

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Course Details				
Code	Academic Year			Semester
BAU352	3			Fall
Title	T	A	L	ECTS
Construction Management I	3	1	1	6
Language	German			
Level	Undergraduate	✓	Graduate	Postgraduate
Department / Program	Department of Civil Engineering (German)			
Forms of Teaching and Learning	Formal Education			
Course Type	Compulsory	✓	Elective	
Objectives	In this module, students acquire knowledge about the construction and quantity calculation of excavation pits, classical earthmoving machines, transport vehicles, performance calculation of construction machinery, performance calculation of loader–transport vehicle operations, lifting equipment in general and specifically tower cranes and mobile cranes for construction site use, the design and economical selection of tower cranes, the safe installation and costs of tower cranes, formwork facing, formwork systems for foundations, slabs, walls, columns, and floors, and the design of slab and wall formwork systems.			
Content	<ul style="list-style-type: none"> - Construction and quantity calculation of excavation pits according to VOB Earthmoving machinery and transport vehicles - Performance calculation of earthmoving machinery - Performance calculation of loader–transport equipment operations - Lifting equipment for use in construction - Installation and cost planning of lifting equipment - Performance calculation of lifting equipment using tower cranes as an example - Formwork construction: function, design, and possibilities of formwork facing - Formwork construction: formwork systems for concrete components - Formwork construction: selection and design of slab formwork systems - Formwork construction: selection and design of wall formwork systems including supports 			
Prerequisites	None			
Coordinator	Prof. Dr. -Ing. Ulrich Neuhof			
Lecturer(s)	Prof. Dr. -Ing. Ulrich Neuhof			
Assistant(s)	--			
Work Placement	No			
Recommended or Required Reading				
Books / Lecture Notes	Lecture Notes Krause, Ulke, Ferger, 9.Auflage 2024, Springer Verlag, Leistungsberechnung der Baumaschinen, Felix Hüster, 5.Auflage 2005, Shaker Verlag Grundlagen der Baubetriebslehre Bd. 1-3; Fritz Berner, Bernd Kochendörfer, Rainer Schach, Teubner			

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Other Sources	Table books and product documentation from formwork manufacturers PERI, DOKA, MEVA, PASCHAL, HÜNNEBECK, ISCHEBECK, ULMA, and others from the Internet Documentation and tables from construction machinery and crane manufacturers from the Internet		
Additional Course Material			
Documents	--		
Assignments	--		
Exams	--		
Course Composition			
Mathematics und Basic Sciences	10		%
Engineering	50		%
Engineering Design	30		%
Social Sciences			%
Educational Sciences			%
Natural Sciences			%
Health Sciences			%
Expert Knowledge	10		%
Assessment			
Activity	Count	Percentage (%)	
Midterm Exam	1	40	
Quiz			
Assignments			
Attendance			
Recitations			
Projects			
Final Exam	1	60	
	Total	100	
ECTS Points and Work Load			
Activity	Count	Duration	Work Load (Hours)
Lectures	14	5	70
Self-Study	14	4	56
Assignments	1	2	2
Presentation / Seminar Preparation			
Midterm Exam	1	6	6
Recitations	14	2	28
Laboratory			

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Projects			
Final Exam	1	6	6
Total Work Load			168
ECTS Points (Total Work Load / Hour)			6

Learning Outcomes

1	Students acquire knowledge about the process of constructing unsupported and supported excavation pits and trenches and are able to plan and bill their safe construction.
2	Students are able to calculate and design the performance and costs of earthmoving machinery and loader-transport operations and understand the workflow processes in earthworks.
3	Students are able to select and design lifting equipment for construction projects and plan and optimize their installation in accordance with valid safety regulations.
4	Students are able to select and design the formwork facing in coordination with clients in a cost- and environmentally optimized manner.
5	Students are able to optimally select the load-bearing structure for formwork facing for concrete components such as foundations, slabs, columns, walls, beams, ceilings, etc., while considering the respective boundary conditions
6	Students are able to select and design formwork systems for walls, columns, and slabs and to roughly estimate the costs.
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Weekly Content

1	Topic: Excavation Pits: Unsupported excavation pits – planning of construction and quantity calculation according to VOB
2	Topic: Excavation Pits: Supported excavation pits – planning of construction and quantity calculation according to VOB
3	Topic: Construction Machinery: Earthmoving machinery – cable excavators Earthmoving machinery – hydraulic excavators
4	Topic: Construction Machinery: Performance calculation of construction machinery Performance calculation of hydraulic excavators
5	Topic: Construction Machinery: Performance calculation of cable excavators
6	Topic: Construction Machinery: Earthmoving machinery – loaders (wheel loaders, crawler loaders, multipurpose equipment) Performance calculation of wheel loaders
7	Topic: Construction Methods and Processes in Earthworks: Processes in earthworks, planning processes with mass balance, cut-and-fill cross sections, etc. Transport chains in earthworks – “closed queuing model with limited population,” cybernetic model of an earthwork site as a control loop, and exam preparation
8	Midterm Exam
9	Topic: Construction Machinery: Performance calculation of hydraulic excavators in operation with trucks

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10	Topic: Construction Machinery: Performance calculation of cable excavators in operation with trucks Performance calculation of wheel loaders in operation with trucks
11	Topic: Formwork Construction: Technical and economic fundamentals and application and cost planning of formwork facing
12	Topic: Formwork Construction: Technical and economic fundamentals and application and cost planning of formwork structures
13	Topic: Formwork Construction: Technical and economic fundamentals and application and cost planning of slab formwork systems
14	Topic: Formwork Construction: Technical and economic fundamentals and application and cost planning of wall formwork systems and exam preparation
15	Final Exam

Contribution of Learning Outcomes to Program Objectives

	P1	P2	P3	P4	P5	P6	P7
1	5	4	3	2	2	3	5
2	5	4	3	2	2	3	5
3	5	4	3	2	2	3	5
4	5	4	3	2	2	3	5
5	5	4	3	2	2	3	5
6	5	4	3	2	2	3	5
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Contribution Level 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

<https://obs.tau.edu.tr/oibs/bologna/progCourseDetails.aspx?curCourse=171650&lang=en>

Compiled by: Prof. Dr. -Ing. Ulrich Neuhof

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