AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Genomics								
Course Code	TBY422		Couse Level	First Cycle (Bachelor's Degree)					
ECTS Credit	3	Workload	76 *(Hours)*	Theory	2	Practice	0	Laboratory	0
Objectives of the Course	To learn the gene structure and functioning with the use of bioinformatics databases, to know the "-omic" world and to learn the historical developments from the discovery of DNA to the emergence of the genome concept, To explore the relationships between gene and genome through molecular biology laboratory applications.								
Course Content	Introduction to the course, definition of gene, definition of genome, -omic world, expression of genome, gene expression, chromosome structure, genome size, eukaryotic genes, prokaryotic genes, proteins interacting with DNA, histone proteins, transcription factors, transcription, translation, mitochondria DNA, Miktekondri DNA, human genome, repetitive sequences, molecular markers, bioinformatics tools								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Individual Study								
Name of Lecturer(s)	Lec. Murat Kemal AVCI								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	70

Recommended or Required Reading	
1	Essential Genetics and Genomics, Hartl, Daniel L, 2020, Jones & Bartlett Learning LLC
2	Epigenetic Regulation and Epigenomics Advances in Molecular Biology and Medicine Edited by Robert A. Meyers, 2012 Wiley-VCH Verlag & Co. KGaA
3	Genomik Analiz İçin Biyoinformatik Yöntemler, Muhammet Şakiroğlu, 2020, Palme Yayınevi
4	Principles of Gene Manipulation and Genomics, Seventh Edition, Sandy B., Primrose, Richard M. Twyman, Madlen, MA; Oxford: Blackwell Pub. (2013)

Week	Weekly Detailed Course Contents	
1	Theoretical	Genome Anatomy and study
2	Theoretical	Genome Function and Regulation Activity
3	Theoretical	DNA Methylation and Genome
4	Theoretical	DNA methylation changes in cancer
5	Theoretical	Genome-wide and gene-specific DNA matylation level and structure
6	Theoretical	Histone Modification and Epigenetics
7	Theoretical	Histone Differences and Nucleosome Placement
8	Intermediate Exam	Midterm Exam
9	Theoretical	Genomic Imprintig Biology
10	Theoretical	Molecular Mechanism of Mammalian X Chromosome Inactivation
11	Theoretical	Cancer Epigenetics
12	Theoretical	Environmental Effects of Developmental Programming and Gene Expression on Epigenetic Regulation
13	Theoretical	Plant Epigenetics
14	Theoretical	GENERAL EVALUATION OF THE CONCEPTS OF DNA, GENE, GENOME, CHROMOSOME, RPOTEIN, TRANSCRIPTION, TRANSLATION, PHENOTYPE, EPIGENETICS, GENE EXPRESSION AND GENETIC DISEASES
15	Final Exam	Final exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	2	2	52
Assignment	4	1	1	8
Midterm Examination	1	7	1	8

Final Examination	1	7	1	8
			Total Workload (Hours)	76
			[Total Workload (Hours) / 25*] = **ECTS**	3
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	To learn gene structure, genome and genomic concepts
2	To learn the relationships of metabolic processes in the context of gen-genome-protein-phenotype
3	To have detailed information about genome structure, genome and chromosome organization
4	To be able to define the mechanisms of change in gene expression
5	To learn the role of epigenetic changes on organism

Programme Outcomes *(Agricultural Biotechnology)*	
1	To be able to develop skills in identifying, modeling and solving problems in agricultural biotechnology
2	To be able to synthesize life and engineering sciences for the effective resource planning of agricultural biotechnology applications
3	To be able to interpret about living organisms structure, metabolic and physiological processes in order to propose biotechnological solutions to the agricultural problems
4	To be able to analyze genomic, metabolomic and proteomic information via bioinformatic tools.
5	To have the ability to analyze collected data and interpret the results.
6	To have the ability of individual working ability and to make independent decisions, to work in inter-disciplinary and interdisciplinary teamwork, to communicate by expressing their ideas orally and in writing, clearly and concisely
7	To have the awareness of professional liabilities and ethics
8	To be able to follow current national and international problems

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

	L1	L2	L3	L4	L5
P1	4	3	4	3	4
P2	5	4	3	4	5
P3	4	5	5	5	4
P4	5	4	4	4	5
P5	4	5	2	5	4
P6	5	4	4	4	5
P7	4	5	3	5	4
P8	5	4	5	4	3