DIFFERENTIAL EQUATIONS

1	Course Title:	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:	English	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Dr. Ögr. Üyesi NISA ÇELİK	
15	Course Lecturers:	Prof.Dr.Sezai HIZLIYEL Prof.Dr.Emrullah YAŞAR Doç.Dr. Yeşim Sağlam ÖZKAN Doç.Dr. Arzu AKBULUT Dr.Öğr.Üyesi Nisa ÇELİK	
16	Contact information of the Course Coordinator:	e-posta:nisa@uludag.edu.tr Telefon:0224 2941764 Adres:U.Ü Fen-Edb. Fak. Mat. Böl. B102 Görükle Bursa	
17	Website:		
18	Objective of the Course:	Obtaining of the solutions of differential equations occuring mathematics, physics engineering.	
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	The modelling of some events as differential equations.
		2	Solving of first order differential equations.
		3	Solving of first order and higher degree differential equations.
		4	Understanding the theory of linear differential equations of order n .
		5	Knows the method of solutions of linear differential equation with constant coefficient.
		6	Knows the method of solutions of linear differential equation with variable coefficient.
		7	Knows the method of solution of nonlinear differential equations of higher order.
		8	
		9	
		10	
21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	General concepts and classification, First order equations	Applications of theory..

2	Seperable equations, Exact equations	Applications of theory..
3	Integrating factor, First order linear equations,	Applications of theory..
4	Change of variable; Homogeneous equations , Bernoulli equations, Riccati equations	Applications of theory..
5	Exsistence and uniqueness theorems ,applications of first order differential equation	Applications of theory..
6	High degree of first-order equations,	Applications of theory..
7	n.th order theory of linear differential equations with constant coefficient :The method of undetermined coefficients	Applications of theory..
8	Factorization of operator,The method of variation of parameters	Applications of theory..
9	Repeating a course	Applications of theory..
10	Reduction of order, Cauchy- Euler equations	Applications of theory..
11	Laplace transformation; basic definition and theorems	Applications of theory..
12	Laplace transform solutions of initial value problems	Applications of theory..
13	Power series Method; solution around ordinary and regular-singular points	Applications of theory..
14	Systems of linear differential equations; fundamental theory and solutions, Solutions using Laplace transformation.	Applications of theory..

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	14	3.00	42.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	14.00	14.00
Others	1	26.00	26.00
Final Exams	1	28.00	28.00
Total Work Load			194.00
Total work load/ 30 hr			6.00
ECTS Credit of the Course			6.00

23	**Assessment**	**R**
	Midterm Exam	1
	Quiz	0
	Home work project	0
	Final Exam	1
	Total	2
	Contribution of Term (Year) Learning Activities to Success Grade	40.00
	Contribution of Final Exam to Success Grade	60.00
	Total	100.00
	Measurement and Evaluation Techniques Used in the Course	The system of relative evaluation is applied.

24	**ECTS / WORK LOAD TABLE**

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	2	4	1	2	3	1	5	1	2	1	0	0	0	0	0	0
ÖK2	4	3	1	2	4	1	5	1	2	1	0	0	0	0	0	0
ÖK3	2	2	1	1	3	1	3	1	1	1	0	0	0	0	0	0
ÖK4	2	4	1	2	3	1	4	1	3	1	0	0	0	0	0	0
ÖK5	2	4	1	2	3	1	4	1	3	1	0	0	0	0	0	0
ÖK6	3	4	1	3	5	1	2	1	2	1	0	0	0	0	0	0
ÖK7	4	4	1	2	3	1	5	1	2	1	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	**1 very low**		**2 low**		**3 Medium**		**4 High**			**5 Very High**						