



ESOGÜ Mathematics and Computer Sciences Department
COURSE INFORMATION FORM

SEMESTER	Spring
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COURSE CODE	821614006	COURSE NAME	Numerical Analysis II
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Labratory	Credit	ECTS	TYPE	LANGUAGE
4	3	0	0	3	5	COMPULSORY () ELECTIVE (X)	Turkish
COURSE CATAGORY							
Mathematics			Computer			Social Science	
X							
ASSESSMENT CRITERIA							
MID-TERM	Evaluation Type		Quantity		%		
	1st Mid-Term		1		50		
	2nd Mid-Term						
	Quiz						
	Homework						
	Project						
	Report						
Others (.....)							
FINAL EXAM					1		50
PREREQUIEITE(S)			None				
COURSE DESCRIPTION			Spline and B-spline functions, approximation theory and least squares approximation, approximating eigenvalues, numerical solutions of nonlinear systems of equations, boundary value problems for ordinary differential equations, numerical solutions to partial differential equations, stability and convergence.				
COURSE OBJECTIVES			The aim of the course is to introduce the concepts and techniques involved in the basic topics listed in this lecture and to develop skills in applying those concepts and techniques to solve the problem using numerical approaches.				
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION			Gain the ability of problem solution using numerical approaches.				
COURSE OUTCOMES			Gain sufficient knowledge of numerical analysis subject, related with science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of problems.				
TEXTBOOK			Burden, R. L. & Faires J. D, Numerical Analysis, Fifth Ed., PWS Publishing Company, Boston, 1993.				
OTHER REFERENCES			Ward Cheney & David Kincaid, Numerical Mathematics and Computing, Second Ed., Cole Publishing Company, California, 1985.				
TOOLS AND EQUIPMENTS REQUIRED							

COURSE SYLLABUS	
WEEK	TOPICS
1	Spline and B-spline Functions
2	Approximation Theory and Least Squares Approximation
3	Approximation Theory and Least Squares Approximation
4	Approximating Eigenvalues
5	Approximating Eigenvalues
6	Numerical Solutions of Nonlinear Systems of Equations
7	Numerical Solutions of Nonlinear Systems of Equations
8	Midterm
9	Boundary Value Problems for Ordinary Differential Equations
10	Boundary Value Problems for Ordinary Differential Equations
11	Numerical Solutions to Partial Differential Equations
12	Numerical Solutions to Partial Differential Equations
13	Numerical Solutions to Partial Differential Equations
14	Stability and Convergence
15	Stability and Convergence
16,17	Final Exam

NO	PROGRAM OUTCOMES	3	2	1
1	The ability to apply knowledges of Mathematics and Computer Sciences,		X	
2	To have sufficient theoretical and practical knowledge of Mathematics at international level,	X		
3	The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects,	X		
4	The skill to solve and design a problem process in accordance with a defined target,	X		
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,		X	
6	The skill to use the modern techniques and computational tools needed for mathematical applications,	X		
7	The skill to make team work within the discipline and interdisciplinary,		X	
8	The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics and Computer Sciences,		X	
9	The skill to communicate orally and in written way, in a clear and concise manner by having individual work skills and ability to independently decide and analytical thinking,		X	
10	The skill to have professional and ethical responsibility,		X	
11	The skill to have consciousness for quality issues and scientific research,		X	
12	The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations,		X	
13	Ability to solve problems in the working life faced to find an appropriate algoritms via mathematical modeling and to write computer programs,	X		
14	The skill to developed design of software systems at different complex levels,		X	
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.		X	
1:None. 2:Partially contribution. 3: Completely contribution.				

Instructor(s): Prof. Dr. Bülent SAKA

Signature:

Date: 29.08.2022