



Course name: MATH 430 Numerical Solution of Partial Differential Equations		Department: Mathematics			Semester		
					8		
Methods of Education							Credit (ECTS)
Lecture	Recitation/ (Etud)	Lab	Exams	Homework/ Quiz	Other	Total	
42	0	0	40	14	84	180	6

Language: English

Compulsory/Elective: Elective

Prerequisites: None

Weeks	Subjects
1	▪ Introduction, Partial Differential Equations (PDEs) and their classifications
2	▪ On the general theory of PDEs
3	▪ Finite Difference Methods
4	▪ Finite Difference Methods
5	▪ Finite Difference Methods for Elliptic Equations
6	▪ Finite Difference Methods for Elliptic Equations
7	▪ Finite Difference Methods for Elliptic Equations
8	▪ Finite Difference Methods for Elliptic Equations
9	▪ Finite Difference Methods for Parabolic PDEs
10	▪ Finite Difference Methods for Parabolic PDEs
11	▪ Finite Difference Methods for Parabolic PDEs
12	▪ Finite Difference Methods for Hyperbolic PDEs
13	▪ Finite Difference Methods for Hyperbolic PDEs
14	▪ Finite Difference Methods for Hyperbolic PDEs

Course Objectives

- 1.To familiarize students with the basic concepts, principles and methods of Numerical Solution of Partial Differential Equations.
- 2.To provide the knowledge of applications of Numerical Solution of Partial Differential Equations

Learning Outcomes and Competences

Upon completion of this course students will

- know about the general properties for each class of PDEs.
- be able to apply finite difference method to elliptic equations.
- be able to apply finite difference method to parabolic equations.
- be able to apply finite difference method to hyperbolic equations.

Textbook and /or References	<ul style="list-style-type: none"> • K. W. Morton, D. F. Mayers, Numerical Solution of Partial Differential Equations An Introduction, Second Edition, Cambridge University Press, Cambridge, 2005. • R. J. LeVeque, Finite Difference Methods for Ordinary and Partial Differential Equations Steady-State and Time-Dependent Problems, SIAM, Philadelphia, 2007. • J.W. Thomas, Numerical Partial Differential Equations Finite Difference Methods, Springer, New York, 1995. □ J. D. Hoffman, Numerical Methods for Engineers and Scientists, McGraw-Hill, 		
Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes		
	Homework	X	20
	Projects		
	Term Paper		
	Laboratory work		
	Other		
Instructors	Prof. Dr. Gülnihal MERAL		