COASTAL HYDRODYNAMICS

1	Course Title:	COASTAL HYDRODYNAMICS	
2	Course Code:	INS5261	
3	Type of Course:	Optional	
4	Level of Course:	Second Cycle	
5	Year of Study:	1	
6	Semester:	1	
7	ECTS Credits Allocated:	7.50	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. Adem Akpınar	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	ademakpinar@uludag.edu.tr 0224 24 09 04	
17	Website:		
18	Objective of the Course:	To teach and develop basic understanding of the physical processes that are of engineering and environmental importance in coastal regions, and to acquire engineering skills needed to solve coastal problems, such as sediment transport and beach erosion, coastal protection, navigation and structure design, coastal floods and water quality control.	
19	Contribution of the Course to Professional Development:	To teach and develop basic understanding of the physical processes that are of engineering and environmental importance in coastal regions, and to acquire engineering skills needed to solve coastal problems, such as sediment transport and beach erosion, coastal protection, navigation and structure design, coastal floods and water quality control.	
20	Learning Outcomes:		
		1	Be able to learn the wave mechanics.
		2	Be able to have general knowledge about computations and processes of wave transformation in near-shore.
		3	Be able to learn the mechanism of wind-wave generation.
		4	Be able to have general knowledge about applications regarding wave hydrodynamics.
		5	Be able to learn the application studies regarding coastal protection.
		6	Be able to have general knowledge about wave loadings on structures
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21	Course Content:		
	Course Content:		

Week	Theoretical	Practice
1	Overview of coastal engineering and introduction to water waves, linear water waves and wave theory; kinematics, pressure, wave energy and power, wave celerity and group velocity	
2	Wave Transformation in Near-shore; shoaling, refraction, diffraction, reflection, breaking, wave run-up and down	
3	Wave Transformation in Near-shore; shoaling, refraction, diffraction, reflection, breaking, wave run-up and down	
4	Wave Transformation in Near-shore; shoaling, refraction, diffraction, reflection, breaking, wave run-up and down	
5	Random waves; wave statistics	
6	Wind-wave generation; hindcast and forecast of wind-wave characteristics	
7	Wind-wave generation; hindcast and forecast of wind-wave characteristics	
8	Shallow-water Dynamics; longshore and cross-shore currents, storm surge, coastal water level fluctuations	
9	Wave loading on structures	
10	Wave loading on structures	
11	Coastal protection structures; breakwater	
12	Littoral sediment transport	
13	Littoral sediment transport	
14	Coastal sediment transport	
15	Coastal sediment transport	
16	Coastal sediment transport	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	13.00	182.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	2.00	2.00
Others	0	0.00	0.00
Final Exams	1	2.00	2.00
Total Work Load			230.00
Total work load/ 30 hr			7.60
ECTS Credit of the Course			7.50

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		Students are assessed with homework that must personally apply what they have learned in the course.

22 Textbooks, References and/or Other

Theoretical

Y. Yüksel, F.Ö. Cevik, 2009: Kıyı Mühendisliği, İstanbul:

US Army Corps of Engineers, Coastal Engineering Manual, Part II – Coastal Hydrodynamics

Engineers & Scientists, World Scientific.

Leo H. HOLTHUIJSEN, Waves in Oceanic and Coastal

Dominic REEVE, Andrew CHADWICK, and Christopher E. FLEMING, Coastal Engineering: Processes, Theory, and

24	ECTS / WORK LOAD TABLE

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	0	4	0	0	0	0	0	0	0	5	0	0	0	0	0	0
ÖK2	0	4	5	0	0	0	0	0	0	5	0	0	0	0	0	0
ÖK3	0	4	0	0	0	0	0	0	0	5	0	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	3	0	5	5	0	0	0	0	0	5	0	0	0	0	0	0
ÖK6	3	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	1 very low	2 low	3 Medium	4 High	5 Very High