

**Department of Ocean and Mechanical Engineering  
Florida Atlantic University  
Course Syllabus**

<b>1. Course title/number, number of credit hours</b>	
EOC4422 Ocean Wave Mechanics	3 credit hours
<b>2. Course prerequisites, co-requisites, and where the course fits in the program of study</b>	
Prerequisite: <ul style="list-style-type: none"> <li>• EOC 3123 Fluid Mechanics</li> <li>• EGN 4323 Vibration Synthesis and Analysis (both with a grade of C or above)</li> </ul> Co-requisite: <ul style="list-style-type: none"> <li>• EGN 4323 Vibration Synthesis and Analysis</li> </ul>	
<b>3. Course logistics</b>	
Term: Fall 2019 Class hours: MW 11:30 – 12:50pm, ST 209	
<b>4. Instructor contact information</b>	
<i>Instructor's name</i> <i>Office address</i> <i>Office Hours</i> <i>Contact telephone number</i> <i>Email address</i>	Prof. Betsy Seiffert SeaTech ST 236 MTWR 4:00 to 5:00 pm 954-924-7227 <a href="mailto:eseiffert@fau.edu">eseiffert@fau.edu</a>
<b>5. TA contact information</b>	
<i>TA's name</i> <i>Office address</i> <i>Office Hours</i> <i>Contact telephone number</i> <i>Email address</i>	N/A
<b>6. Course description</b>	
The course deals with Small amplitude wave theory, finite amplitude waves, wave generation, wave forecasting, wave measurements. Wave force on fixed structures, floating bodies and moored bodies.	
<b>7. Course objectives/student learning outcomes/program outcomes</b>	
<i>Course objectives</i>	The objective of the course is to provide the students with a basic and applied knowledge of water wave mechanics as required in the design of ocean structures, marine vehicles and harbors; in the protection of shores; and for the prediction of sea states.
<i>Student learning outcomes &amp; relationship to ABET a-k objectives</i>	<ol style="list-style-type: none"> <li>1. An ability to apply the knowledge of mathematics for formulation and analysis of ocean wave and boundary-value fluids problems. (a,e/1)</li> <li>2. A thorough knowledge of the basic properties of ocean waves in deep and coastal waters, and mechanisms of wave generation. (a/1)</li> <li>3. An ability to determine wave forces on fixed and floating structures. (a,e,k/1,6)</li> <li>4. A basic knowledge of the relation between atmosphere and sea states, and wave modeling and spectra. (a/1)</li> </ol>

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	<p>5. An ability to make measurements of surface waves and/or analyze experimental data. (b/6)</p> <p>6. An ability to work on team projects. (d/5)</p>
<b>8. Course evaluation method</b>	
Home Work	30%
Midterm I	20%
Midterm II	20%
Final Exam	30%
<b>9. Course grading scale</b>	
<p>Grading Scale: 90 and above: "A", 87-89: "A-", 83-86: "B+", 80-82: "B", 77-79: "B-", 73-76: "C+", 70-72: "C", 67-69: "C-", 63-66: "D+", 60-62: "D", 51-59: "D-", 50 and below: "F."</p>	
<b>10. Policy on makeup tests, late work, and incompletes</b>	
<p><i>Makeup tests</i> are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student of participating in the exam. Makeup exam should be administered and proctored by department personnel unless there are other pre-approved arrangements</p> <p><i>Incomplete grades</i> are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given.</p> <p><i>University policy on electronic devices during exams:</i> No cell-phones, i-pads, or other electronic devices are allowed during any of the exams. No watches capable of taking pictures or communicating with others are allowed during exams. If, because of an emergency, there is a need to carry an electronic device to the exam, you must secure permission from the instructor</p>	
<b>11. Special course requirements</b>	
This course contains no special requirements.	
<b>12. Classroom etiquette policy</b>	
University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be <b>turned off</b> during class.	
<b>13. Disability policy statement</b>	
In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS)—in Boca Raton, SU 133 (561-297-3880); in Davie, LA 203 (954-236-1222); or in Jupiter, SR 110 (561-799-8585)—and follow all SAS procedures.	
<b>14. Honor code policy</b>	
Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a	

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system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at [www.fau.edu/regulations/chapter4/4.001\\_Code\\_of\\_Academic\\_Integrity.pdf](http://www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf)

**15. Counseling and Psychological Services Center**

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

**16. Required texts/reading**

*Water Wave Mechanics for Engineers and Scientists*, by Robert G. Dean and Robert A. Dalrymple, World Scientific Publishing Company, 1991.

**17. Supplementary/recommended readings**

Coastal Engineering Manual – Part II, US Army Corps of Engineers (PDF version on Canvas)

**18. Course topical outline, including dates for exams/quizzes, papers, completion of reading**

Tentative Course Topics:

1. Potential flow, Laplace's equation, boundary value problems.
2. Small amplitude waves, linearized boundary conditions.
3. Periodic, progressive and standing wave solutions.
4. Wave kinematics, dispersion relation, shallow- and deep-water waves.
5. Phase and group velocity, energy propagation, capillary waves.
6. Wave and current interaction, shoaling waves and refraction.
7. Long wave theory, tides in channels, storm surge.
8. Wave radiation, wave-maker theory.
9. Wave forces, Froude-Krylov and Morison-equation methods.
10. Wind generated waves, Sea spectra (time permitting)

Tentative Dates:

Midterm I: Wednesday, Sept 26<sup>th</sup>

Midterm II: Monday, Oct 29<sup>th</sup>

Final Exam: Monday, December 10, 10:30 am to 1:00 pm