

COURSE DESCRIPTION FORM	
Course Code and Title	CE450 INTRODUCTION TO COASTAL ENGINEERING
Semester	8
Catalog description	Coastal systems, Small Amplitude Wave Theory, particle velocities and trajectories, wave pressure and wave energy, wave shoaling, wave refraction, wave reflection, wave diffraction, wave breaking, wave statistics, wind waves prediction methods, coastal protection structures, design of rubble mound breakwaters, design of vertical wall breakwaters
Required reading	Water Wave Mechanics for Engineers and Scientists, Robert G. Dean, Robert A. Dalrymple, Advanced Series on Ocean Engineering, Volume 2, World Scientific, 1992.
Recommended reading	1)Introduction to Coastal Engineering and Management, J.William Kamphuis, Advanced Series on Ocean Engineering, Volume 16, World Scientific, 2000. 2)SPM, Shore Protection Manual, Volume1-2, Coastal Engineering Research Center, Department of the Army, US Army Corps of Engineers, Washington DC, USA 1984. 3)CEM, Coastal Engineering Manual, Coastal Engineering Research Center, Department of the Army, US Army Corps of Engineers, Washington DC,USA 2006.
ECTS	4
Prerequisites and co-requisites	No prerequisite. Required attendance to lectures is at least 70% of total term hours.
Compulsory/Elective	Technical elective course
Language of instruction	English
Aim of course	To provide students the basic theories of coastal wave mechanics and principles of coastal engineering.
Learning outcomes of the course unit	1) Numerically solve wave propagation 2) Perform the long term and extreme statistical analyses of wave measurements 3) Calculate the short and long term design parameters of coastal waters 4) Calculate the shoaling effects on wave heights propagating from deep to shallow waters. 5) Estimate the deep water wave heights and periods from the wind forces 6) Calculate the breaking wave height and depth. 7)Estimate the effects of wave diffraction on wave heights. 8) Solve numerically wave refraction effects on wave propagation. 9) Design rubble mound and vertical wall breakwaters 10) Know the processes of coastal structures design.
Mode of delivery	The mode of delivery of this course is face to face.
Course content	1. Coastal systems 2. Small Amplitude Wave Theory 3. Particle velocities and trajectories 4. Wave pressure and wave energy 5. Wave shoaling 6. Wave refraction 7. Wave reflection, 8. 1. Midterm 9. Wave diffraction 10. Wave breaking 11. Wave statistics

	12. Wind waves prediction methods 13. Coastal protection structures 14. Design of rubble mound breakwaters 15. Design of vertical wall breakwaters								
Planned learning activities and teaching methods	3 theoretical lecture hours per week (3+0) Web search and library use Reading assignments and homeworks Midterm exams and related works Final exam and related works								
Assessment methods and criteria		Quantity	Percentage (%)						
	Mid-terms	1	30						
	Assignment	8	30						
	Exercises	-	-						
	Projects	-	-						
	Practice	-	-						
	Quiz	-	-						
	Contribution of In-term Studies to Overall Grade %		60						
	Contribution of Final Examination to Overall Grade (%)		40						
	Attendance	-	-						
Workload	Efficiency		Total Week Count	Weekly Duration (in hour)	Total Workload in Semester				
	Theoretical Study Hours of Course Per Week		14	3	42				
	Practicing Hours of Course Per Week		14	0	0				
	Reading		14	1	14				
	Searching in Internet and Library		14	2	28				
	Designing and Applying Materials		14	0	0				
	Preparing Reports		14	1	14				
	Preparing Presentation		14	0	0				
	Presentation		14	0	0				
	Mid-Term and Studying for Mid-Term		1	4	4				
	Final and Studying for Final		1	5	5				
	Other		0	0	0				
	Total Workload:				107				
	Total Workload / 25:				4,28				
	ECTS:				4,00				
Course's contribution to program	No	Program Learning Outcomes			1	2	3	4	5
	1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems.							X
	2	Ability to identify, formulate, and solve complex civil engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.							X
	3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result: ability to						X	

		apply modern design methods for this purpose.					
	4	Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in civil engineering practice; ability to employ information technologies and to use at least one computer programming language effectively.		X			
	5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex civil engineering problems or discipline specific research questions.					
	6	Ability to work efficiently in intra-disciplinary and multi-disciplinary teams.					X
	7	Ability to work individually.					X
	8	Ability to communicate effectively in Turkish, both orally and in writing; ability to write effective reports and comprehend written reports.				X	
	9	Knowledge of English of B1 level according to <u>Common European Framework of Reference</u> .					
	10	Prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.		X			
	11	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.		X			
	12	Consciousness to behave according to ethical principles and professional and ethical responsibility.				X	
	13	Knowledge on standards used in civil engineering practice.			X		
	14	Knowledge about business life practices such as project management, risk management, and change management.					
	15	Awareness in entrepreneurship, innovation; knowledge about sustainable development.					
	16	Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering.					X
	17	Awareness of the legal consequences of engineering solutions.		X			
Name of lecturer and contact information		Prof.Dr. Lale Balas Prof.Dr.Can Elmar Balas Doç.Dr. Asu İnan	lalebal@gazi.edu.tr cbalas@gazi.edu.tr asuinan@gazi.edu.tr				