

## REAL ANALYSIS II

1	Course Title:	REAL ANALYSIS II	
2	Course Code:	MAT5102	
3	Type of Course:	Optional	
4	Level of Course:	Second Cycle	
5	Year of Study:	1	
6	Semester:	2	
7	ECTS Credits Allocated:	6.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	none	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. OSMAN BİZİM	
15	Course Lecturers:	Prof. Dr. Osman Bizim	
16	Contact information of the Course Coordinator:	Uludağ Üniversitesi, Fen-Edebiyat Fakültesi Matematik Bölümü, Görükle Bursa-TÜRKİYE 0 224 294 17 57 / obizim@uludag.edu.tr	
17	Website:		
18	Objective of the Course:	The aim of this course is to review student's undergraduate analysis courses and to correct the deficiencies. So students can be successful in graduate studies.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Learns measure and its applications.
		2	Learns measurable sets, measurable functions and the Lebesgue measure.
		3	Learns the Lebesgue integral and its properties.
		4	Learns $L_p$ -spaces and convex functions.
		5	Learns Hilbert spaces, inner-product spaces and linear functionals.
		6	Learns orthonormal sets and trigonometric series.
		7	Learns the Fourier series of continuous functions.
		8	
		9	
		10	
21	Course Content:		
		<b>Course Content:</b>	
Week	Theoretical	Practice	
1	Set functions and their properties		
2	Measurable function, measure space and their properties		
3	Construction of the Lebesgue and the Borel measure and their properties		

<b>4</b>	Measurable functions	
<b>5</b>	Simple functions and their properties	
<b>6</b>	The Lebesgue integral of simple functions and their properties	
<b>7</b>	The Lebesgue convergence theorem and its applications	
<b>8</b>	The integral of complex functions and their properties	
<b>9</b>	The Riesz-Fischer theorem and its applications	
<b>10</b>	Lp-spaces and their properties	
<b>11</b>	Convex functions and their properties	
<b>12</b>	Hilbert spaces inner-product spaces and linear functionals.	
<b>13</b>	Orthonormal sets and trigonometric series and their properties	
<b>14</b>	Banach spaces and the Fourier series of continuous functions.	
<b>22</b>	Textbooks, References and/or Other Materials:	[1] Principles of Mathematical Analysis, W. Rudin, [2] Real and Complex Analysis, W. Rudin, [3] Real Analysis, H. L. Royden, [4] Introduction to Real Analysis, W. F. Trench.
<b>23</b>	Assesment	
<b>TERM LEARNING ACTIVITIES</b>		<b>NUMBER</b>
Midterm Exam		0
Quiz		0
Homeworks, Performances		0
Final Exam		1
Total		1
Contribution of Term (Year) Learning Activities to Success Grade		0.00
Contribution of Final Exam to Success Grade		100.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		
<b>24</b>	<b>ECTS / WORK LOAD TABLE</b>	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	5.00	70.00
Homeworks, Performances	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	14	5.00	70.00
Final Exams	1	43.00	43.00
Total Work Load			225.00
Total work load/ 30 hr			7.50
ECTS Credit of the Course			6.00

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK2	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK3	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK4	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK6	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK7	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
<b>LO: Learning Objectives PQ: Program Qualifications</b>																
<b>Contribution Level:</b>	<b>1 very low</b>		<b>2 low</b>			<b>3 Medium</b>			<b>4 High</b>			<b>5 Very High</b>				