



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Statistical Methods For Bioinformatics							
Course Code		BİS530		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		The objective of this course is to provide students with an understanding of statistical methods used in bioinformatics.							
Course Content		Theory and applications for classical and advanced statistical data analysis methods used in bioinformatics. Micro Array Analysis, Cluster Analysis and Trees, Classifcation Methods, Analyzing Sequences, Markov Models.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Project Based Study, Individual Study					
Name of Lecturer(s)									

### Assessment Methods and Criteria

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

### Recommended or Required Reading

1	Ewens, W. J., & Grant, G. R. (2006). Statistical methods in bioinformatics: an introduction. Springer Science & Business Media.
2	Lee, J. K. (2011). Statistical bioinformatics: for biomedical and life science researchers. John Wiley & Sons.
3	Rashidi, H. H., & Buehler, L. K. (1999). Bioinformatics basics: applications in biological science and medicine. CRC press.
4	Shen, S. (2008). Theory and Mathematical methods in Bioinformatics. Springer Science & Business Media.

Week	Weekly Detailed Course Contents	
1	Theoretical	Hypothesis tests
2	Theoretical	Hypothesis tests
3	Theoretical	Correlation Analysis
4	Theoretical	Regression Analysis
5	Theoretical	Logistic Regression Analysis
6	Theoretical	Cluster Analysis and Trees
7	Theoretical	Microarray analysis
8	Intermediate Exam	Midterm exam
9	Theoretical	Classification Analysis-1
10	Theoretical	Classification Analysis-2
11	Theoretical	Analyses of Sequences-1
12	Theoretical	Analysis of Sequences-2
13	Theoretical	Markov Models-1
14	Theoretical	Markov Models-2
15	Theoretical	Literature review and discussion
16	Final Exam	Final exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	3	42
Assignment	2	10	0	20
Seminar	2	15	2	34
Reading	14	0	1	14
Individual Work	10	0	2	20
Quiz	14	2	1	42
Midterm Examination	1	10	1	11



Final Examination	1	15	2	17
Total Workload (Hours)				200
[Total Workload (Hours) / 25*] = <b>ECTS</b>				8
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	Understanding the importance of statistics in bioinformatics
2	To be able to comprehend the fundamental concepts of statistics in bioinformatics
3	To be able to apply statistical techniques to analyze microarray data and interpret the results generated
4	To be able to use advanced statistical tests commonly employed in bioinformatics
5	To be able to comprehend modern statistical methods and software to solve complex problems in bioinformatics

### Programme Outcomes (Biostatistics 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 advice 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

	L2	L3	L4	L5
P1	5	5	4	5
P2	4	5	5	4
P3	5	4	3	4
P4	5	5	5	4
P5	3	4	5	4
P6	4	4	4	3
P7	4	4	4	3
P8	4	4	3	3
P9	5	4	5	4
P10	3	5	4	4

