

GEOL 33400
PGEOG 70503

Coastal Geomorphology: The Study of Beaches & Coasts

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

Instructor: Frank Buonaiuto
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Office Hours: Tu: 1730 – 1845 (or by appointment)
Th: 1730 – 1845
Fr: 1200 – 1400

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%), Two 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.

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 must be turned off or switched to quiet mode.
- Laptops are permitted for note taking purposes only.
- No electronic devices or reference materials will be permitted on the desk during exams.

Academic Dishonesty

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.

Office of AccessABILITY.

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 HE1124 to secure necessary academic accommodations.

For further information and assistance please call (212-772-4857)/ TTY (212- 650-3230). **You must be registered with the Office of AccessABILITY to qualify for the accommodations.**

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, or 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 or 212-650-3262) or Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Room HE 1123.

The CUNY Policy on Sexual Misconduct Link is:

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

Schedule Of Topics And Readings:

| Month | Date | Day | Subject | Reading CEM | IPCG |
|-------|------|-----|---|-----------------------|-------|
| Jan | 28 | Tue | Intro To Coastal Geomorphology | EM-Part I, Ch4, Ch2 | Ch1 |
| | 30 | Thu | Intro To ArcGIS | | |
| Feb | 04 | Tue | Geomorphology Review | EM-Part I, Ch4, Ch2 | |
| | 06 | Thu | Lab Exercise 1: Inlet Morphology | | |
| | 11 | Tue | Coastal Diversity | EM-Part I, Ch4, Ch2 | |
| | 13 | Thu | Lab Exercise 1: Inlet Morphology | | |
| | 18 | Tue | Coastal Terminology & Geologic Environments | EM-Part IV, Ch1 | Ch2,3 |
| | 20 | Thu | Lab Exercise 2: Inlet Evolution 1 | | |
| | 25 | Tue | Coastal Terminology & Geologic Environments | EM-Part IV, Ch1 | Ch2,3 |
| | 27 | Thu | Lab Exercise 3: Inlet Evolution 2 | | |
| Mar | 03 | Tue | Water Levels and Long Waves | EM-Part II, Ch5 | Ch3 |
| | 05 | Thu | Lab Exercise 3: Inlet Evolution 2 | | |
| | 10 | Tue | Water Wave Mechanics | EM-Part II, Ch1 | Ch4,5 |
| | 12 | Thu | Lab Exercise 4 | | |
| | 17 | Tue | Surf Zone Hydrodynamics Exam 1: Take Home | EM-Part II, Ch4 | Ch6 |
| | 19 | Thu | Lab Exercise 4 | | |
| | 24 | Tue | Sediment Transport | EM-Part III, Ch2, Ch3 | Ch7 |
| | 26 | Thu | Lab Exercise 5 | | |
| | 31 | Tue | Classification & Morphology | EM-Part IV, Ch2 | |
| Apr | 02 | Thu | Lab Exercise 5 | | |
| | 07 | Tue | Wednesday Schedule | | |
| | 09 | Thu | Spring Recess | | |
| | 14 | Tue | Spring Recess | | |
| | 16 | Thu | Spring Recess | | |
| | 21 | Tue | Coastal Morphodynamics | EM-Part IV, Ch3 | Ch8,9 |
| | 23 | Thu | Lab Exercise 6 | | |
| | 28 | Tue | Coastal Morphodynamics | EM-Part IV, Ch3 | Ch10 |
| | 30 | Thu | Lab Exercise 6 | | |
| May | 05 | Tue | Coastal Morphodynamics | EM-Part IV, Ch3 | Ch11 |
| | 07 | Thu | Lab Exercise 7 | | |
| | 12 | Tue | Coastal Morphodynamics | EM-Part IV, Ch3 | Ch12 |
| | 14 | Thu | Lab Exercise 7 | | |
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| | 19 | Tue | Final Exam (1:45-3:45) | | |

COURSE WEBSITE: <http://www.geo.hunter.cuny.edu/~fbuon/>