

ENGINEERING MATHEMATICS

1	Course Title:	ENGINEERING MATHEMATICS
2	Course Code:	INS2002
3	Type of Course:	Compulsory
4	Level of Course:	First Cycle
5	Year of Study:	2
6	Semester:	4
7	ECTS Credits Allocated:	6.00
8	Theoretical (hour/week):	4.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. M.ÖZGÜR YAYLI
15	Course Lecturers:	Fen-Edebiyat Fakültesi Matematik Bölümü tüm öğretim üyeleri
16	Contact information of the Course Coordinator:	Prof.Dr. M. Özgür YAYLI ozgurayli@uludag.edu.tr
17	Website:	
18	Objective of the Course:	To provide basic concepts of linear algebra and its application to engineering problems
19	Contribution of the Course to Professional Development:	<p>1 Be able to describe special type of matrices and vectors</p> <p>2 Be able to characterize matrices and vectors properties</p> <p>3 Be able to perform matrices and vectors operations such as addition, multiplication, inverse, etc.</p> <p>4 Be able to recognize the difference between the algebraic and matrices operations.</p> <p>5 Be able to establish set of system of equation if it is required at any of engineering problem</p> <p>6 Be able to solve the system of equations and able to interpret the results.</p>
20	Learning Outcomes:	
	1	Be able to describe special type of matrices and vectors
	2	Be able to characterize matrices and vectors properties
	3	Be able to perform matrices and vectors operations such as addition, multiplication, inverse, etc.
	4	Be able to recognize the difference between the algebraic and matrices operations.
	5	Be able to establish set of system of equation if it is required at any of engineering problem
	6	Be able to solve the system of equations and able to interpret the results.
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21	Course Content:	
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Week	Theoretical	Practice
1	Matrices; Matrix Operations, Properties of Matrix Operations, Special Types of Matrices	
2	Solving Linear Systems; Elementary Row and Column Operations; (reduced) Row Echelon Form of a Matrix; Gauss Elimination and Gauss-Jordan Method	
3	Homogeneous Systems.	
4	Elementary Matrices and Finding the Inverse of a Matrix by Using Elementary Operations	
5	Determinants; Definition and Properties of Determinants	
6	Cofactor Expansion; Finding Inverses by Using Cofactors	
7	Cramer's Rule. Rank of a Matrix	
8	Vector Spaces: Definition; Subspaces	
9	Span and Linear Independence	
10	Basis and Dimensions	
11	Eigenvalues and Eigenvectors of a Square Matrix	
12	Diagonalization and the Cayley–Hamilton Theorem	
13	Linear Transformation	
14	Review of Basic Concepts	
22	Textbooks, References and/or Other Materials:	B.Kolman-Dr.Hill, Introductory Linear Algebra, Prentice-Hall (2005), ISBN 0-13-127773-1
23	Assesment	
TERM LEARNING ACTIVITIES		
	NUMBER	WEIGHT
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course	Understanding the principles of applied mathematics used in the course	
24	ECTS / WORK LOAD TABLE	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	4.00	56.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	8.00	112.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	3.00	3.00
Others	0	0.00	0.00
Final Exams	1	3.00	3.00
Total Work Load			177.00
Total work load/ 30 hr			5.80
ECTS Credit of the Course			6.00

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			