Coastal Morphology and Processes
GLY 4734 / 6932, Spring 2020
Tuesday (9:35-10:25 am) Thursday (9:35-11:30 am)
202 Williamson Hall

Instructor:
Dr. Peter N. Adams, adamsp@ufl.edu
279 Williamson Hall, (352) 846-0825
Office Hours: By appointment

Teaching Assistant:
Han Byul Woo (Aiden), hbwoo@ufl.edu
120 Williamson Hall
Office Hours: By appointment

Course Description:
This class will focus on the origin/evolution of coastal landforms and the physical processes responsible for their creation and modification. We will cover the following topics: geomorphic classification of coasts, sediment description and analysis, sea level fluctuation, tides, generation and transformation of waves, wave climate, wave breaking, nearshore currents, longshore and cross-shore sediment transport, deltas, estuaries, beach and nearshore morphology, barrier island systems, cliffed coasts, and the effects of humans on coastal environments.

Course Objectives:
At the completion of this course, students will be able to:

1. Summarize the schemes of coastal classification and identify the tectonic setting of a coast by evaluating the coastal landforms at a location.
2. Appreciate the influence of global climate and *long-term* sea level history on a coastal setting.
3. Distinguish among various processes responsible for *short-term* dynamic changes in sea level.
4. Explain the origin of the tides with Newton's equilibrium theory and the complexities explained by dynamic tidal theory.
5. Outline the processes of wave transformation from generation to propagation to shoaling and breaking including the role of refraction.
6. Summarize the generation of cross-shore and longshore currents in shallow coastal waters.
7. Classify coastal sediments and demonstrate how sediment transport within littoral cells influences the evolution of shore profiles and planform shapes.
8. Link the form and variability of beaches and shallow sedimentary features to the hydrodynamic and sedimentary processes shaping them.
9. Provide an overview of how barrier systems originate and evolve.
10. Explain the links among tidal inlets, estuary hydrodynamics, and back barrier morphology.
11. Contrast rocky and sandy coasts in terms of dominant geomorphic processes.
12. Provide several examples where humans are adapting to, or altering, a coastal site.

Required Textbook:
Introduction to Coastal Processes & Geomorphology, 2nd Edn., 2011, by Gerhard Masselink, Michael G. Hughes, and Jasper Knight; ISBN: 978-1444122404; Publisher: Hodder Education

Logistics:
During class meetings, we will introduce and discuss key concepts and work through some examples. Some class meetings will consist of work sessions, in which you will work (sometimes individually, sometimes in small groups) on problem sets or reading/discussion exercises, which you will finish outside of class and turn in (online to the Canvas site) by an announced date and time. We will have two one-day field trips to get to know the regional coastal geology, examine beach morphology, marsh landforms/dynamics, and witness coastal processes in action. We will have six quizzes to keep up with the material and also to avoid the overwhelming task of digesting 4 months worth of study into a two-hour exam. Lastly, each student will participate in online "discussions" in which you will examine various aspects of a particular coastal location that is of importance to you.

Course Readings:
The textbook serves as the primary reading material. Further reading will be provided in the form of my detailed course notes and powerpoint slide .pdfs. The course topics are organized (roughly) in the same order as the textbook chapters, so you shouldn't have much difficulty figuring out what to read to be prepared for the class meetings. Note that the notes and slides are not a suitable substitute for the textbook readings. In addition, I will provide readings from the following sources:

- Davidson-Arnott, R. (2010). *Intro. to Coastal Processes and Geomorphology*. Cambridge.
- Davis, R. A., Jr, & FitzGerald, D. M. (2004). *Beaches and Coasts*. Blackwell Publishing.
- Komar, P. D. (1998). *Beach Processes and Sedimentation*, 2nd Edn., Prentice Hall.

Grade Calculation:

Assignments	35%
Quizzes	35%
Field Trips	10%
Discussions	10%
Class Participation*	10%

* Note that the class participation grade will be made up of your attendance in class, your willingness to attempt to answer questions posed by the instructor, and your attempts to enhance/improve the learning environment of the classroom and the field trips.

Late Policy:
Late assignments will be docked at a rate of -10%/day late.

Letter Grade Distribution:
Final grades will be determined by computing final scores then shifting the class-wide distributions according to a gaussian curve, if necessary, to get an adjusted score for each student. After applying the curve, the adjusted score will be subject to the following grading scale:

>93	A	73 - 77	C
90 - 93	A-	70 - 73	C-
87 - 90	B+	67 - 70	D+
83 - 87	B	63 - 67	D
80 - 83	B-	60 - 63	D-
77 - 80	C+	<60	F