T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

MATHEMATİCS AND COMPUTER SCIENCES DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
Analysis IV	821614001

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
4	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	
Objectives of the Course	To introduce the basic concepts and techniques in the course content and to improve students' problem-solving abilities by applying these concepts and techniques.
Short Course Content	Definition of double integrals, some properties and Fubini theorems, Change of variable and region transformation in double integrals, Applications of double integrals, Definition and properties of triple integrals, Region transformations in triple integrals, Applications of triple integrals, Line integrals and Green's theorem, Area and work calculations in line integrals, Surface integrals and Stoke's theorem, Applications of surface integrals

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To have sufficient knowledge about the basic concepts of Euclidean space and mathematical analysis.	1,2,3,4,5,9,13	1,2,5,10	A
2	Understanding the structure of multiple integrals and being able to calculate them	1,2,3,4,5,9,13	1,2,5,10	A
3	To be able to perform applications of multiple integrals such as area and volume calculations	1,2,3,4,5,9,13	1,2,5,10	A
4	Learning line and surface integrals	1,2,3,4,5,9,13	1,2,5,10	A
5	To be able to perform applications of line and surface integrals	1,2,3,4,5,9,13	1,2,5,10	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	Mahmut Koçak, Analiz III-IV
Supporting References	1. Mustafa Balcı, Matematiksel Analiz 2. Robert A. Adams, Calculus: A Complete Course 3. George B. Thomas, Ross L. Finney, Calculus and Analytic Geometry 4. Robert Ellis, Denny Gulick, Calculus with Analytic Geometry 5. George B. Thomas, Maurice D. Weir, Joel R. Hass, Thomas' Calculus
Necessary Course Material	

Course Schedule	
1	Definition of double integrals, some properties and Fubini theorems
2	Change of variable and region transformation in double integrals
3	Applications of double integrals (area, volume)
4	Applications of double integrals (mass, center of mass, etc.)
5	Definition and properties of triple integrals
6	Region transformations in triple integrals
7	Calculation of triple integrals using spherical and cylindrical coordinates
8	Mid-Term Exam
9	Applications of triple integrals (area, volume, center of mass, etc.)
10	Line integrals of scalar fields
11	Line integrals of vector fields
12	Green's theorem
13	Area and work calculations in line integrals
14	Surface integrals and Stoke's theorem
15	Applications of surface integrals
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			
Studying for Mid-Term Exam	1	2	2
Final Exam	1	20	20
Studying for Final Exam	1	2	2
	1	30	30
	Total workload		**153**
	Total workload / 30		**153/ 30**
	Course ECTS Credit		**5**

Evaluation	
Activity Type	**%**
Mid-term	40
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,	4
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,	3
6	The skill to use the modern techniques and computational tools needed for mathematical applications,	2
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,	2
10	The skill to have professional and ethical responsibility,	1
11	The skill to have consciousness for quality issues and scientific research,	1
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,	3
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.	1

LECTUTER(S)				
Prepared by	Ass. Prof. Temel Ermiş			
Signature(s)				

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