned readings deal with natural and anthropogenic influences on various coastal settings, and the problems facing coastal communities. In particular, this course will focus on wave-dynamics, sediment transport processes beaches, barrier island evolution, storm systems, and coastal erosion. The Atlantic coast of New York will be used as a case study, and students are encouraged to participate in local field trips to explore both natural and engineered shorelines.

This is a **3-hr, 3.0-credit**, science-based course, which fulfills **GER 3/B**. It will require that students learn to understand physical and quantitative, concepts. One of your best friends in this course is the textbook.

**Required Text:** Coastal Engineering Manual  
EM 1110-2-1100  
<http://chl.erdc.usace.army.mil/cem>

The Coastal Engineering Manual (CEM) provides a single, comprehensive technical document that incorporates tools and procedures to plan, design, construct, and maintain coastal projects. This engineering manual will include the basic principles of coastal processes, methods for computing coastal planning and design parameters, and guidance on how to formulate and conduct studies in support of coastal flooding, shore protection, and navigation projects. **The non-interactive version is available online as a free download.**

**Learning Outcomes:** Upon completion of this course students will be able to

- Characterize various coastal environments based on geology and hydrodynamic conditions
- Define the natural forces that continually reshape these environments
- Describe relevant coastal processes, including the cross-shore and longshore transport of sediments and the resulting geo-morphologic features
- Discuss the evolution of the NY barrier beach/island system
- Analyze the impacts of engineering activities on coastal environment
- Critique sustainability measures as they pertain to marine systems

**Course Evaluation:** Grades are based on homework, class participation, laboratory exercises, research project and exams. The numerical breakdown is as follows: Class participation (10%); homework (10%); lab assignments (20%); research project (20%); and two (2) exams (20% each). Makeup exams will only be given for extreme circumstances.

**Field Trips:** Three field trips will be scheduled during the semester focused on regional coastal processes and coastal engineering activities. Potential site visits along the NY Atlantic coast include Long Beach, Fire Island, Dune Road and Montauk Point.

**This is a 300-level course and it is expected that all students will be committed to attending and participating in all lectures and organized field trips.**

#### **About Examinations and Grades:**

- I use the Hunter College grading system that can be found at <http://catalog.hunter.cuny.edu/content.php?catoid=28&navoid=5862>
- Examinations are 1 hour and 15 minutes for the mid-term and 2 hours for the final exam and both must be turned in promptly. If you arrive late, you lose that time.
- Make-up exams are ONLY available in extreme cases, and with medical (or other) forms that confirm the absence.
- For undergraduates only: I will automatically agree to the CR/NC option only if the conditions stated in the CN/NC form are satisfied: all course work has been completed and your earned grades such that you accumulated at least 50 points total in the course. Students on academic probation are not eligible for this option.
- IN (incomplete) as a final grade option is only available under the most extraordinary, and documented, circumstances. You must contact me within 48 hours of the final exam and request the IN. You must also complete a Contract to Resolve an Incomplete Grade and between the two of us, we will agree upon a date by which the IN to be satisfied.

**Classroom Policies:** All students are expected to abide by the following policies when in lecture in order to provide a more respectful and productive learning environment.

- All cell phones and pagers must be turned off or switched to quiet mode.
- Laptops are permitted for note taking purposes only, **NO FACEBOOKING!**
- No electronic devices or reference materials will be permitted on the desk during exams.

#### **Academic Dishonesty**

Please be advised that plagiarism, dishonesty, or cheating in any portion of the work required for this course will be punished to the full extent allowed according to Hunter College regulations.

Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

See the following report by the Hunter College Senate for more details:

<http://www.hunter.cuny.edu/senate/assets/Documents/Hunter%20College%20Policy%20on%20Academic%20Integrity.pdf>

### **ADA Policy**

In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical, and/or Learning) consult the Office of AccessABILITY, located in Room E1214B, to secure necessary academic accommodations. For further information and assistance, please call: (212) 772- 4857 or (212) 650-3230.

### **Hunter College Policy on Sexual Misconduct**

In compliance with the CUNY Policy on Sexual Misconduct, Hunter College affirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationship. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.

- a. Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, on contacting the College's Public Safety Office (212-772-4444)
- b. All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose ([jtrose@hunter.cuny.edu](mailto:jtrose@hunter.cuny.edu) or 212-650-3262) of Colleen Barry ([colleen.barry@hunter.cuny.edu](mailto:colleen.barry@hunter.cuny.edu) or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

CUNY Policy on Sexual Misconduct Link:

<http://www.cuny.edu/about/administration/offices/la/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf>

**Schedule of Topics and Readings:**

Lec#	Month	Date	Day	Subject	Reading
1	Aug	29	Tue	Intro, Coastal Diversity	EM-Part I, Ch4, Ch2
2		31	Thu	Intro To ArcGIS	
3	Sep	05	Tue	Intro, Coastal Diversity	EM-Part I, Ch4, Ch2
4		07	Thu	Lab Exercise 1	
5		12	Tue	Coastal Diversity	EM-Part I, Ch4, Ch2
6		14	Thu	Lab Exercise 2	
7		19	Tue	Coastal Terminology & Geologic Environments (classes follow a Thursday schedule)	EM-Part IV, Ch1
		21	Thu	<b>No Classes Scheduled</b>	
8		26	Tue	Classification & Morphology	EM-Part IV, Ch2
9		28	Thu	Lab Exercise 3	
10	Oct	03	Tue	Classification & Morphology	EM-Part IV, Ch2
11		05	Thu	Lab Exercise 4	
12		10	Tue	Coastal Morphodynamics	EM-Part IV, Ch3
13		12	Thu	Lab Exercise 5	
14		17	Tue	<b>Exam I</b>	
15		19	Thu	Lab Exercise 6	
16		24	Tue	Coastal Morphodynamics	EM-Part IV, Ch3
17		26	Thu	Lab Exercise 7	
18		31	Tue	Water Wave Mechanics	EM-Part II, Ch1
19	Nov	02	Thu	Lab Exercise 8	
20		07	Tue	Surf Zone Hydrodynamics	EM-Part II, Ch4
21		09	Thu	Lab Exercise 9	
22		14	Tue	Water Levels and Long Waves	EM-Part II, Ch5
23		16	Thu	Lab Exercise 10	
		21	Tue	<b>Friday Schedule</b>	
		23	Thu	Lab Exercise 11	
		28	Tue	Water Levels and Long Waves	EM-Part II, Ch5
		30	Thu	Lab Exercise 12	
	Dec	05	Tue	Sediment Transport	EM-Part III, Ch2, Ch3
		07	Thu	Lab Exercise 13	
		12	Tue	Sediment Transport	EM-Part III, Ch2, Ch3
		19	Tue	<b>Final Exam (1:45-3:45)</b>	