

Course Title-Course Code: Mathematics III, Differential Equations With Applications- MAT-201						Name of the Programme: Computer Systems Teaching			
Semester	Teaching Methods							Credits	
	Lecture	Recite	Lab.			Other	Total	Credit	ECTS Credit
3	42					33	75	3	3
Language	Turkish								
Compulsory / Elective	Compulsory								
Prerequisites	-								
Course Contents	Definition of differential equations. First order ordinary differential equations (separable differential equations, exact differential equations, homogen differential equations, linear differential equations, Bernoulli differential equations) and solution techniques. Applications of first order ordinary differential equations. Second order ordinary differential equations and it's solution methods (Solution of linear homogen differential equations; reduction of order, real different characteristic root condition, repeated characteristic real root condition, kompleks root condition. Solutions of linear nonhomogeneous ordinary differential equations (undeterminant coefficients methods, changing of variations methods). Differential equations structure of electrical equations and it's solutions. Symbolic and numerical solution with some programs (Matlab, Mathematica, Maple, etc.).								
Course Objectives	To solve of first and second order ordinary differential equations. To solve initial value problems on computer by using numerical analysis methods. To solve differential equations of electrical circuits.								
Learning Outcomes and Competences	<ul style="list-style-type: none"> • To solve of first and second order ordinary differential equations. • To solve initial value problems by using numerical analysis methods. • To solve differential equations of electrical circuits. 								
Textbook and /or References	<ul style="list-style-type: none"> • Akın, Ömer, (2005), “ Bilgisayar Destekli ve Matematiksel Modellemeli Diferensiyel Denklemler ve Sınır Değer Problemleri”, Palme Yayıncılık, Ankara. (Translation: Adwards&Penney). • Doğan, Nurettin, (2005), “Differential Equations With Applications Course Notes”. 								
Assessment Criteria								<i>If any, mark as (X)</i>	Percent (%)
	Midterm Exams							x	50
	Quizzes								
	Homeworks								
	Projects								
	Term Paper								
	Laboratory Work								
	Other								
	Final Exam							x	50
Instructors	Assist. Prof. Dr. Nurettin DOĞAN								
Week	Subject								

1	Definition of Differential Equations.
2	seperable differential equations, , , ,
3	exact differential equations
4	Nonexact differential equations
5	homogen differential equations
6	linear differential equations
7	Bernoulli differential equations
8	Applications of first order differential equations about electrical circuits.
9	Symbolic and Numerical Solutions by using computer algebraic systems. (Matlab, Mathematica, Maple etc.)
10	Second Order Differential Equations and Solutions Techniques.
11	Solutions of Constant Coefficients Linear Homogen Ordinary Differenatial Equations.
12	Solutions of Constant Coefficients Linear Nonhomogeneous Ordinary Differenatial Equations.
13	Solutions of Constant Coefficients Linear Nonhomogeneous Ordinary Differenatial Equations.
14	Applications of Second Order Ordinary Differential Equations Connected with Electrical Circuits.