DEPARTMENT OF CIVIL ENGINEERING

Course Details				
Code		**Academic Year**		**Semester**
BAU464		4		Fall, Spring
Title		**T**	**A**	**L**	**ECTS**
Port Design		3	2	-	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	The lecture yields technical and practical skills for the design of ports and port elements with structural practical applications.					
Content	Definitions, types of ports and terminals, structural and functional elements. Location selection. Port capacity. Ship characteristics. Fundamental design principles of port inlet, manoeuvering circle, waterways and kais. Design principles for general cargo ports, bulk load ports, ore ports, container ports, Ro-Ro terminals, ferry terminals. Marina and fishery design. Liquid and gas cargo terminals. Military ports. Shipyards. Loads on quaywalls, berthing loads, fender loads, vehicle and cargo loads, wave and current loads. Moorings. Environmental effects of ports.					
Prerequisites	“Fluid Mechanics”					
Coordinator	Asst. Prof. Dr. M. Adil Akgul					
Lecturer(s)	Asst. Prof. Dr. M. Adil Akgul					
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Lecture notes and applications are shared online with the students.
Other Sources	Thoresen, . (2007). "Port Design", ICE Institute of Civil Engineers, London. EM 1110-2-1100 (2005) “Coastal Engineering Manual”, US Army Corps of Engineers, Washington D.C.

Additional Course Material	
Documents	Shared online
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%

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Engineering	40	%
Engineering Design	60	%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	20
Quiz		
Assignments	4	10
Attendance		
Recitations		
Projects	1	30
Final Exam	1	40
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	14	3	42
Assignments	4	4	16
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	14	2	28
Laboratory			
Projects	1	36	36
Final Exam	1	2	2
		Total Work Load	**168**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	Ability to make the conceptual design of a port with its primary elements.
2	Ability to execute the primary design of a vertical quaywall.
3	Ability to calculate ship and sea loads acting on quaywalls and piers
4	Attaining knowledge on environmental effects of ports including coastal morphodynamics
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Weekly Content	
1	Introduction, ports and their structural elements, types of ports.
2	Site selection, hinterland concept. Port capacity.
3	Types and characteristics of ships and marine vessels; port operations.
4	Design of structural port elements, inlet, manoeuvering basin, waterways, quaywalls and piers.
5	Design principles for general cargo and container ports.
6	Design principles for bulk cargo and ore ports, Ro-Ro and ferry terminals.
7	Marina and fishery design.
8	Interm exam.
9	Liquid cargo terminal and shipyard design.
10	Ship loads on quaywalls: Berthing and fendering loads.
11	Loads on quaywalls: Vehicle, cargo and crane loads.
12	Loads on quaywalls: Wave and current loads.
13	Quaywall design and stability.
14	Moorings and offshore terminals.
15	Environmental effects of ports and port operations.

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
1	5	5	1	5	1	5	4
2	5	5	1	5	1	5	5
3	5	5	1	5	1	5	5
4	2	5	1	5	1	3	5
5							
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11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	Dr. M. Adil Akgül
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