AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Bioinformatic Programs and Applications in Recombinant Technology								
Course Code	MBTK643		Couse Level		Third Cycle (Doctorate Degree)				
ECTS Credit	10	Workload	256 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	The aim of this course help the students to learn the fundamentals of nucleic acid and protein sequence analysis and the analysis of complex biological systems using bioinformatic tools								
Course Content	The subject is Genomics, GenBank Sequence Database, Sequence Alignment, Gen Prediction and realated Programe (NCBI's Entrez, BLAST, PSI-BLAST, ClustalW, Pfam, BIOEDIT, GENEMARKER, SEQUIN, CAP3, ORF Finder, GENSCAN, MICROSATELLITE REPEATS FINDER)								
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	Bioinformatics, A practical Guide to the Analysis of Genes and proteins, A.D. Baxevanis ve B.F.F. Ouellette, 1998, ISBN0-471-19196-5

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction to bioinformatics
2	Theoretical	GenBank and BLAST Verbal lecture
3	Theoretical	BLAST practice
4	Theoretical	Comparison of two or more DNA / protein sequences/ combining: alingment/CAP
5	Theoretical	Comparison of two or more DNA / protein sequences/ combining: alingment/CAP
6	Theoretical	Primer design
7	Theoretical	Data entry into GenBank database
8	Intermediate Exam	Midterm exam
9	Theoretical	Phylogenetic tree construction
10	Theoretical	Determination of microsatellite locus lengths
11	Theoretical	Microsatellite data entry
12	Theoretical	Population genetics applications (Microchecker, DNAsp, Popgene, Genepop)
13	Theoretical	Population genetics applications (Arlequin, Populations, Phylip)
14	Theoretical	Population genetics applications (Bottleneck, Migrate, Structure)
15	Final Exam	Final exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	0	3	39
Assignment	6	0	15	90
Term Project	3	0	6	18
Laboratory	5	0	4	20
Individual Work	13	0	5	65
Quiz	6	0	3	18
Midterm Examination	1	0	3	3

Final Examination	1	0	3	3
			Total Workload (Hours)	256
			[Total Workload (Hours) / 25*] = **ECTS**	10
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	By the end of the course the students learn the basic concepts behind Bioinformatics and Computational Biology tools
2	Students will be able to define sequence analysis methods
3	Students will be able to state different application areas of sequence analysis
4	Students have knowledge about the details and area of usage of the most commonly used bioinformatic tools
5	Students have experience to use most important bioinformatic tools
6	Students will be able to interpret the results of sequence analysis methods

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
P1	5	5	5	5	5	5
P2	5	5	5	5	5	5
P3	3	3	3	3	3	3
P4	5	5	4	4	4	4
P5	5	5	4	4	4	4
P6	3	3	3	3	3	3
P7	4	4	5	5	5	5
P8	4	4	5	5	5	5
P9	4	4	5	5	5	5
P10	4	4	5	5	5	5
P11	3	3	3	3	3	3
P12	3	3	3	3	3	3
P13	5	5	5	5	5	5