

Code: 0424662		Dersin Adı: Design of Marine Structures						
Year	Semester	Group(s)	Language	Theory	App	Lab.	Credit	ECTS
2019-20	Spring	2	English	1	2	0	2	7
Course Type		Basic Sciences <input type="checkbox"/>	Engineering <input type="checkbox"/>	Technical Elective <input checked="" type="checkbox"/>		Non-Technical Elective <input type="checkbox"/>		
Prerequisite		Introduction to Coastal Hydraulics (0423222)						
Coordinator *		Prof. Dr. Yalçın Yüksel						
Instructor(s)		Prof.Dr. Yalçın Yüksel, Prof. Dr. Esin Çevik, Assoc Prof. Yeşim Çelikoğlu, Assoc. Prof Dr. Anıl Arı, Assoc Prof. Mehmet Öztürk, Assoc. Prof. Murat Serdar Kırçıl, Assist Prof. Murat Tonaroğlu (Geotechnics), Assis. Prof. Cihan Şahin, Assis. Prof. Ahmet Beşer Kızılkant (Construction Materials)						
Course Goals		Design of marine structures						
Course Topics		Classification of coastal structures and design criteria. / Assessment of geotechnical investigations. Selection of foundation soil and backfill material parameters. / Plan of harbor/ Vessel berthing loads and fender design / Introduction to performance-based design / Design of closed type (precast-concrete) berthing structures/ Design of block type, L-type and concrete caisson type berthing structures / Design of open type berthing structures and piles. / Coastal protection structures, hard and soft measures and design criteria/ Design of Rubble mound breakwaters / Design of monolithic breakwaters / Maintenance and repair of maritime structures. /Reinforcement corrosion damage for marine structures and underwater concreting practices./ Classification of and design criteria of piled structures / Design examples and Environmental impact assessment.						
Knowledge and Skills		Planning of coastal area and harbour. Design of berthing structures under the dynamic and static loads and the design of breakwaters under wave loads. Experiment design.						
References		<p>Liman Mühendisliği (2. Baskı), Prof. Dr. Yalçın Yüksel ve Prof. Dr. Esin Çevik, Beta Yayınevi (2010)</p> <p>Deniz Tabanı Hidrodinamiği ve Kıyı Morfolojisi (2. Baskı), Prof. Dr. Yalçın Yüksel, BETA yayınevi (2011)</p> <p>Kıyı Mühendisliği (2. Baskı), Prof. Dr. Yalçın Yüksel ve Prof. Dr. Esin Çevik, Beta Yayınevi (2016)</p> <p>Kıyı Yapıları - Planlama ve Tasarım Teknik Esasları, T.C. Ulaştırma, Haberleşme ve Denizcilik Bakanlığı Altyapı Yatırımları Genel Müdürlüğü (AYGM), (2016)</p> <p>Kıyı ve Liman Yapıları, Demiryolları, Havameydanları İnşaatları Deprem Teknik Yönetmeliği, T.C. Ulaştırma, Haberleşme ve Denizcilik Bakanlığı Altyapı Yatırımları Genel Müdürlüğü (AYGM), (2008), İMO İstanbul Şubesi (2009)</p> <p>Dalgakıran Tasarımı, Prof. Dr. Yalçın Yüksel, BETA yayınevi (2011)</p> <p>Yüksel et al. Seismic Response of Coastal and Port Structures, Chapter 15, World Scientific, 2017.</p> <p>Coastal Engineering Manual (2003)</p> <p>CERC (Shore Protection Manual) (1984)</p> <p>OCDI (2009)</p> <p>British Standards, BS</p> <p>PIANC</p> <p>CIRIA, Rock Manual (2012)</p> <p>Kıyı Kanunu ve Kıyı Kanunun Uygulanmasına Dair Yönetmelikte Değişiklik Yapılması Hakkında Yönetmelik, TC Resmi Gazete, 2004</p>						
Assignments and Projects		A marine structures project that contains port planning with desing of berthing structures and breakwaters						
Laboratory Experiment topics		Experimental design; designing a physical model for the designed marine structure and performing laboratory experiments						
Computer codes		Word, Excel and AutoCad						
Other Activities		Slide shows, site visits, movie presentations. Attendance of professional engineers in classes						
Contribution Of The Course Towards Providing Professional Education		<p>Learning how to use interdisciplinary knowledge in Civil Engineering</p> <p>Learning how to design Marine Structures</p> <p>Discussing the interaction of marine structures with environmental impacts</p> <p>Usage of design codes</p> <p>Usage of contemporary knowledge</p> <p>Gaining the ability of experimental design</p> <p>Gaining the ability of writing reports, preparing and making presentations for students</p> <p>Gaining the professional and ethical awareness</p>						

Success Evaluation					
Theoretical Courses			Projects		
	Number	Weight (%)		Number	Weight (%)
Midterms			Midterms	1	15
Quizzes			Controls and mid-presentations	2	25
Assignments			Other (Experimental design)	1	20
Laboratory					
Other			Project report	1	40
Final Exam			Final oral presentation	1	
			Final Exam	1	
Make-up Exam			Project report	1	40
			Final oral presentation	1	
			Make-up Exam	1	
Subjects					
Week 1	Introduction				
Week 2	Information about the project. Introduction of design codes. Classification of coastal structures and design criteria.				
Week 3	Vessel berthing loads and fender design				
Week 4	Geotechnical investigations and determination of geotechnical parameters Determination of soil profile and explanation with an example Long term wave statistics, Shoaling and diffraction calculations (regular wave case)				
Week 5	Introduction to performance based design. Discussion on the project criteria. Design of closed type berthing structures				
Week 6	Preliminary student presentations (Draft harbor plan and determination of environmental deficiencies)				
Week 7	Coastal protection structures, hard and soft measures and design criteria. Environmental impact assessment of the coastal structure. Planning criteria.				
Week 8	MIDTERM WEEK				
Week 9	Shoaling calculation (Irregular wave case) Design of rubble mound breakwaters				
Week 10	Calculation of the bearing capacity and settlement				
Week 11	Material, maintenance and repair for marine structures, Reinforcement corrosion damage in marine structures and underwater concrete				
Week 12	Physical model study				
Week 13	Design of open type quay structures Deformation based design criteria for pile structures				
Week 14	Final student presentations				

FORM 2: LECTURER COMMUNICATION INFORMATION

Course code : 0424662		Course name : Design of Marine Structures				
Groups	Course hours and locations	Course Lecturer	Lecturer office	Student meeting hours	email	Web address
1	THURSDAY 15 ⁰⁰ -17 ⁵⁰ F1 -95	Prof. Dr. Yalçın Yüksel	H Block No 9	Wednesday 14 ⁰⁰ -16 ⁰⁰	yuksel @yildiz.edu.tr	www.inm.yildiz.edu.tr
		Prof. Dr. Esin Çevik	H Block No 8	Wednesday 14 ⁰⁰ -16 ⁰⁰	cevik yildiz.edu.tr	www.inm.yildiz.edu.tr
		Assoc. Prof. Dr. Anıl Arı Güner	H Block No 4	Wednesday 14 ⁰⁰ -16 ⁰⁰	aari@yildiz.edu.tr	www.inm.yildiz.edu.tr
		Assoc. Prof. Dr. Yeşim Çelikoğlu	H Block No 6.	Wednesday 14 ⁰⁰ -16 ⁰⁰	ycelik@yildiz.edu.tr	www.inm.yildiz.edu.tr
		Assoc. Prof. Dr. Murat Kırçıl	Faculty of Civil Eng.	Wednesday 14 ⁰⁰ -16 ⁰⁰	kircil@yildiz.edu.tr	www.inm.yildiz.edu.tr
		Assis. Prof. Dr. Mehmet Öztürk	H Block No 3	Wednesday 14 ⁰⁰ -16 ⁰⁰	meozturk@yildiz.edu.tr	www.inm.yildiz.edu.tr
		Assis. Prof. Dr. Cihan Şahin	H Block No 3	Wednesday 14 ⁰⁰ -16 ⁰⁰	cisahin@yildiz.edu.tr	www.inm.yildiz.edu.tr
		Assis. Prof. Dr. Ahmet B. Kızılkıranat	Faculty of Architecture	Wednesday 14 ⁰⁰ -16 ⁰⁰		www.mim.yildiz.edu.tr

Date 03/02/2020