

**Tides, Surges and Relative Sea-Levels**  
**CE 7200 - Fall 2017**  
**Professor Scott C. Hagen, PhD, PE, F.ASCE**

**Course Description:** The development and implementation of ocean and coastal numerical models has led to specialized applications in fields of science and engineering. However, it is important to first provide in-depth focus on tidal theory. This course will explore theoretical concepts and provide a basis upon which the student can build in order to better understand tides, surges and relative sea levels.

**Office:** 124C, Sea Grant Bldg.

**E-mail:** shagen@lsu.edu

**Office hours:** T.B.D.

**Textbook:** Pugh, D. & P. Woodworth, Sea-Level Science: Understanding Tides, Surges, Tsunamis and Mean Sea-Level Changes. Cambridge University Press, 2014. Available at NO CHARGE at: <http://libezp.lib.lsu.edu/login?url=http://ebooks.cambridge.org/ebook.jsf?bid=CBO9781139235778>

**Supplemental reading:** Various articles / book chapters will be distributed throughout the semester.

**Required software:** To be provided as necessary.

**Procedure:** Reading assignments should be read before and after class. Not all material will be covered by lectures; it is the student's responsibility to remediate if needed. Further, all students are strongly encouraged to read relevant books, journal articles and conference proceedings to broaden and deepen your understanding of the subject matter.

**15-week course outline:**

Week 1	Chapter 1	Introduction to historical perspectives, astronomic vs. meteorological tides
Week 2	Chapter 2	Sea-level measurements
Week 3	Chapter 3	Tidal forces
Week 4	Chapter 4	Tidal analysis, including harmonics and response
Week 5	Chapter 4	Tidal analysis, including predictions
Week 6	Chapter 5	Tidal dynamics of the oceans
Week 7	Chapter 5	Tidal dynamics on the shelf
Week 8	Midterm	Cumulative review and exam
Week 9	Chapter 6	Shallow-water and coastal tides
Week 10	Chapter 7	Storm surges and meteorological effects on sea-level
Week 11	Chapter 8	Tsunamis
Week 12	Chapter 9	Spatial variations in sea-level
Week 13	Chapter 10	Mean sea-level changes in time
Week 14	Chapter 11	Sea-level changes in time to do with the solid Earth
Week 15	Chapter 12	Sea-level applications
	REVIEW	Cumulative

**Final grades will be computed from the following activities:** While you are encouraged to work together, all submitted work must be your own. A grade of "F" will be assigned for any work which is clearly not your own or cheating of any type.

Homework	20%
Mid-term exam	20%
Final exam (cumulative)	30%
Project Report	15%
Project Presentation	15%

**Homework assignments:** All assignments should be done neatly and in a professional manner. I encourage you to use word-processing software to prepare your solutions. The problem should be defined, diagrammed (if appropriate), and the solution should be developed in a step-by-step procedure. The final solution(s) should be reported to two or three significant figures, as appropriate, and should be underlined. You are encouraged to work together in study groups; however, identical (copied) homework will be awarded a grade of zero (0). Students should e-mail an electronic version of their homework and will be required to follow due dates for all. Late homework will be graded from a basis of 75% of full credit, unless prior arrangements are made with the instructor.

**Project:** Each student will be responsible for conducting a research project on tidal data analysis directly related to course material. The final results will be written up in a 3-5 page report and shared with the entire class in a 10 minute oral presentation. More details will follow after the mid-term examination.

**Attendance:** Please arrive on time for class. Late arrivals are distracting to your classmates and to me. While there is no attendance policy for this class, I strongly encourage you to attend and participate.

**Grading scheme:** The plus/minus system will be used and grades will be assigned as follows. Your end of semester numerical grades are rounded to whole numbers (for example, 94.49 = 94, 94.50 = 95)

A+	98-100
A	94-97
A-	90-93
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	71-76
C-	68-70
D+	65-67
D	62-64
D-	58-61
F	57 and below

**Expectations:** LSU's general policy states that for each credit hour, you (the student) should plan to spend at least two hours working on course related activities outside of class. Since this course is for three credit hours, you should expect to spend a minimum of six hours outside of class each week working on assignments for this course.

For more information see: <http://catalog.lsu.edu/content.php?catoid=12&navoid=822>.

**LSU student code of conduct:** The LSU student code of conduct explains student rights, excused absences, and what is expected of student behavior. Students are expected to understand this code as described here: <http://students.lsu.edu/saa/students/code>. Any violations of the LSU student code will be duly reported to the Dean of Students.

**Disability access:** Students with documented disabilities who need accommodations in this course must contact the instructor at the beginning of the semester to discuss their requirements. No accommodations will be provided until the student has met with the instructor to request accommodations. Students who need accommodations must contact the LSU Office of Disability Services before requesting accommodations from the instructor.

**Respect for diversity:** The diversity that students bring to this class is considered a strength and resource and it is the intent of the instructor to create a respectful, supportive, and inclusive learning atmosphere where everyone should feel comfortable sharing ideas and expressing opinions and concerns. Course content will be considered from multiple perspectives. Suggestions on how to improve the value of diversity in this course are welcome and appreciated.

**Moodle and email correspondence policy:** The instructor may use email and/or Moodle as a means of communication with students. Students are expected to check both email and Moodle regularly.

**Academic success:** The primary ingredients of your academic success are attending class, managing your time efficiently, taking good notes, and developing good critical thinking and communication abilities. LSU has a number of excellent resources that will assist you in developing these skills. The place to begin is the Center for Academic Success (<http://students.lsu.edu/academicsuccess>). The CAS offers guidance on what learning strategies are best suited to your talents, tutoring in the basic subjects, and workshops on a variety of topics, from note taking to time management. The main key to succeeding in this or any other course is to not get behind. Good luck!

**Disclaimer:** Any part of this syllabus is subject to revision at the discretion of the instructor at any time during the semester. Please bring this syllabus to class on a regular basis. Any changes will be announced in class and/or communicated via email and/or Moodle.