

CALCULUS III (DIFFERENTIAL EQUATIONS)

1	Course Title:	CALCULUS III (DIFFERENTIAL EQUATIONS)	
2	Course Code:	MAT2083	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	2	
6	Semester:	3	
7	ECTS Credits Allocated:	6.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	2.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Dr. Öğr. Üyesi NISA ÇELİK	
15	Course Lecturers:	Prof.Dr.Sezai HIZLIYEL Prof.Dr.Emrullah YAŞAR Doç.Dr. Yaşım SAĞLAM ÖZKAN Doç.Dr. Arzu AKBULUT Dr.Öğr.Üyesi Nisa ÇELİK	
16	Contact information of the Course Coordinator:	nisa@uludag.edu.tr, 0-224-2941764 Uludağ Ün. Fen Ed. Fakültesi Matematik Bölümü Görükle Yerleşkesi 16059 Nilüfer/Bursa	
17	Website:		
18	Objective of the Course:	To introduce differential equations which are appear in a lot of applications of engineering and investigate to solutions of this..	
19	Contribution of the Course to Professional Development:	Students can set up mathematical models at the beginner level. Solve equations containing derivatives.	
20	Learning Outcomes:		
		1	Understands the importance of differential equations in terms of engineering
		2	Uses the definitions and methods of solution of differential equations
		3	Solves the first order differential equations.
		4	Solves the second and higher order differential equations.
		5	Solves differential equations with boundary conditions.
		6	Solves differential equations using Laplace transform
		7	
		8	
		9	
		10	
21	Course Content:		
		Course Content:	
Week	Theoretical	Practice	
1	General concepts and classification, First order equations	Problem solving	

2	seperable equations, exact equations	Problem solving
3	Integral factor, first order linear equations, variable substitution (Homogenous equations, Bernoulli equations, Ricatti Equations)	Problem solving
4	Existence and uniqueness theorems, the first order differential equations with applications	Problem solving
5	High degree of first-order equations	Problem solving
6	n.-order linear differential equations: the constant coefficient differential equations (method of undetermined coefficients), variable-coefficient differential equations (separation of the operator factorization, method of variation of parameters	Problem solving
7	reduction of order	Problem solving
8	Cauchy Euler Equations	Problem solving
9	Repeating courses	Problem solving
10	Laplace transforms	Problem solving
11	Definitons and theorems	Problem solving
12	Solution of initial value problem with Laplace Transformation	Problem solving
13	Power series method, solution around the ordinary and singular point	Problem solving
14	Linear differential equations and systems: basic theory and solutions, using the Laplace transform solution	Problem solving

24	ECTS / WORK LOAD TABLE
----	------------------------

[illegible]

ÖK4	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																	
Contrib ution Level:	1 very low			2 low			3 Medium			4 High			5 Very High				