



Kırıkkale University

FACULTY OF ARTS AND SCIENCES
MATHEMATICS

MAT2006 Differential Equations 2					
Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
4	MAT2006	Differential Equations 2	4	4	6

Mode of Delivery:

Face to Face

Language of Instruction:

Türkisch

Level of Course Unit:

Bachelor's Degree

Work Placement(s):

No

Department / Program:

MATHEMATICS

Type of Course Unit:

Required

Objectives of the Course:

To gain students to be able to solving higher differential equations

Teaching Methods and Techniques:

Lecture, Drilland Practice, Problem Solving.

Prerequisites and co-requisites:

Course Coordinator:

Name of Lecturers:

Associate Prof.Dr. Recep ŞAHİN

Assistants:

Recommended or Required Reading

Resources

ROSS, S.L, JOHN Wiley and Sons, Differential Equations, 1924.
Lectures notes based on theory of differential equations.
BRONSON, R., Modern Introductory Differential Equations, Schaum's Outline Series, 1973

Course Category

Mathematics and Basic Sciences	:	Education	:
Engineering	:	Science	:
Engineering Design	:	Health	:
Social Sciences	:	Field	:

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Basic Theory of Linear Differential Equations of higher- Order		
2	The Homogeneous Linear Equations with constant coefficients		
3	Non-homogeneous Linear Differential Equations		
4	The Method of Undetermined Coefficients		
5	Variation of Parameters		
6	The Cauchy-Euler Equations		
7	Some Applications of Second-Order Linear Differential Equations with constant coefficients		
8	Midterm		
9	Series Solutions of Linear Differential Equations (Introduction)		
10	Power Series Solutions About on Ordinary Point		
11	Solutions About Singular Point, The Methods of Frobenius		
12	Bessel Differential Equations and Bessel Functions		
13	Gauss (Hypergeometric) Differential Equations		
14	The Laplace Transform		
15	Applications		

Course Learning Outcomes

No Learning Outcomes

C01 They learn that higher-order differential equations are the mathematical models of many events in engineering and science, and even in social sciences.

Program Learning Outcomes

No Learning Outcome

P09 Independently carries out research in the field of Mathematical Sciences.
P08 Uses the ability of abstract thinking.
P07 Solves numerical, algebraic, geometric and spatial expressions, equations, functions and problems.
P12 Develops new ideas in the field of Mathematical Sciences.
P11 Updates their current knowledge in the field of Mathematical Sciences.
P10 Critically evaluates the knowledge and skills acquired in the field.
P03 Advanced undergraduate subjects will have the qualifications to carry out the work independently in partnership.
P02 The fundamental notions, theories and data, evaluating scientific methods, identify and analyze problems and issues encountered in discussions, makes recommendations based on research evidence.
P01 Based on efficiencies gained by using materials related to mathematics in secondary education, is equipped with advanced knowledge.
P06 Interprets abstract mathematical concepts, including rings and abstract algebra, and critical reasoning.
P05 Interprets mathematical and statistical models such as formulas, functions, graphs, tables, and schematics.
P04 Can express mathematical information numerically, symbolically, graphically, verbally, and visually.

