



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

Course Title	Applied Multivariate Statistical Methods-I								
Course Code	BİS503		Course Level		Second Cycle (Master's Degree)				
ECTS Credit	6	Workload	152 (Hours)	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	Providing theoretical and practical knowledge about multivariate statistical methods								
Course Content	Matrices algebra, multivariate normal distribution, inferences in multivariate means and linear models, principle components, factor analysis, discriminant analysis, cluster analysis.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation)								
Name of Lecturer(s)	Prof. Mevlüt TÜRE								

#### Assessment Methods and Criteria

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

#### Recommended or Required Reading

1	Bilodeau, M., & Brenner, D. (2008). Theory of multivariate statistics. Springer Science & Business Media.
2	Albayrak, A. S. (2006). Uygulamalı çok değişkenli istatistik teknikleri. Asil yayın dağıtım.
3	Alpar, R. (2011). Çok Değişkenli İstatistiksel Yöntemler, Üçüncü Baskı, Detay Yayıncılık.
4	Sharma, S. (1995). Applied multivariate techniques. John Wiley & Sons, Inc..

Week	Weekly Detailed Course Contents	
1	Theoretical	Matrices algebra
	Practice	Applications with package programs
2	Theoretical	Multivariate normal distribution
	Practice	Applications with package programs
3	Theoretical	Multivariate normal distribution
	Practice	Applications with package programs
4	Theoretical	Inferences in multivariate means and linear models
	Practice	Applications with package programs
5	Theoretical	Inferences in multivariate means and linear models
	Practice	Applications with package programs
6	Theoretical	Principle component analysis
	Practice	Applications with package programs
7	Theoretical	Principle component analysis
	Practice	Applications with package programs
8	Intermediate Exam	Midterm exam
9	Theoretical	Factor analysis
	Practice	Applications with package programs
10	Theoretical	Factor analysis
	Practice	Applications with package programs
11	Theoretical	Discriminant analysis
	Practice	Applications with package programs
12	Theoretical	Discriminant analysis
	Practice	Applications with package programs
13	Theoretical	Cluster analysis
	Practice	Applications with package programs
14	Theoretical	Cluster analysis
	Practice	Applications with package programs



15	Theoretical	Literature review and discussion
	Practice	Literature review and discussion
16	Final Exam	Final exam

**Workload Calculation**

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Lecture - Practice	14	0	2	28
Assignment	1	10	0	10
Quiz	14	2	1	42
Midterm Examination	1	20	2	22
Final Examination	1	20	2	22
Total Workload (Hours)				152
[Total Workload (Hours) / 25*] = ECTS				6

\*25 hour workload is accepted as 1 ECTS

**Learning Outcomes**

1	To be able to comprehend the concept and terminology of multivariate methods
2	To be able to comprehend and apply matrices and vectors algebra for multivariate problems
3	To be able to comprehend multivariate normal distribution
4	To be able to compare multivariate means
5	To be able to comprehend and apply principle components analysis, factor analysis, discriminant analysis and cluster analysis

**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**

	L1	L2	L3	L4	L5
P1	4	4	4	5	4
P2	5	4	5	5	5
P3	4	4	4	5	5
P4	4	4	4	5	5
P5	4	4	4	5	4
P6	4	4	4	5	5
P7	4	4	4	5	4
P8	4	4	4	5	5
P9	4	4	4	5	5
P10	4	5	4	5	5

