



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Matrix Analysis							
Course Code		MTK561		Couse Level		Second Cycle (Master's Degree)			
ECTS Credit	8	Workload	200 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		This basic course includes some concepts of linear algebra, which is essential in all branches of science. The purpose of this course the student to teach the basic and general concepts.							
Course Content		Systems of Linear Equations, Linear Transformations, Diagonalization, inner product spaces							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study, Problem Solving					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	50
Assignment	1	20

Recommended or Required Reading

1	Matrix analysis and applied Linear Algebra
2	Linear Algebra, K. Hoffman and R. Kunze

Week	Weekly Detailed Course Contents	
1	Theoretical	Linear equations and matrices
2	Theoretical	Matrix algebra, some specail matrices,row and column operations
3	Theoretical	Echelon form in matrices, LU-decompositions
4	Theoretical	Vector spaces, linear independence,basis and dimensions
5	Theoretical	Homojen equation systems
6	Theoretical	Coordinates, isomorphisms, rank of matrix
7	Theoretical	Linear transformations, kernel, image
8	Intermediate Exam	MIDTERM EXAM
9	Theoretical	Matrix representation, of linear transformations
10	Theoretical	Linear functionals, Dual
11	Theoretical	Determinants and its aplications
12	Theoretical	Eigenvalues and eigenvectors
13	Theoretical	Diagonalization, similar matrices
14	Theoretical	Inner product spaces, R^2 and R^3 standart inner product spaces
15	Theoretical	Gram-Schmidt method, orthonormal sets
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	3	84
Assignment	1	20	2	22
Midterm Examination	1	40	2	42
Final Examination	1	50	2	52
Total Workload (Hours)				200
[Total Workload (Hours) / 25*] = ECTS				8

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	To be able to extract the characteristic and minimal polynomials of an operator
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2	To be able to obtain eigenvalues and canonical forms of a matrix
3	To be able to find Jordan and rational forms of matrices
4	To be able to define an inner product space
5	To be able to define the linear operator on inner product spaces
6	To be able to obtain the form of a quadratic transformation

Programme Outcomes (Mathematics Master)

1	To be able to have an adequate theoretical and practical domain knowledge.
2	To be able to comprehend the interdisciplinary interaction associated with Mathematics.
3	To be able to use theoretical and practical domain knowledge gained in the field of Mathematics.
4	To be able to interpret knowledge from different disciplines integrating knowledge in the field of mathematics and produce new information.
5	To be able to define, analyse, model and to solve the problems by scientific methods in Mathematics.
6	To be able to conduct a math related specialistic study independently.
7	To be able to develop new strategic approaches to solve problems occurred in unforeseen and complex math-related applications by taking responsibility.
8	To be able to lead in situations that require solving problems related to the mathematics.
9	To be able to criticize his/her knowledge and skills acquired in the field mathematics.
10	To be able to transfer his/her ideas and suggestions for solutions to problems by supporting quantitative or qualitative data verbally and in writing.
11	To be able to communicate both orally and written in a foreign language.
12	To be able to use computer hardware and information technologies with software required by Mathematics.
13	To be able to contribute to the solution of the social, scientific, cultural and ethical problems related to the Mathematics, and being able to support the development of social, scientific, cultural and ethical values.
14	To be able to develop mathematics-related strategies, policies and operational plans, and to evaluate the results obtained within the framework of quality processes.
15	To be able to use his/her knowledge in the field of mathematics and practical problem-solving skills in interdisciplinary studies.

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5	L6
P1	5	3	4	5	5	5
P2	5	5	4	4	5	5
P3	4	4	5	5	4	4
P4	5	4	5	5	5	5
P5	4	5	5	5	4	4
P6	3	3	3	3	3	3
P7	2	3	4	5	3	3
P11					4	4
P15	2	4	4	5	5	5

