T.C.

ESKİŞEHİR OSMANGAZİ ÜNİVERSİTY

FACULTY OF SCIENCES

MATHEMATİCS AND COMPUTER SCIENCES DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
Differential Equations	821613003

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
3	3	0		5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	None
Objectives of the Course	It is to give solution differential equations and their application fields.
Short Course Content	After obtaining and classifying the Differential Equations, solutions and applications of 1st order Differential Equations are given. Higher order differential equations.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Gain sufficient knowledge of Analysis subject, related with science and own branch	1,2	1,2	A
2	Develops ability to analyze and solve problems encountered	1,2	1,2	A
3	Analytical thinking skills develop and the ability to make individual and independent decisions develops.	3,4,5,9	2,10	A
4	Gain ability to apply theoretical and practical knowledge on solving and modeling of problems.	3,4,5,9	10,11	A
5		13	10,11	A
6				
7				
8				

*Teaching Methods 1:Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods A:Exam, **B:Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Diferensiyel Denklemler (Teori ve Uygulamalar), Mehmet Naci Özer, Dursun Eser
Supporting 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.
Necessary Course Material	

Course Schedule	
1	Basic definitions and terminology of differential equations
2	First-order differential equaitons
3	Separable differential equations, homegeneous differential equations, Exact differential equations
4	Intagrable 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	Mid-Term Exam
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 indepentent variable alone
13	Homegeneus differntial equations, linear differential equations
14	Nonhomegeneus differential equations, the method of reduction of order
15	Linear differential equations with constant coefficient, Cauchy-Euler equations
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework	5	3	15
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	30	30
	Total workload		
	Total workload / 30		
	Course ECTS Credit		**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to apply knowledges of Mathematics and Computer Sciences,	4
2	To have sufficient theoretical and practical knowledge of Mathematics at international level,	5
3	The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects,	5
4	The skill to solve and design a problem process in accordance with a defined target,	5
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,	4
6	The skill to use the modern techniques and computational tools needed for mathematical applications,	3
7	The skill to make team work within the discipline and interdisciplinary,	2
8	The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics and Computer Sciences,	2
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,	4
10	The skill to have professional and ethical responsibility,	2
11	The skill to have consciousness for quality issues and scientific research,	2
12	The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations,	1
13	Ability to solve problems in the working life faced to find an appropriate algoritms via mathematical modeling and to write computer programs,	4
14	The skill to developed design of software systems at different complex levels,	1
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.	1

LECTUTER(S)				
Prepared by	Prof. Dr. Dursun ESER			
Signature(s)				

Date:30.07.2024