



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Evolutionary and Ecological Genomics							
Course Code		MBTK633		Couse Level		Third Cycle (Doctorate Degree)			
ECTS Credit	7	Workload	178 ( <i>Hours</i> )	Theory	2	Practice	2	Laboratory	0
Objectives of the Course		To semtinize evolutionary theory at molecular aspect. To choose suitable marker by learning molecular techniques. To applicate for working organism by learning phylogeny concepts.							
Course Content		Molecular bases of evolution, Evolutionary changes at protein and DNA sequences, synonymous and nonsynonymous substitution, the methods used for phylogenetic relationships, phylogenetic trees, molecular clocks, neutral allele theory							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Demonstration, Discussion, Case 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	Nei M, Kumar S (2000) Molecular evolution and phylogenetics. Oxford University press.
2	Singh RS, Uyenoyama MK (2004). Evolution of population biology. Cambridge University press

Week	Weekly Detailed Course Contents	
1	Theoretical	What is Molecular Ecology?
2	Theoretical	Basic information about DNA (Repair, replication, mtDNA etc.)
3	Theoretical	Markers and Sampling in Molecular Ecology
4	Theoretical	Molecular evolution, phylogenetic
5	Theoretical	Phylogeography
6	Practice	Maximum parsimony, maximum possibility and distance approaches
7	Practice	Hardy Weinberg equation, mutation, genetic drift, genetic selection
8	Intermediate Exam	Midterm exam
9	Practice	Neutral theory, population diversity sources
10	Practice	Determination of genetic structures of populations
11	Theoretical	Speciation and Hybridization
12	Theoretical	Protection Genomic
13	Practice	Case Studies
14	Practice	Package Programs for Data Analysis
15	Final Exam	Final exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	0	2	26
Lecture - Practice	13	0	2	26
Assignment	3	0	15	45
Term Project	3	0	6	18
Individual Work	13	0	3	39
Quiz	6	0	3	18
Midterm Examination	1	0	3	3



Final Examination	1	0	3	3
Total Workload (Hours)				178
[Total Workload (Hours) / 25*] = ECTS				7
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	To use and learn molecular techniques
2	To learn phylogenetic methods
3	Rule over to evolutionary theory at molecular level
4	To understand DNA structure, to determine suitable tools for working and to examine mutations
5	To know methods used to phylogenetic relationship
6	To know methods used to phylogenetic relationship
7	To know neutral allele theory
8	To learn Phylogeny concept and to apply to organisms
9	To know synonymous and nonsynonymous substitution in the nucleotides
10	10. To know phylogenetic tree construction

### Programme Outcomes (Molecular Biotechnology( English) Interdisciplinary Doctorate)

1	Ability to identify, analyze and understand problems related to molecular biotechnology and finding valid conclusions with basic knowledge in biotechnology
2	Ability to appropriately use laboratories and their associated equipment as part of research and observation activities through various branches of sciences
3	Ability to understand and interpret biological processes at cell, tissue, organ, system and organism levels
4	Ability to decide and apply appropriate tools and techniques in biotechnological manipulation
5	Ability to comprehend fundamentals of genetics and molecular biology and carry out basic methods in relevant applications
6	Ability to apply the fundamentals of protein and DNA chemistry, and immunology to techniques in biotechnology
7	. Ability to understand and practice basics of applied biotechnology, with acquired knowledge on problem solving approaches
8	Ability to understand and interpret basics of molecular applications within medical, agriculture, veterinary and forensic sciences
9	Ability to perceive biological existence at the global and regional scales, together with comprehension of associated problems
10	Acquiring appropriate knowledge in the field of basic sciences to support perception, analysis and interpretation of biological facts, and ability to use and practice relevant methods for this goal
11	Ability to develop proficiency in laboratory management, including maintenance of an orderly work environment, inventory and ordering, and set up or maintenance of equipment
12	Ability to learn essential methods in microbiology and basic skills in a microbiology labortaory
13	Ability to demonstrate proficiency with standard techniques in liquid measurement, recombinant DNA technology, protein purification and identification, and cell culture

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

	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
P1	5	5	5	5	5	5	5	5	5	5
P2	5	5	5	5	5	5	5	5	5	5
P3	3	3	3	3	3	3	3	3	3	3
P4	5	5	4	4	4	4	4	4	4	4
P5	5	5	4	4	4	4	4	4	4	4
P6	3	3	3	3	3	3	3	3	3	3
P7	4	4	5	5	5	5	5	5	5	5
P8	4	4	5	5	5	5	5	5	5	5
P9	4	4	5	5	5	5	5	5	5	5
P10	4	4	5	5	5	5	5	5	5	5
P11	3	3	3	3	3	3	3	3	3	3
P12	3	3	3	3	3	3	3	3	3	3
P13	5	5	5	5	5	5	5	5	5	5

