



AYDIN ADNAN MENDERES UNIVERSITY
GRADUATE SCHOOL OF HEALTH SCIENCES
BIostatISTICS
BIostatISTICS (MEDICAL)
BIostatISTICS (MEDICAL) MASTER
COURSE INFORMATION FORM

Course Title	Matrix Algebra								
Course Code	BİS539		Course Level		Second Cycle (Master's Degree)				
ECTS Credit	4	Workload	102 (Hours)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course	The aim of the course is to make students aware of systems of linear equations and their solutions.								
Course Content	Systems of linear equations, their applications, and solutions; matrix operations, inverses and determinants of matrices; linear independence, the rank of a matrix, and the Gram-Schmidt process, eigenvalues, eigen-vectors, singular value decomposition.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Problem Solving								
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading

1	Brualdi, R. A., & Ryser, H. J. (1991). Combinatorial matrix theory. Cambridge: Cambridge University Press.
2	Axler, S. J. (1997). Linear algebra done right (Vol. 2). New York: Springer.
3	Demmel, J. W. (1997). Applied numerical linear algebra (Vol. 56). Siam.
4	Lipschutz, S., & Lipson, M. (2001). Schaum's outline of theory and problems of linear algebra. Erlangga.

Week	Weekly Detailed Course Contents	
1	Theoretical	Matrix calculations
2	Theoretical	The inverse and determinant of the matrix
3	Theoretical	Linear independency
4	Theoretical	Orthogonality
5	Theoretical	The process of Gram-Schmidt-1
6	Theoretical	The process of Gram-Schmidt-2
7	Theoretical	Eigenvalue-Eigenvector
8	Intermediate Exam	Midterm exam
9	Theoretical	Decomposition of eigenvalue and eigenvector-1
10	Theoretical	Decomposition of eigenvalue and eigenvector-2
11	Theoretical	Singular values
12	Theoretical	Singular value decomposition
13	Theoretical	Linear equation systems
14	Theoretical	The application and solutions of linear equation systems
15	Theoretical	Literature review and discussion
16	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Assignment	1	10	0	10
Quiz	10	2	1	30
Midterm Examination	1	10	2	12



Final Examination	1	20	2	22
Total Workload (Hours)				102
[Total Workload (Hours) / 25*] = ECTS				4
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	To know the concept of matrix and matrix types
2	Learning the determinant calculation and its properties
3	To be able to calculate eigenvalues of matrices and eigenvectors corresponding to these eigenvalues
4	To know the matrix functions and calculate some norms of the matrix
5	Know the Solution of linear equations by using matrix algebra

Programme Outcomes (Biostatistics (Medical) Master)

1	To be able to understand the interdisciplinary interaction related with biostatistics.
2	to be able to use Theoretical and practical knowledge at the level of expertise.
3	To be able to interpret the information by integrating information from different disciplines and create new information
4	To be able to analyze the problems encountered by using research methods
5	to be able to conduct a study as an independent specialist
6	To be able to formulate solutions for complex unpredictable problems encountered by developing new approaches and taking responsibility.
7	To be able to resolve problems in environments that require leadership.
8	To be able to evaluate and direct knowledge and skills with a critical approach at the level of expertise.
9	To be able to give statistical advise at the beginning stages of preparing health related projects
10	To be able to get the knowledge and the ability of using statistical packages

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

	L5
P1	3
P2	3
P3	4
P4	4
P5	2
P6	2
P7	3
P8	2
P9	3
P10	3

