



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		C*-Algebras							
Course Code		MTK524		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	8	Workload	200 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		The course aim to introduce C*-algebras by giving the basic definition and theorems of C*-algebras.							
Course Content		The definition and examples of C*-algebras, commutative C*-algebras, quotient C*-algebras, representations, the dual of a C*-algebra, automorphisms of C*-algebras.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study, Problem Solving					
Name of Lecturer(s)		Prof. Hülya İNCEBOZ							

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	50
Assignment	1	20

Recommended or Required Reading

1	C*-Algebras and Operator Theory, Gerald J. Murphy, Academic Press Inc., San Diego, 1990.
2	C*-Algebras and W*-Algebras, S. Sakai, Springer-Verlag, New York, 1970.

Week	Weekly Detailed Course Contents	
1	Theoretical	Involute algebras and normed involute algebras
2	Theoretical	C*-algebras
3	Theoretical	Commutative C*-algebras
4	Theoretical	Examination of a functional on C*-algebras and approximation to identity
5	Theoretical	Quotient C*-algebras
6	Theoretical	Representations
7	Theoretical	Envelop of C*-algebras
8	Theoretical	Ideals of C*-algebras
9	Intermediate Exam	Midterm Exam
10	Theoretical	Dual of a C*-algebra
11	Theoretical	Polar decomposition of a linear mapping
12	Theoretical	Positive part of the ideal of a C*-algebra and its tensor products
13	Theoretical	Automorphisms of C*-algebras
14	Theoretical	Inner automorphism
15	Theoretical	Derivable automorphism
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	3	84
Assignment	1	20	2	22
Midterm Examination	1	40	2	42
Final Examination	1	50	2	52
Total Workload (Hours)				200
[Total Workload (Hours) / 25*] = ECTS				8

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Ability to understand the concept of C*-algebra, its basic properties and ability to recognize the examples of some C*-algebras.
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2	Ability to understand the concept of a functional on C^* -algebras.
3	Ability to understand quotient C^* -algebras.
4	Ability to find the dual of a C^* -algebra.
5	Ability to find automorphisms of C^* -algebras.

Programme Outcomes (Mathematics Master)

1	To be able to have an adequate theoretical and practical domain knowledge.
2	To be able to comprehend the interdisciplinary interaction associated with Mathematics.
3	To be able to use theoretical and practical domain knowledge gained in the field of Mathematics.
4	To be able to interpret knowledge from different disciplines integrating knowledge in the field of mathematics and produce new information.
5	To be able to define, analyse, model and to solve the problems by scientific methods in Mathematics.
6	To be able to conduct a math related specialistic study independently.
7	To be able to develop new strategic approaches to solve problems occurred in unforeseen and complex math-related applications by taking responsibility.
8	To be able to lead in situations that require solving problems related to the mathematics.
9	To be able to criticize his/her knowledge and skills acquired in the field mathematics.
10	To be able to transfer his/her ideas and suggestions for solutions to problems by supporting quantitative or qualitative data verbally and in writing.
11	To be able to communicate both orally and written in a foreign language.
12	To be able to use computer hardware and information technologies with software required by Mathematics.
13	To be able to contribute to the solution of the social, scientific, cultural and ethical problems related to the Mathematics, and being able to support the development of social, scientific, cultural and ethical values.
14	To be able to develop mathematics-related strategies, policies and operational plans, and to evaluate the results obtained within the framework of quality processes.
15	To be able to use his/her knowledge in the field of mathematics and practical problem-solving skills in interdisciplinary studies.

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	3	4	4	5	5
P2	4	4	4	4	4
P3	4	4	5	5	5
P4	3	4	5	5	4
P5	3	3	3	4	4
P6	4	4	4	4	4
P7		3		3	3
P9	3	3	3	3	3
P11	3	3	3	3	3
P13	4	4	4	4	4
P15	4	4	4	4	4

