



T.C.

ESKİŞEHİR OSMANGAZİ ÜNİVERSİTESİ

FACULTY OF SCIENCES

MATHEMATICS AND COMPUTER SCIENCES DEPARTMENT



## COURSE INFORMATION FORM

Course Name	Course Code
Analysis III	821613001

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

<b>Prerequisite(s) if any</b>	
<b>Objectives of the Course</b>	To introduce the basic concepts and techniques in the course content and to improve students' problem-solving abilities by applying these concepts and techniques.
<b>Short Course Content</b>	Vector valued functions; concept of limit, continuity, derivative and integration in the vector valued functions, Multivariable function; concept of limit, continuity and derivative in the multivariable functions

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 Learning basic concepts and theorems about limits, continuity, derivatives and integrals in vector valued functions	1,2,3,4,5,9,13	1,2,5,10	A
3 Learning basic concepts and theorems about limits, continuity and derivatives in multivariable functions	1,2,3,4,5,9,13	1,2,5,10	A
4			
5			
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:Individual 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

<b>Main Textbook</b>	Mahmut Koçak, Analiz III-IV
<b>Supporting References</b>	<ol style="list-style-type: none"> <li>1. Mustafa Balcı, Matematiksel Analiz</li> <li>2. Robert A. Adams, Calculus: A Complete Course</li> <li>3. George B. Thomas, Ross L. Finney, Calculus and Analytic Geometry</li> <li>4. Robert Ellis, Denny Gulick, Calculus with Analytic Geometry</li> <li>5. George B. Thomas, Maurice D. Weir, Joel R. Hass, Thomas' Calculus</li> </ol>
<b>Necessary Course Material</b>	

<b>Course Schedule</b>	
<b>1</b>	Vector valued functions and properties
<b>2</b>	Limit in vector valued functions
<b>3</b>	Continuity in vector valued functions
<b>4</b>	Derivative in vector valued functions
<b>5</b>	Integral in vector valued functions
<b>6</b>	Curves and their properties
<b>7</b>	Multivariable functions and their properties
<b>8</b>	Mid-Term Exam
<b>9</b>	Limit in multivariable functions
<b>10</b>	Continuity in multivariable functions
<b>11</b>	Derivative and partial derivative in multivariable functions
<b>12</b>	Gradient vector and chain rule in multivariable functions
<b>13</b>	Taylor expansion of multivariable functions
<b>14</b>	Concept of differential and exact differential
<b>15</b>	Extreme values of multivariable functions
<b>16,17</b>	Final Exam

<b>Calculation of Course Workload</b>			
<b>Activities</b>	<b>Number</b>	<b>Time (Hour)</b>	<b>Total Workload (Hour)</b>
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
<b>Total workload</b>			<b>153</b>
<b>Total workload / 30</b>			<b>153/ 30</b>
<b>Course ECTS Credit</b>			<b>5</b>

Evaluation	
<b>Activity Type</b>	<b>%</b>
Mid-term	40
Bir öge seçin.	
Bir öge seçin.	
<b>Final Exam</b>	60
<b>Total</b>	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)				
<b>Prepared by</b>	Ass. Prof. Temel Ermiş			
<b>Signature(s)</b>				

**Date:** 24.07.2024