



## ESOGÜ Mathematics and Computer Sciences Department COURSE INFORMATION FORM

<b>SEMESTER</b>	Fall
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<b>COURSE CODE</b>	821617007	<b>COURSE NAME</b>	Motion Geometry
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Labratory	Credit	ECTS	TYPE	LANGUAGE
7	3	0	0	3	5	COMPULSORY ( ) ELECTIVE ( x )	Turkish

### COURSE CATAGORY

<b>Mathematics</b>	<b>Computer</b>		<b>Social Science</b>
x		X	

### ASSESSMENT CRITERIA

	Evaluation Type	Quantity	%
	<b>MID-TERM</b>	1st Mid-Term	1
2nd Mid-Term			
Quiz			
Homework			
Project			
Report			
Others (.....)			

<b>FINAL EXAM</b>		1	60
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<b>PREREQUIEITE(S)</b>	None
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<b>COURSE DESCRIPTION</b>	<p>Basic definitions and theorems about dual numbers , Dual number systems, dual vector spaces, D-module, inner product and norm on D-module, E. Study mappings and dual angle, Exterior product, mixed product on D-module, dual isometries on D-module, Dual variable functions, Real quaternion and algebra on real quaternion, Matrix representation of real quaternion, Dual quaternion and algebra on dual quaternion, Line quaternion, Quaternion operators, rotation and translation operators, Screw operators and screw motions.</p>
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<b>COURSE OBJECTIVES</b>	<p>The main of the course is to introduce the concepts and techniques involved in the basic topics listed in this lecture and to develope skills in applying those concepts and techniques to the solution of problems</p>
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<b>ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION</b>	Gain analytical thinking and problem solving ability.
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<b>COURSE OUTCOMES</b>	Gain sufficient knowledge of Motion Geometry subject, related with science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of problems.
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<b>TEXTBOOK</b>	Hacısalıhoğlu H. H., <b>Hareket Geometrisi ve Kuaternionlar Teorisi, Ankara, 1983</b>
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<b>OTHER REFERENCES</b>	<p>1- Müller, H. R., Kinematik Dersleri, Ankara Üniversitesi Yayınları, (1963).  2- Biran, L., Kinematik, İstanbul Üniversitesi yayınları, 1949.  3- Hacısalıhoğlu, H. H., Diferensiyel Geometri, Cilt I-II, Ankara, 2004.  4- R. Kaya, <b>Lineer Cebir (Redaksiyon)</b>, Eskişehir, (2000).</p>
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<b>TOOLS AND EQUIPMENTS REQUIRED</b>	
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COURSE SYLLABUS	
WEEK	TOPICS
1	Basic definitions and theorems about dual numbers
2	Dual vector spaces, D-module, inner product and norm on D-module
3	Exterior product, mixed product on D-module
4	Normalization of dual vectors
5	E. Study mappings, Dual angle,
6	Dual isometries on D-module, Dual variable functions,
7	Problem solving,
8	Mid-term exam
9	Real quaternion and algebra on real quaternion
10	Matrix representation of real quaternion,
11	Dual quaternion and algebra on dual quaternion
12	Quaternion operators, rotation
13	Translation operators and Screw operators
14	Screw operators and screw motions
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:**