



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Molecular Biology of the Cell- I							
Course Code		BYF522		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	3	Workload	78 (Hours)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		The purpose of the course is to be able to tell about the basic genetic mechanisms in the cell							
Course Content		Basic genetic mechanisms, RNA and protein synthesis, DNA replication, recombinant DNA technology, the cell nucleus and its properties, control of gene expression.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual 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	Medical Physiology (Guyton & Hall)
2	Molecular Biology of the Cell, Alberts, Roberts, Lewis, Raff, Tüba Yayınları

Week	Weekly Detailed Course Contents	
1	Theoretical	The structure and properties of the cell
2	Theoretical	The organnels of the cell and their structures
3	Theoretical	Functions of cell organnels
4	Theoretical	Functional systems in the cell
5	Theoretical	Movement of the cells
6	Theoretical	Genes found in nucleus of the cell
7	Intermediate Exam	Midterm exam
8	Theoretical	The transfer of the codes of DNA to RNA
9	Theoretical	Types of RNA and their functions
10	Theoretical	Types of RNA and their functions
11	Theoretical	Gene expression
12	Theoretical	The control of gene expression
13	Theoretical	The control of gene expression
14	Theoretical	Protien synthesis
15	Theoretical	Protien synthesis
16	Final Exam	Final exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Assignment	4	2	2	16
Reading	8	1	1	16
Midterm Examination	1	6	2	8
Final Examination	1	8	2	10
Total Workload (Hours)				78
[Total Workload (Hours) / 25*] = ECTS				3

\*25 hour workload is accepted as 1 ECTS

### Learning Outcomes

1	To gain knowledge on the structure and properties of the cell
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2	To gain knowledge on the organelles of the cell, their structures and functions
3	To comprehend the functional systems in the cell
4	To be able to tell the basic genetic mechanisms in the cell
5	To be able to explain the synthesis of RNA and proteins, DNA replication and the control of gene expression

#### Programme Outcomes (Biophysics Master)

1	To be able to acquire an up-to-date theoretical and practical background on biophysical and electrophysiological research
2	To be able to acquire a background needed for basic biophysical research and having the ability to use the theoretical and practical knowledge in the field
3	To be able to attain the ability to get access to the up-to-date knowledge, interpret and improve the information in the field of biophysics
4	To be able to attain the ability to perform experimental methods in the field, produce new approaches and ability to produce analytical solutions to the problems faced during application of new methods
5	To be able to reach a level to follow research in the field, to possess written and spoken communication skills and be able to join discussions
6	To be able to acquire knowledge and skill to apply scientific principles of ethics.
7	To be able to gain knowledge and skill about the basic issues of electric and magnetic fields, the interaction of light with matter, spectroscopy, radiation biophysics such as radiation, electromagnetic spectrum, ionizing radiation and radioactivity; learn about the physical properties of these issues and to be able to evaluate biological effects of radiation on tissues
8	To be able to construct knowledge and skill about the molecular structure and function in living systems, bioenergetic concepts, information theory and the processing of information in living systems
9	To be able to master about the basic principles of bioelectrical incidents that occur in cells, such as transport across membranes, electrical properties of membranes, resting membrane potential, and to be able to discuss the bioelectrical behaviour of excitable membranes
10	To be able to define the kinds, sources and biophysical properties of bioelectrical signals, to store knowledge in areas of biophysical concepts and characteristics such as nerve action potential and compound nerve action potential and to record to record these potential variants, analyze and evaluate the results
11	To be able to define basic biophysical principles of the visualization techniques used in medical field and the techniques used to determine biological signals, such as electromyography (EMG), electroencephalography (EEG), and electrocardiography (ECG), and attain the ability to apply these techniques
12	To be able to attain knowledge on molecular biophysics and its basic principles
13	To be able to attain the ability to plan and conduct projects in the field of biophysics, and attain the ability to write and publish scientific results
14	To be able to acknowledge the national and international laws and regulations about the concepts related to biophysics
15	To be able to attain the skills to organize activities together with non-governmental organizations or to conduct collaborative projects with other disciplines
16	To be able to acquire the ability of critical thinking, making judgements and solving problems in the field of biophysics
17	To be able to use statistical, computational and communicational tools, which can be applied in the field of biophysics
18	To be able to use basic knowledge and skills of the field; be able to evaluate data, identify problems and propose solutions

#### 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	5	5	5	5	5
P2	5	5	4	4	4
P3	5	5	4	5	5
P4	5	5	4	4	4
P5	5	5	4	5	5
P6	2	2	2	3	2
P7	1	1	1	1	1
P8	4	4	5	5	5
P9	2	2	2	2	2
P10	1	1	1	1	1
P11	1	1	1	1	1
P12	5	5	5	5	5
P13	4	4	4	4	4
P14	2	2	3	2	2
P15	4	4	4	4	4
P16	4	4	4	4	4
P17	4	4	4	4	4



P18	5	5	5	5	5
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