

MAT 201 ADVANCED MATHEMATICS I		CIVIL ENGINEERING	
Semester	Credit Structure		
	Lecture	Recitation	Laboratory
3	2	2	0
Language	Turkish		
Compulsory / Elective	Compulsory		
Prerequisites	MAT 102		
Catalog Description	Basic concepts. Methods of obtaining differential equations. First order differential equations: exact differential, separable, homogenous differential equations. Higher order, constant coefficient linear differential equations. Undetermined coefficients method. Operator method. Higher order variable coefficient linear differential equations. Solution by power series. Laplace transformation.		
Course Objectives	Provision of a mathematical fundamental for analysis of engineering problems.		
Course Outcomes	Acquisition of fundamental mathematical knowledge for engineering problems and developing analytical thinking skills.		
Textbook and /or References	TANER Tuğrul, "Calculus I" DEMİR H., SÜER B., "Calculus" Prof.Dr.Saffet SÜRAY, "Genel Matematik" AYRES F., "Calculus" Prof.Dr.Alptekin ESİN-Esen AĞLI, "Genel Matematik"		
Assessment Criteria		Quantity	Percentage
	Midterm Exams	2	50
	Quizzes		
	Homework		
	Projects		
	Term Paper		
	Laboratory Work		
	Other		
	Final Exam	1	50
Course Category by Content (%)	Mathematics and Basic Sciences	45	
	Engineering Science	25	
	Engineering Design	25	
	Social Sciences	5	
Instructors	Prof. Güven ÜNAL		

COURSE PLAN

Week	Topics
1	Formation of Differential Equations
2	Degree and Order in Differential Equations
3	Separable Differential Equations
4	Homogeneous Differential Equations
5	Linear Differential Equations
6	Exact Differential Equations and Bernoulli Differential Equations
7	Clairauts Differential Equations
8	Riccati Differential Equations
9	Second Order Linear Differential Equations
10	Higher Order Linear Differential Equations
11	Solution of Differential Equations by Operators
12	Solution of Differential Equations Systems
13	Linear Differential Equations by Undetermined Coefficients Method
14	Cauchy Linear Differential Equations

RELATIONSHIP BETWEEN THE COURSE AND DEPARTMENT CURRICULUM

	Program Outcomes	1	2	3
1	An ability to apply knowledge of mathematics, science, and engineering			X
2	An ability to design and conduct experiments, as well as to analyze and interpret data		X	
3	An ability to design a system, component, or process to meet desired needs		X	
4	An ability to function on multi-disciplinary teams			X
5	An ability to identify, formulate, and solve engineering problems			X
6	An understanding of professional and ethical responsibility		X	
7	An ability for effective written and oral communication in Turkish and English		X	
8	The broad education necessary to understand the impact of engineering solutions in a global and societal context			X
9	A recognition of the need for, and ability to engage in life-long learning			X
10	A knowledge of contemporary issues			X
11	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice		X	
Contribution of the course : 1:None 2:Partially 3:Completely				