



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Algebra II							
Course Code		MTK504		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		This course gives the fundamental concepts of rings.							
Course Content		Rings, homomorphisms of rings, ideals, isomorphism theorems, prime and maximal ideals, factorization in commutative rings, division rings and localization, rings of polinomials and formal power series factorization in polynomial rings, modules, homomorphism and exact sequences, vector spaces, field extension.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Individual Study, Problem Solving					
Name of Lecturer(s)									

### Assessment Methods and Criteria

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

### Recommended or Required Reading

1	Algebra, T.W.Hungerfort
2	Contemporary Abstract Algebra, J.A.Gallian
3	Basic Algebra I-II, N. Jacobson
4	Basic Abstract Algebra, P.B. Bhattacharya, S.K.Jain, S.R. Nagpaul, Cambridge University Pres
5	Fundamentals of Abstract Algebra, D.S.Malik, John M.Mordeson, M.K.Sen, The McGraw-Hill Companies

Week	Weekly Detailed Course Contents	
1	Theoretical	Rings
2	Theoretical	Homomorphisms of rings,ideals
3	Theoretical	Isomorphism theorems
4	Theoretical	Prime and maximal ideals
5	Theoretical	Prime and maximal ideals
6	Theoretical	Factorization in commutative rings
7	Theoretical	PID,UFD, Dedekind domains
8	Theoretical	Division rings and localization
9	Intermediate Exam	Midterm
10	Theoretical	Rings of polynomials and formal power series
11	Theoretical	Factorization in polynomial rings
12	Theoretical	Modules
13	Theoretical	Homomorphism and exact sequences
14	Theoretical	Vector spaces
15	Theoretical	Field extension
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	To be able to give fundamental properties of ring theory
2	To be able to relate ring theory with other fields of algebra
3	To be able to develop some theoretical approach on ring theory
4	To be able to develop individual works on ring theory
5	To be able to relate ring theory with some other fields except algebra

### 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	5	3	4	5	5
P2	5	5	4	4	5
P3	4	4	5	5	4
P4	5	4	5	5	5
P5	4	5	5	5	4
P6	3	3	3	3	3
P7	2	3	4	5	3
P11					4
P15	2	4	4	5	5

