INTEGRAL EQUATIONS

1	Course Title:	INTEGRAL EQUATIONS	
2	Course Code:	MAT4032	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	8	
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:	Dr. Ögr. Üyesi NISA ÇELİK	
15	Course Lecturers:	Yrd.Doç.Dr.Setenay DOĞAN Yrd.Doç.Dr.Nisa ÇELİK Yrd.Doç.Dr.Sezai HIZLIYEL Yrd.Doç.Dr.Emrullah YAŞAR	
16	Contact information of the Course Coordinator:	caglayan@uludag.edu.tr 0 224 2941752 U.Ü. Fen Edebiyat Fak. Mat.Böl. Görükle Yerleşkesi, Nilüfer BURSA	
17	Website:		
18	Objective of the Course:	To introduce the concept of integral equation and give some applications	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Learns the modelling of some events as an integral equations
		2	Understands the relationship between integral and differential equations.
		3	Learns to get solutions of some integral equations.
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Preliminary information. Definition, classification, Fredholm and Volterra equations, the concept.of solution	

2	Fredholm integral equation of second kind with dejenerate kernel. Reducing to system of algebric equations, obtaining of the solution in case is not an eigenvalue. Resolvent kernel. Exercises.	
3	Homegenous Fredholm equation, eigenvalues and eigenfunctions. Exercises.	
4	Adjoint homegeneous and inhomegeneous Fredholm equations. Existance of the solutions in case is an eigenvalue	
5	Successive substitutions method, the applications of the method to Fredholm and Volterra equations.	
6	Iterated kernels and resolvent kernels. Neumann series. Exercises.	
7	Method of successive appoximations. Applications of the method to Fredholm and Volterra equations. Exercises.	
8	Midterm exam, general review	
9	Classical Fredholm theory in case an arbitrary kernel.	
10	Obtainig of the solutions in case lambda is not an eigenvalue.	
11	Existence of solutions in case lambda is an eigenvalue	
14	General exercises.	
22	Textbooks, References and/or Other Materials:	Linear Integral Equations, William Vernon Lovitt
23	Assesment	

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	4.00	56.00
Homeworks	14	4.00	56.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	12.00	12.00
Midterm Exam 1	40.00		
Others	0	0.00	0.00
Final Exams	1	14.00	14.00
Home work-project 0	0.00		
Total Work Load			180.00
Total work load/ 30 hr			6.00
Total 2	100.00		
ECTS Credit of the Course			6.00

Success Grade	
Contribution of Final Exam to Success Grade	60.00
Total	100.00
Measurement and Evaluation Techniques Used in the Course	

24 ECTS / WORK LOAD TABLE

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	2	3	1	2	4	1	4	4	3	1	0	0	0	0	0	0

ÖK2	3	2	1	2	4	1	3	4	2	1	0	0	0	0	0	0
ÖK3	2	3	1	2	5	1	3	4	2	1	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications					
Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**