MATRIX THEORY

1	Course Title:	MATRIX THEORY
2	Course Code:	INS2010
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. MURAT KANKAL
15	Course Lecturers:	-
16	Contact information of the Course Coordinator:	mkankal@uludag.edu.tr 0224 275 52 90
17	Website:	
18	Objective of the Course:	To teach different solution methods of linear equation systems and eigenvalue eigenvector concepts with matrix theory.
19	Contribution of the Course to Professional Development:	be able to solve engineering problems involving Linneer equation systems.
20	Learning Outcomes:	

		1	To be able to understand the solution of linear equation systems with Gauss elimination and Gauss-Jordan methods.
		2	To be able to understand the solution of linear equation systems with Cramer's Rule and Matrix inverse methods
		3	To be able to understand the solution of linear equation systems with the LU decomposition method.
		4	To be able to understand the solution of linear equation systems with Cholesky decomposition method.
		5	Be able to diagonalize a matrix
		6	Be able to understand the concepts of eigenvalues and eigenvectors
		7	
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		9	
		10	

21	Course Content:	

Course Content:	

Week	Theoretical	Practice
1	Solution of Systems of Linear Equations; Cramer's Rule.	
2	Rank of a Matrix	
3	Diagonalization, Cayley–Hamilton Theorem	

4	Eigenvalues and Eigenvectors	
5	Eigenvalues and Eigenvectors	
6	Solution of Systems of Linear Equations; Matrix Inverse Method	
7	Solution of Systems of Linear Equations; Gaussian Elimination Method.	
8	Solution of Systems of Linear Equations; Gauss-Jordan Method.	
9	LU decomposition	
10	Obtaining inverse matrix with LU decomposition	
11	Solution of Systems of Linear Equations; LU decomposition Method	
12	Positive Defined Matrices	
13	Cholesky decomposition	
14	Solution of Systems of Linear Equations; Cholesky decomposition Method	

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

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical / Total	14 / 2 / 100.00	4.00	56.00
Practicals/Labs	0	0.00	0.00
Self study and preperation / Success Grade	14	8.00	112.00
Homeworks	0	0.00	0.00
Projects / Total	0 / 100.00	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams / Courses	1	3.00	3.00
Others	0	0.00	0.00
Final Exams	1	3.00	3.00
Total Work Load			174.00
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
ÖK6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications															
Contrib ution Level:	**1 very low**		**2 low**		**3 Medium**		**4 High**			**5 Very High**					