	FUNC	CTION							
1	Course Title:	FUNCTI	ONAL ANALYSIS						
2	Course Code:	MAT402	1						
3	Type of Course:	Compuls	sory						
4	Level of Course:	First Cyc	le						
5	Year of Study:	4							
6	Semester:	7							
7	ECTS Credits Allocated:	8.00							
8	Theoretical (hour/week):	2.00							
9	Practice (hour/week):	2.00							
10	Laboratory (hour/week):	0							
11	Prerequisites:	none							
12	Language:	Turkish							
13	Mode of Delivery:	Face to f	ace						
14	Course Coordinator:	Prof. Dr.	OSMAN BİZİM						
15	Course Lecturers:	Prof. Dr.	Osman Bizim						
16	Contact information of the Course Coordinator:	Uludağ Ü Matemat obizim@	Üniversitesi, Fen-Edebiyat Fakültesi tik Bölümü, Görükle Bursa-TÜRKİYE 0 224 294 17 50 / uludag.edu.tr						
17	Website:								
18	Objective of the Course:	The aim concepts spaces, a among e	of the course is to make the students gain the fundamental s on functional analysis including metric spaces, normed and inner-product spaces. Further to give the connection intire spaces, normed spaces and Hilbert spaces.						
19	Contribution of the Course to Professional Development:								
20	Learning Outcomes:								
		1	Learns metric, normed, topologic and inner-product spaces and relation between them.						
		2	Learns the Banach spaces and their properties.						
		3	Learns the linear spaces, linear operators and their properties.						
		4	Learns dual and algebraic dual spaces and their properties.						
		5	Learns the Hilbert spaces and their properties.						
		6							
		7							
		8							
		9							
	-	10							
21	21 Course Content:								
		Co	ourse Content:						
Week	Theoretical		Practice						
1	Metric, normed, topologic and inner- spaces and their properties	product	Examples of the Metric, normed, topologic and inner- product spaces.						
2	Linear spaces and their properties		Examples of the Linear spaces						

3	The Banach spaces and their properties									Examples of the Banach spaces.									
4	The linear space of finite order and their properties.								Ex pro	Examples of the linear space of finite order and their properties.									
5	The lir	he linear operators and their properties.								Examples of the linear operators.									
6	The b and th	The bounded and continued linear operators and their properties.									Examples of the bounded and continued linear operators								
7	The lir prope	nea rties	r boui 3.	nded e	extens	ions a	nd the	eir	Ex sp:	ample: aces	s of the	e linear	bounde	ed exte	nsions	and Dua	I		
8	The a space	lget of l	oraic o finite	dual sp order a	bace, and th	linear o ieir pro	operat pertie	tors in s.	Ex in :	Examples of the algebraic dual space and linear operators in space of finite order									
9	The H	anh	n-Ban	ach th	eoren	n			Th	e appl	ication	s of the	Hanh-E	Banach	n theore	m			
10	The of theore	The open-mapping and closed-graph theorems								e appli eorems	ication:	s of the	open-n	nappin	g and c	losed-gr	aph		
11	The H	ilbe	ert spa	aces a	nd the	eir prop	oerties		Ex	ample	s of the	Hilber	t space	S					
12	The cl space	ose an	ed sub d its p	space propert	e, alge ties	ebraic s	sum of	f the	Ex the	ample: e space	s of the es	e closec	l subsp	ace an	id algeb	raic sum	n of		
13	The fu prope	inct rties	ional s.	in Hilb	ert sp	aces a	and the	eir	Ex	ample	s of the	e functio	onal in H	Hilbert	spaces				
14	The lir their p	nea orop	r oper erties	ators	with t	wo vari	iables	and	Ex	ample	s of the	linear	operato	ors with	n two va	riables			
22	Textbooks, References and/or Other Materials:									 [1] Fonksiyonel Analiz, M. Bayraktar, [2] Fonksiyonel Analiz'in Yöntemleri, T. Terzioğlu, [3] Functional Analysis, W. Rudin, [4] Fonksiyonel Analiz, B. Musayev, M. Alp. 									
Activites								Numb	er		Duration (hour) I otal Work Load (hour				/ork nour)				
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Theore Midtern	tical n Exan	<u></u> า					1		40	1 <u>4</u> .00			2.00			28.00			
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LO: Learning Objectives PQ: Program Qualifications																
Contrib ution Level:		2 low			3 Medium			4 High			5 Very High					