

# Syllabus for: MSL 622: Tides their Nature and Impacts

Instructor: Dr. Zygmunt Kowalik  
School of Fisheries and Ocean Sciences  
118 O'Neill

Class meeting times: TBA  
Location: TBA  
Office hours: By appointment

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## Course Description

It will provide students in marine sciences with in-depth knowledge on tides and the role

## Course Policies and Requirements

Check your e-mail regularly, and be sure to have your current contact information throughout the semester. Class information, updates, readings, and changes to the schedule will be distributed via e-mail.

Class participation and homework assignments are expected from ALL students. Points for class participation will be applied toward the final grade, as indicated below. One midterm and one final exam will be given during the course. These exams will be written, closed-book. The final exam will include material presented throughout the semester.

Home assignments will play the major role in this educational process. A series of the short practical projects will be made for the real hands-on experience in applying numerical methods for exploring the role of tides in the oceans.

### Course Readings:

The hard copies of the following text books will be available in Dr. Kowalik's office to borrow and/or at the UABio-Science Library,

1. Waves, tides and shallow-water processes. 1993, Open Univ. Course Team, Pergamon Press.
2. Massel S. R. 1999. Fluid mechanics for marine ecologists. Springer.
3. Mann, K. H. and J. R. N. Lazier, 1991. Dynamics of Marine Ecosystems. Blackwell Scientific Pub.

The electronic copies of the following text books will be available

1. Tides, Surges and Mean Sea-Level by T. Pugh. (pdf file of the book)
2. Coastal Engineering Manual (six chapters) available from the Website of US Army Corps of Engineer.
3. Lecture notes prepared by Z. Kowalik

Handouts of the important journal publications will be provided as appropriate.

**Student Presentations:** An assignment for a presentation will be made in the first month of the course. The topics related to tides and studied of interest will be chosen so the students will be able to apply the new topic to their specific fields. Instructor will be strongly involved into preparation of presentation by suggesting proper tools required for the solving problems. The presentation will be scheduled in the second part of the semester and usually will be given for one hour. The presentation will be graded as fail or pass. After and during presentation the group discussion will be encouraged.

A note about plagiarism: Plagiarism will not be tolerated in any way during this course. All student presentations are expected to consist of students' original ideas and/or

information from properly cited published sources. Every case of plagiarism will be carefully scrutinized and the range of consequences will be from failing assignment to failing the entire course.

**Grading:**

Grades will be determined based on the total points awarded for the following requirements.

Requirements	Points	% of total
Class participation (attendance, preparedness)	10	10
Homework assignments	40	40
Midterm exam	10	10
Presentation	10	10
Final exam	30	30
Total	100pts	100%

Semester Grades will be assigned according to the following scale:

- 100-90 A
- 89-80 B
- 79-70 C
- 69-60 D
- Below 59 F

Lecture Schedule (subject to change):

Week	Lecture Topic	Assignments/Readings
1 and 2	Tide generating forces. Enumerate and discuss all forces and periodicities related to tides.	Readings: Ch.I (Tidal Forces) , pdf file, prepared by Z. Kowalik and Waves, tides and shallow-water processes. 1993, Open Univ. Course Team, Pergamon Press.  Home assignment No11a. Calculate magnitude of the tidal force as a function of latitude. 1b. Perform calculation and make graphics of linear and nonlinear superposition of the two tide periods.

methods to analyze sea level  
and currents by classic  
harmonic analysis and by  
selected modern tools related  
to energy spectra.

	<p>transport and dissipation will be discussed. Harnessing the power of tides for the generation of electricity will be explained. The methods for evaluation environmental impact of a tidal power development will be given.</p>	<p>by Z. Kowalik</p> <p>Home assignment No8: Describe five regions in the World Ocean of extreme tidal ranges. Explain physics of the high tide generation.</p>
<p>14 and 15</p>	<p>Impact of tides on climate. Tidal forces display many long periods</p>	

FINAL EXAM