

## DEPARTMENT OF CIVIL ENGINEERING COURSE SYLLABUS

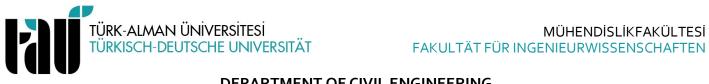
Course Details									
Code				Acad	Academic Year		Semester		
MAT302				3	3		Fall		
Title				Т	Α	L	ECTS		
Numerical Mathematics					1	1	6		
Language	German								
Level	Undergraduate	x	Graduate		P	ostgra	duate		
Department / Program	Civil Engineering								
Forms of Teaching and Learning	Formal								
Course Type	Compulsory			Ele	ective		x		
Objectives	<ul> <li>Upon successful completion of this course, a student will have comprehensive knowledge of below subjects; <ul> <li>Introduction to typical numerical questions</li> <li>Use numerical algorithms and numerical software</li> <li>Principles and methods for the numerical solution of mathematical problems</li> <li>Apply the general methods and principles to particular classes of problems</li> <li>Develop approaches to extracting practically useful solutions with appropriately chosen numerical software</li> </ul> </li> </ul>								
Content	<ul> <li>Basic error concepts: condition of mathematical problems, data error, discretization error, round-off error.</li> <li>Numerical solution of linear and nonlinear systems of equations</li> <li>Numerical differentiation and integration</li> <li>Polynomial interpolation and approximation</li> <li>Numerical solution of differential equation</li> </ul>								
Prerequisites	None								
Coordinator									
Lecturer(s)									
Assistant(s)									
Work Placement	None								
Recommended or Required R	eading								
Books / Lecture Notes	- Quarteroni, A., R. S	acco, and F.	Saleri. "Nume	rische Mat	hemati	k Sprin	ger-Verlag." (2002).		
Other Sources	<ul> <li>Dahmen, Wolfgang, and Arnold Reusken. Numerik für Ingenieure und Naturwissenschaftler. Springer-Verlag, 2006.</li> <li>Deuflhard, Peter, andFolkmar Bornemann. "Numerische Mathematik. II." (1994).</li> <li>Hanke-Bourgeois, Martin. Grundlagen der numerischen Mathematik und des wissenschaftlichen Rechnens. Wiesbaden: Vieweg+ Teubner, 2009</li> </ul>								
Additional Course Material									



## DEPARTMENT OF CIVIL ENGINEERING **COURSE SYLLABUS**

Documents	-	
Assignments	-	
Exams	-	
Course Composition		
Mathematics und Basic Sciences	50	%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge	50	%
Assessment		
Activity	Count	Percentage (%)
Midterm Exam	1	40
Quiz		
Assignments	1	10
Attendance		
Recitations		
Projects		
Final Exam	1	50
	Total	100

ECTS Points and Work Load			
Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	1	66	66
Assignments	10	4	40
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	10	10
	168		
	ECTS Poi	nts (Total Work Load / Hour)	6
Learning Outcomes			



## DEPARTMENT OF CIVIL ENGINEERING COURSE SYLLABUS

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