AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Groups and Symmetry								
Course Code	MTK559		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	The purpose of this course is to present the students with the subjects in the course content at the graduate level								
Course Content	Groups, subgroups, generators, cyclic and dihedral groups, finite groups, permutations, group action, orbit and stabiliser of a point, symmetry groups of regular polygons, symmetry groups of regular polytopes, finite rotation groups, translations, rotations, reflections and glide reflections in the Euclidean plane, Euclidean groups and quotient spaces, Euclidean groups with compact quotient spaces								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, 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	Armstrong, M.A. (1988) Groups and Symmetry, Springer
2	Farmer, D. (1996) Groups and Symmetry,American Mathematical Society

Week	Weekly Detailed Course Contents	
1	Theoretical	Groups, subgroups and generators
2	Theoretical	Cyclic and dihedral groups
3	Theoretical	Finite groups
4	Theoretical	Permutations
5	Theoretical	Group action
6	Theoretical	Orbit and stabiliser of a point
7	Theoretical	Symmetry groups of regular polygons
8	Intermediate Exam	MIDTERM EXAM
9	Theoretical	Symmetry groups of regular polytopes
10	Theoretical	Finite rotation groups
11	Theoretical	Isometries of the Euclidean plane
12	Theoretical	Isometries of the Euclidean plane
13	Theoretical	Euclidean groups and quotient spaces
14	Theoretical	Euclidean groups with compact quotient spaces
15	Theoretical	Euclidean groups with compact quotient spaces
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 define the concepts of a group
2	To be able to express cyclic and dihedral groups
3	To be able to define the concepts of group action
4	To be able to determine the symmetry groups of regular polygons and regular polytopes
5	To be able to explain the isometries of the Euclidean plane
6	To be able to determine the quotient spaces of Euclidean groups

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	L6
P1	3	3	3	3	3	3
P2	4	4	4	4	4	4
P3	3	3	3	3	3	3
P4	4	4	4	4	4	4
P5	2	2	2	2	2	2
P9	3	3	3	3	3	3
P13	1	1	1	1	1	1
P14	2	2	2	2	2	2
P15	3	3	3	3	3	3