



T.C.

ESKİŞEHİR OSMANGAZİ ÜNİVERSİTESİ

FACULTY OF SCIENCES

MATHEMATICS AND COMPUTER SCIENCES DEPARTMENT



**COURSE INFORMATION FORM**

Course Name	Course Code
Functional Analysis II	821618002

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	-	5

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

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

<b>Prerequisite(s) if any</b>	
<b>Objectives of the Course</b>	Having general knowledge about the notion of the Functional Analysis
<b>Short Course Content</b>	Ortogonal Kümeler, Hilbert Uzayları ve Lineer Operatörler.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Gain sufficient knowledge of Functional 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: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>	<b>Fonksiyonel Analize Giriş II, Prof. Dr. Mahmut Koçak</b>
<b>Supporting References</b>	1) <i>Fonksiyonel Analize Giriş I, Prof. Dr. Mahmut Koçak</i> 2) <i>W, W.L., Chen, Linear Functional Analysis</i> 3) <i>Rudin, W., Functional Analysis, TATA McGraW-HILL, 1973</i>
<b>Necessary Course Material</b>	

<b>Course Schedule</b>	
<b>1</b>	Introduction to metric spaces
<b>2</b>	Complete metric spaces
<b>3</b>	Continuity in metric spaces
<b>4</b>	Completion of metric spaces
<b>5</b>	Squentially Compackness in metric spaces
<b>6</b>	Compackness in metric spaces
<b>7</b>	Kompactness and continuity
<b>8</b>	Mid-Term Exam
<b>9</b>	Linear spaces
<b>10</b>	Linear transformations
<b>11</b>	Normed spaces
<b>12</b>	Completion of normed spaces
<b>13</b>	Series in normed spaces
<b>14</b>	Banach spaces
<b>15</b>	Problem solutions
<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>Total workload / 30</b>		
	<b>Course ECTS Credit</b>		<b>5</b>

Evaluation	
<b>Activity Type</b>	<b>%</b>
Mid-term	40
Quiz	
Homework	
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,	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)				
<b>Prepared by</b>	Prof. Dr. Mahmut KOÇAK			
<b>Signature(s)</b>				

**Date:**11.07.2024