

OCEN 300 - OCEAN ENGINEERING WAVE MECHANICS

COURSE SYLLABUS

Course Information	Ocean Engineering Wave Mechanics - OCEN 300 Spring 2015				
Course Instructor	Masoud Hayatdavoodi, Ph.D. Instructional Assistant Professor Maritime Systems Engineering Department		Office: PMEC 117 E-mail: masoud@tamu.edu Website:http://people.tamu.edu/~masoud/		
CLASS SCHEDULE	• Lecture: Monday, Wednesday, Friday 02:00PM - 02:50PM at SAGC 401				
Office Hours	Monday: 03:00PM-05:00PM, Wednesday: 03:00PM-05:00PM, Friday: 03:00PM-05:00PM.				
	And by appointments.				
Grading	Assignments Project Midterm Exam Final Exam	20% 20% 30% 30%			
Grading Scale	$\begin{array}{rrrr} A & \geq 90\% \\ B & \geq 75\% \\ C & \geq 60\% \\ D & \geq 50\% \\ F & < 50\% \end{array}$				
Техтвоок	• Required: Dean, Robert G. and Dalrymple, Robert A. (1991), Water Wave Mechanics for Engineers & Scientists (Advanced Series on Ocean Engineering-Vol. 2), World Scientific Pub Co Inc, 353 pp., ISBN: 978-981-02-0421-1.				
	• Alternative Reference Books: Wiegel, Robert L. (2005), Oceanographical Engineering, Dover Publications, 544 pp., ISBN: 978-0486446004.				
	Lighthill, James (2001), Waves in Fluids (Cambridge Mathematical Library Series), Cambridge University Press; 2 edition, 524 pp., ISBN: 978-0521010450.				
	Mei, Chiang C. (1991), The Applied Dynamics of Ocean Surface Waves (Advanced Series on Ocean Engineering-Vol. 1), World Scientific Pub Co Inc; 2 edition, 760 pp., ISBN: 978-9971507893.				
	Whitham, G. B. (1999), Linear and Nonlinear Waves, Wiley-Interscience, 660 pp., ISBN: 978-0471359425.				
	Coastal Enginee Corps of Engineer	ring Manual (Part II, Chapt s, 2006 (PDF version availabl	er 1: Water Wave Mechanics), US Army e online at http://chl.erdc.usace.army.mil/cem).		

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Course Communications	Course-related material, along with class communications, are held on $eCampus$ through $Howdy$ portal. Students are expected to check and use the course webpage on regular basis		
Course Description	Physical and mathematical fundamentals of ocean wave behavior. Mechanics of wave mo- tion. Use of statistics and probability to develop design wave criteria.		
Learning Outcomes	The course in intended to familiarize students with formation, propagation and transfor- mation of regular and irregular surface waves in water of constant or variable depth, and fundamentals of interaction of water waves with structures. Conservation laws, governing equations, and wave theories will be discussed. Upon completion of the course, students should be able to explain applicability of different wave theories, and the kinematic and dy- namic of water particles, including velocities and pressures, in deep, intermediate or shallow waters. This course supports the ABET criteria b, d, g and k, as following, and criteria 1, 5 and 7:		
	a. An ability to apply knowledge of mathematics, science and engineering;b. An ability to design a system, component, or process to meet desired need;d. An ability to identify, formulate, and solve engineering problems;g. An ability to communicate effectively;		
	k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.		
Prerequisites	CVEN 311. Enrollment in MASE major degree sequence.		
Attendance and Make-up Polices	Information concerning absences is contained in the University Student Rules Section 7 http://www.tamug.edu/stulife/Academic%20Rules/Rule%207.pdf.		
	The University views class attendance as an individual student responsibility. All students are expected to attend class and to complete all assignments. Late arrivals count as absences.Please consult the University Student Rules for reasons for excused absences, detailed procedures and deadlines as well as student grievance procedures (Part III, Section 45). If the absence is excused, the student will be provided an opportunity to make up any quiz, exam or other work that contributes to the final grade. The evaluation method will be decided by the instructor. The evaluation date is agreed upon by the student and instructor.		
Academic Integrity	An Aggie does not lie, cheat or steal, or tolerate those who do. For additional information visit: http://www.tamug.edu/HonorSystem.		
Americans with Disabilities Act (ADA)	The Americans with Disabilities Act (ADA) is a federal non-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this law requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Counseling Office, Seib Student Center, or call (409)740-4587. For additional information visit: http://www.tamug.edu/counsel/Disabilities.html.		

Tentative Schedule

Monday	WEDNESDAY	Friday
Jan 19th 1	21st 2	23rd 3
	Course Introduction	Preliminaries
26th 4	28th 5	30th 6
Conservation Laws	Fluid Motion	Irrotational Motion
Feb 2nd 7	4th 8	6th 9
Irrotational Motion	Linear Wave Theory	Linear Wave Theory
9th 10	11th 11	13th 12
Wave Characteristics	Particle Kinematics and	Particle Kinematics and
	Dynamics	Dynamics
16th 13	18th 14	20th 15
Dispersion Relationship	Wave Energy	Energy Transportation
23rd 16	25th 17	27th 18
Mid-term Review	Nonlinear Wave Theories	Mid-Term Exam
Mar 2nd 19	4th 20	6th 21
Nonlinear Wave Theories	Nonlinear Wave Theories	Stream Function Wave Theory
9th 22	11th 23	13th 24
Cnoidal Wave Theory	Shallow-water Wave Theories	Solitary Wave Theory
16th 25	18th 26	20th 27
SPRING BREAK	SPRING BREAK	SPRING BREAK
23rd 28	25th 29	27th 30
Wave Laboratory	Wave Laboratory	Wave Laboratory
30th 31	Apr 1st 32	3rd 33
Wave Transformation	Wave Transformation	Reading Day; No Class
6th 34	8th 35	10th 36
Wave Transformation	Harbor Oscillation	Tides and Currents
13th 37	15th 38	17th 39
Irregular Waves	Irregular Waves	Irregular Waves
20th 40	22nd 41	24th 42
Wave Spectra	Wave Spectra	Wave Spectra
27th 43	29th 44	May 1st 45
Wave Loads	Wave Loads	Wave Loads
4th 46	6th 47	8th 48
Final Exam Review	Reading Day; No Class	

Midterm Exam: Wednesday, February 25, 2015, 02:00PM to 03:30PM. Final Exam: Monday, May 11, 2015, 02:00PM to 04:00PM.