



ESOGÜ Mathematics and Computer Sciences Department
COURSE INFORMATION FORM

SEMESTER | Fall

COURSE CODE	821613003	COURSE NAME	Differential Equations
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Labratory	Credit	ECTS	TYPE	LANGUAGE
3	3	0	0	3	5	COMPULSORY (x) ELECTIVE ()	Turkish

COURSE CATAGORY

Mathematics	Computer		Social Science
x			

ASSESSMENT CRITERIA

	Evaluation Type	Quantity	%
	MID-TERM	1st Mid-Term	1
Quiz			
Homework			
Project			
Report			
Others (.....)			
FINAL EXAM			1
PREREQUIEITE(S)	none		
COURSE DESCRIPTION	After obtaining and classifying the Differential Equations, solutions and applications of 1 st order Differential Equations are given. Higher order differential equations.		
COURSE OBJECTIVES	It is to give solution differential equations and their application fields.		
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION	Gain the ability of problem solution.		
COURSE OUTCOMES	Solution methods of differential equations, solutions and meanings of differential equations in related sciences.		
TEXTBOOK	Diferensiyel Denklemler (Teori ve Uygulamalar) Mehmet Naci Özer, Dursun Eser		
OTHER REFERENCES	1. Adi Diferensiyel Denklemler, Mehmet Çağlıyan, Nisa Çelik, Setenay Doğan. 2. A Short Course in Differential Equations, Earl D. Rainville and P. E. Bedient.		
TOOLS AND EQUIPMENTS REQUIRED	Notebook, pencil.		

COURSE SYLLABUS	
WEEK	TOPICS
1	Basic definitions and terminology of differential equations
2	First-order differential equations
3	Separable differential equations, homogeneous differential equations, Exact differential equations
4	Integrable combination, integration factor
5	Finding integration factor
6	Linear differential equations, method of changing constants, integration factor method
7	Nonlinear differential equations, Linearable differential equations
8	Midterm
9	Differential equations of degree higher than the first, singular solutions, changing variable
10	Existence-uniqueness of solution, picard's method,.
11	Applications of first-order differential equations
12	The equations which dont have dependent variable alone or independent variable alone
13	Homogeneous differential equations, linear differential equations
14	Nonhomogeneous differential equations, the method of reduction of order
15	Linear differential equations with constant coefficient, Cauchy-Euler equations.
16,17	Final exam.

NO	PROGRAM OUTCOMES	3	2	1
1	The ability to apply knowledges of Mathematics and Computer Sciences,	X		
2	To have sufficient theoretical and practical knowledge of Mathematics at international level,		X	
3	The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects,		X	
4	The skill to solve and design a problem process in accordance with a defined target,	X		
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,	X		
6	The skill to use the modern techniques and computational tools needed for mathematical applications,	X		
7	The skill to make team work within the discipline and interdisciplinary,		X	
8	The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics and Computer Sciences,	X		
9	The skill to communicate orally and in written way, in a clear and concise manner by having individual work skills and ability to independently decide and analytical thinking,	X		
10	The skill to have professional and ethical responsibility,	X		
11	The skill to have consciousness for quality issues and scientific research,		X	
12	The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations,	X		
13	Ability to solve problems in the working life faced to find an appropriate algorithms via mathematical modeling and to write computer programs,	X		
14	The skill to developed design of software systems at different complex levels,	X		
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.	X		
1:None. 2:Partially contribution. 3: Completely contribution.				

Instructor(s): Prof. Dr. Dursun Eser

Signature:

Date: 08-29-2022