



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Population Genetics							
Course Code		BİS506		Couse Level		Second Cycle (Master's Degree)			
ECTS Credit	4	Workload	100 ( <i>Hours</i> )	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 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

