



ESOGÜ Mathematics and Computer Sciences Department COURSE INFORMATION FORM

SEMESTER	Fall
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COURSE CODE	821615002	COURSE NAME	Differential Geometry
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Labratory	Credit	ECTS	TYPE	LANGUAGE
5	3	0	0	3	5	COMPULSORY (x) ELECTIVE ()	Turkish

COURSE CATAGORY

Mathematics	Computer		Social Science
x		X	

ASSESSMENT CRITERIA

MID-TERM	Evaluation Type	Quantity	%
	1st Mid-Term		1
2nd Mid-Term			
Quiz			
Homework			
Project			
Report			
Others (.....)			
FINAL EXAM		1	60

PREREQUIEITE(S)

None

COURSE DESCRIPTION

Affine Space, Euclidean Space, Topological Manifolds, Differentiable Manifolds, Tangent Vectors and Tangent Spaces, Direction Derivative and Covariant Derivative, Lie Operator, Cotangent Vectors of Euclidean Space, Cotangent Spaces , Differential of a Map, Theory of Curves, Parameter Change, Serret-Frenet Vectors, Osculating Hyperplanes of a Curve, Curvatures, Centers and Spheres of Curvature, Special Curves Pairs and Characterizations, Involute and Evolute, Spherical Indicators of a Curve, Hypersurfaces, Gaussian Map on Surfaces, Fundamental Forms, Algebraic Invariants of the Shape Operator, Principal Curvatures, Gaussian and Mean Curvature, Gauss Equation, Riemann Curvature Tensor.

COURSE OBJECTIVES

The main of the course is to introduce the concepts and techniques involved in the basic topics listed in this lecture and to develop skills in applying those concepts and techniques to the solution of problems

ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION

Gain analytical thinking and problem solving ability.

COURSE OUTCOMES

The main aim of the course is to give base concept of Differential geometry, Curves and surfaces theory with Maple. To have skill of the problem analysis and solution.

TEXTBOOK

Ekici, C. 2021, Eğrilerin ve Yüzeylerin Diferensiyel Geometrisi, ESOĞÜ Yayınları.

OTHER REFERENCES

- 1- Hacısalıhoğlu, H. H., 2004, Diferensiyel Geometri, Cilt I-II, Ankara.
- 2- Sabuncuoğlu. A., 2006, Diferensiyel Geometri, Ankara.
- 3- Özdemir, M., 2020, Diferansiyel Geometri, Altın Nokta Yayınevi, İzmir.
- 4- Yüce, S., 2017, Öklid uzayında diferansiyel geometri, Pegem Akademi Yayıncılık, Ankara.

TOOLS AND EQUIPMENTS REQUIRED

COURSE SYLLABUS	
WEEK	TOPICS
1	Affine Space, Euclidean Space,
2	Topological Manifolds, Differentiable Manifolds,
3	Tangent Vectors and Tangent Spaces, Direction Derivative and Covariant Derivative,
4	Lie Operator, Cotangent Vectors of Euclidean Space, Cotangent Spaces
5	Differential of a Map
6	Theory of Curves, Parameter Change,
7	Theory of Curves Serret-Frenet Vectors, Osculating Hyperplanes of a Curve, Problem Solving
8	Midterm
9	Curvatures, Centers and Spheres of Curvature,
10	Special Curves Pairs and Characterizations, Involute and Evolute
11	Spherical Indicators of a Curve, Hypersurfaces,
12	Gaussian Map on Surfaces and Shape Operator
13	Fundamental Forms and Algebraic Invariants of the Shape Operator
14	Principal Curvatures, Gaussian and Mean Curvature, Gauss Equation, Riemann Curvature Tensor.
15	Problem solving
16-17	Final Exam

DİKKAT!... Aşağıdaki PROGRAM ÇIKTILARI Mühendislik için yazılmıştır. BÖLÜM kendi eğitim amaç ve hedeflerini destekleyen Program Çıktılarını belirledikten sonra bu kısım hazırlanmalıdır. ŞABLON OLARAK KULLANMAYINIZ

NO	PROGRAM OUTCOMES	3	2	1
1	The ability to apply knowledges of Mathematics and Computer Sciences,		x	
2	To have sufficient theoretical and practical knowledge of Mathematics at international level,		x	
3	The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects,	x		
4	The skill to solve and design a problem process in accordance with a defined target,		x	
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,	x		
6	The skill to use the modern techniques and computational tools needed for mathematical applications,	x		
7	The skill to make team work within the discipline and interdisciplinary,		x	
8	The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics and Computer Sciences,		x	
9	The skill to communicate orally and in written way, in a clear and concise manner by having individual work skills and ability to independently decide and analytical thinking,	x		
10	The skill to have professional and ethical responsibility,			x
11	The skill to have consciousness for quality issues and scientific research,		x	
12	The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations,			x
13	Ability to solve problems in the working life faced to find an appropriate algorithms via mathematical modeling and to write computer programs,			x
14	The skill to developed design of software systems at different complex levels,			x
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.		x	

1:None. 2:Partially contribution. 3: Completely contribution.

Instructor(s): Prof. Dr. Cumali EKİCİ

Signature:

Date: