



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

Course Title		Population Genetics							
Course Code		BİS506		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	4	Workload	100 (Hours)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		The course includes principles of genetic events in population base							
Course Content		Genetic Structure of Population: Genetic variation, measures of genetic variation, frequencies of gene and genotype, Hardy-Weinberg equilibrium • Factors Altering Gene Frequency: Mutation, migration, selection, balance between mutation and selection, genetic drift • Variances: Phenotypic and genotypic variance • Heritability: Importance, characteristics, estimation • Selection: The basic selection model, selection against recessives and dominants • Population Genetics and Human: Genetic counseling, probability of single gene and polygenic diseases, incidence of genetic disease							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation)					
Name of Lecturer(s)									

Assessment Methods and Criteria

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

Recommended or Required Reading

1	Hedrick, P. (2011). Genetics of populations. Jones & Bartlett Learning.
2	Nei, M. (1972). Genetic distance between populations. The American Naturalist.
3	Weir, B. S. (1990). Genetic data analysis. Methods for discrete population genetic data. Sinauer Associates, Inc. Publishers.
4	Lange, K. (2003). Mathematical and statistical methods for genetic analysis. Springer Science & Business Media.

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction to genetic
2	Theoretical	Genetic variation, measures of genetic variation
3	Theoretical	Frequencies of gene and genotype, Hardy-Weinberg equilibrium
4	Theoretical	Mutation, migration, selection
5	Theoretical	Mutation, migration, selection
6	Theoretical	Phenotypic and genotypic variance
7	Theoretical	Phenotypic and genotypic variance
8	Intermediate Exam	Midterm exam
9	Theoretical	Phenotypic and genotypic variance
10	Theoretical	Heritability: Importance, characteristics, estimation
11	Theoretical	Heritability: Importance, characteristics, estimation
12	Theoretical	The basic selection model, selection against recessives and dominants
13	Theoretical	The basic selection model, selection against recessives and dominants
14	Theoretical	Population Genetics and Human: Genetic counseling, probability of single gene and polygenic diseases, incidence of genetic disease
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	14	1	1	28
Midterm Examination	1	10	2	12



Final Examination	1	20	2	22
Total Workload (Hours)				100
[Total Workload (Hours) / 25*] = ECTS				4
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	To be able to comprehend genetic variation, measurement of genetic variation, gene and genotype frequencies, Hardy-Weinberg equilibrium
2	To be able to comprehend the concepts of mutation, migration, selection
3	To be able to comprehend the concepts of the balance between mutation and selection, random deviation
4	To be able to make statistical analysis of population genetics and phylogenetic data
5	To understand the concept of molecular evolution

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 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

	L1	L3	L4
P1	3	3	3
P2	3	2	3
P3	3	2	3
P4	2	3	3
P5	2	3	3
P6	1	3	
P7	3	2	3
P8	3	2	3
P9	3	3	3
P10	1	1	2

