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	
	8	
	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
Total	2	100.00

Success Grade

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			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	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**