AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Riemannian Manifolds								
Course Code	MTK627		Couse Level		Third Cycle (Doctorate Degree)				
ECTS Credit	7.5	Workload	188 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	Manifoldlar, vektör demetleri, Riemann metrikleri, Riemann geometrisinin model uzayları, koneksiyonlar, vektör alanları, Riemann geodezikleri, model uzayların geodezikleri, Riemann manifoldları üzerinde uzunluklar ve uzaklıklar, eğrilik, sabit eğrilikli manifoldlar, alt manifoldlar								
Course Content	Manifolds, vector bundles, Riemannian metrics, model spaces of Riemannian geometry, connections, geodesics of model spaces, lengths and distances on Riemannian manifolds, curvatures, manifolds of constant curvatures, submanifolds								
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	20
Final Examination	1	60
Quiz	2	10
Assignment	1	10

Recommended or Required Reading	
1	Riemannian Manifolds,Lee J.M., Sringer,1997.
2	Riemannian Geometry, Gallot S., Hulin D., Lafontaine J.,Sringer,1997.

Week	Weekly Detailed Course Contents	
1	Theoretical	Manifolds
2	Theoretical	Vector bundles
3	Theoretical	Riemannian metrics
4	Theoretical	Model spaces of Riemannian geometry
5	Theoretical	Connections
6	Theoretical	Vector fields
7	Theoretical	Riemannian geodesics
8	Intermediate Exam	MIDTERM EXAM
9	Theoretical	Geodesics of model spaces
10	Theoretical	Lengths and distances on Riemannian manifolds
11	Theoretical	Curvature
12	Theoretical	Manifolds of constant curvatures
13	Theoretical	Manifolds of constant curvatures
14	Theoretical	Submanifolds
15	Final Exam	FINAL EXAM

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	3	84
Assignment	1	0	18	18
Quiz	2	12	1	26
Midterm Examination	1	26	2	28

Final Examination	1	30	2	32
			Total Workload (Hours)	188
			[Total Workload (Hours) / 25*] = **ECTS**	7.5
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	Defining the concept of a Riemannian manifold
2	Expressing the Riemannian geometry and model spaces
3	Expressing the metrics and geodesics of model spaces
4	Defining the concept of connection
5	Expressing the manifolds of constant curvatures
6	Expressing the concept of submanifold

Programme Outcomes *(Mathematics Doctorate)*	
1	To be able to develop the current and advanced knowledge of mathematics domain to expertise level by an original idea or research, based on the level of its knowledge at the graduate level, and to be able to reach original definitions that will bring innovation to Mathematics.
2	To be able to comprehend the interdisciplinary interaction associated with Mathematics.
3	To be able to use and evaluate the new knowledge in the field of Mathematics with a systematic approach.
4	To be able to develop an idea, a method, a design or an application that will bring innovation to Mathematics, to use well known ideas, methods, designs or applications on a different research area, or to search, comprehend, design, adapt and apply an original subject matter.
5	To be able to criticize, analyze, synthesize and evaluate new and complex ideas.
6	To be able have high-level skills in research methods related to studies on Mathematics.
7	To be able to expand the frontiers knowledge in the field of Mathematics via generating or interpreting an original study, or publishing at least a scientific paper in national/international refereed journals.
8	To be capable of leadership in the positions that require the analyses of problems related to the field of Mathematics.
9	To be able to defend his/her original ideas among the experts in the discussion of math related issues, and to be able to communicate effectively to show his/her competence in the field of Mathematics.
10	To be able to contribute to the solution of the social, scientific, cultural and ethical problems related to the Mathematics, and to be able to support the development of social, scientific, cultural and ethical values.
11	To be able to have both oral and written communication using a foreign language.

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	1	1	1	1	1	1
P3	3	3	3	3	3	3
P6	3	3	3	3	3	3
P7	1	1	1	1	1	1