



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Introduction to Bioinformatics							
Course Code		BİS529		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	4	Workload	98 (Hours)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		Providing theoretical and practical information about the molecular biological aspects of informatics systems.This course aims to develop student’s skills for data mining in descriptive repositories.							
Course Content		Description and base concepts of bioinformatics. Molecular biology databases, the analysis of macromolecular sequences, hidden Markov models, genome assembly and next-generation sequencing, protein-protein interaction and networks, phylogenetics, protein structure and prediction, molecular dynamics, genetic linkage, gene expression.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Demonstration, Project Based 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	Claverie, J. M., & Notredame, C. (2006). Bioinformatics for dummies. John Wiley & Sons.
2	Baxeavanis, A. D., & Ouellette, B. F. (2004). Bioinformatics: a practical guide to the analysis of genes and proteins (Vol. 43). John Wiley & Sons.
3	Zvelebil, M. J., & Baum, J. O. (2007). Understanding bioinformatics. Garland Science.
4	Rashidi, H. H., & Buehler, L. K. (1999). Bioinformatics basics: applications in biological science and medicine. CRC press.

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction to the course: DNA Databases
2	Theoretical	Protein Databases
3	Theoretical	DNA Sequencing and Assembly
4	Theoretical	Translation, Mapping and Primers
5	Theoretical	Protein Structure Web Tools
6	Theoretical	Pairwise Comparison Scoring Matrices
7	Theoretical	Database Similarity Searching
8	Intermediate Exam	Midterm exam
9	Theoretical	Multiple Alignment
10	Theoretical	Motifs, Patterns, and Profiles
11	Theoretical	Genomics - How were genomes sequenced? Genome Databases and the UCSC Browser
12	Theoretical	Genome Browsers 2 Comparative Genomics
13	Theoretical	Dealing with Gene Lists: Gene Ontology
14	Theoretical	Introduction to Phylogenetic Analysis
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
Reading	14	0	1	14
Individual Work	14	0	2	28
Midterm Examination	1	10	1	11



Final Examination	1	15	2	17
Total Workload (Hours)				98
[Total Workload (Hours) / 25*] = ECTS				4
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	To be able to comprehend the importance of bioinformatics in the field of health care
2	Understand the basics of biological databases and use them in molecular biology and genetics
3	Identify comparison tools for two or more series and discuss similarity / noncompliance
4	To be able to understand the flow of information between protein-RNA and DNA and to analyze large-scale biological data using various bioinformatics based tools
5	Be able to discuss genomics, proteomics and pharmacogenetic approaches using bioinformatics tools

### 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	L2
P1	5	5
P2	3	5
P3	3	5
P4	3	3
P5	4	4
P6	3	5
P7	4	4
P8	3	4
P9	3	5
P10	3	4

