AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Hyperbolic Geometry								
Course Code	MTK556		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	Hyperbolic metric, hyperbolic plane, upper half plane model, unit disc model, geodesics, isometries of the hyperbolic plane, Möbius transformations, the group of isometries of the hyperbolic plane and its discrete subgroups, hyperbolic area, Gauss-Bonnet formula, hyperbolic trigonometry, other models of the hyperbolic plane								
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	Anderson, J. (1999) Hyperbolic Geometry, Springer.
2	Stillwell J. (1992) Geometry of surfaces, Springer

Week	Weekly Detailed Course Contents	
1	Theoretical	Hyperbolic metric
2	Theoretical	Hyperbolic plane and models
3	Theoretical	Geodesics
4	Theoretical	Möbius transformations
5	Theoretical	Isometries of the hyperbolic plane
6	Theoretical	The group of isometries of the hyperbolic plane and its discrete subgroups
7	Theoretical	Fuchsian groups
8	Intermediate Exam	MIDTERM EXAM
9	Theoretical	Fundamental regions
10	Theoretical	Hyperbolic polygons
11	Theoretical	Hyperbolic area and the Gauss-Bonnet formula
12	Theoretical	Hyperbolic trigonometry
13	Theoretical	Hyperbolic trigonometry
14	Theoretical	Other models of the hyperbolic plane
15	Theoretical	Other models of the hyperbolic plane
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 explain the concepts of hyperbolic plane and hyperbolic metric
2	To be able to explain the upper half plane and the unit disc model and the corresponding metrics
3	To be able to explain the isometries of the hyperbolic plane
4	To be able to explain the discrete subgroups of the group of isometries of the hyperbolic plane
5	To be able to explain the other models of the hyperbolic plane

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	2	2	2	2	2
P2	4	4	4	4	4
P3	3	3	3	3	3
P4	2	2	2	2	2
P5	1	1	1	1	1
P9	3	3	3	3	3
P14	2	2	2	2	2
P15	1	1	1	1	1