

### AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Cell Culture and Techniques								
Course Code		BYF538		Couse Level		Second Cycle (Master's Degree)				
ECTS Credit	4	Workload	102 <i>(Hours)</i>	Theory	/	2	Practice	2	Laboratory	0
Course Code ECTS Credit 4 Objectives of the Course Course Content		To acquire general information on the usage and preperation of cell cultures								
Course Content		Introduction to general prope laboratory rule passage of ce contamination	o cell cultures, rties, selection es and prepera Il cultures, me and cytotoxic	genera n and st ations in ethods to sity, the	I prope erilizat o cell cu o deter kinetic:	rties of co ion of the ulture labo mine cell s of cell d	ell cultures, fre materials use oratories, gene viability, cell c leath in culture	equently used d in preperation eral rules in ce counting, how es, storage of f	cell culture lines on of cell cultures ell culture innocul to perform viabili frozen cultures	and their s, general ation, ty tests,
Work Placement N/A										
Planned Learning Activities		and Teaching	Methods	Explan Individ	nation ( ual Stu	Presenta dy	tion), Experime	ent, Demonstr	ation, Discussior	٦,
Name of Lecturer(s)										

### **Assessment Methods and Criteria**

Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	60
Practice Examination	1	20

#### **Recommended or Required Reading**

1	Culture of Animal Cells, Edit: R. Ian Freshney, Wiley-Liss Press, 2005
2	Molecular Cell Biology, Edit: Harvey Lodish, W.H. Freeman and Company, 2008
3	Cell and Tissue Culture. Doyle A and Griffiths JB (eds). John Wiley&Sons.
4	Basic Cell Culture Protocols. 3rd Ed. Helgason CH, Miller CL (eds). 2004, Humana Press.

Week	Weekly Detailed Cours	Detailed Course Contents				
1	Theoretical	Introduction to cell cultures, general properties of cell cultures				
	Practice	Introduction to cell cultures, general properties of cell cultures				
2	2 Theoretical Primary cell cultures and their general properties					
	Practice	Primary cell cultures and their general properties				
3 Theoretical Immortal cell cultures and their general properties						
	Practice	Immortal cell cultures and their general properties				
4	Theoretical	Monolayer cell cultures and their general properties				
	Practice	Monolayer cell cultures and their general properties				
5	Theoretical	election and sterilization of the materials used in preperation of cell cultures, general laboratory les and preperations in cell culture laboratories				
	Practice	Selection and sterilization of the materials used in preperation of cell cultures, general laboratory rules and preperations in cell culture laboratories				
6	Theoretical	Preperation of media, sera, tripsin and other materials to be used in cultures				
	Practice	Preperation of media, sera, tripsin and other materials to be used in cultures				
7	Theoretical	General rules in cell culture innoculation, cell morphology and passage of cell cultures				
	Practice	General rules in cell culture innoculation, cell morphology and passage of cell cultures				
8	Intermediate Exam	Midterm exam				
9	Theoretical	Control of cell culture flasks, cell tripsination				
	Practice	Control of cell culture flasks, cell tripsination				
10	Theoretical	Methods to determine cell viability, cell counting, how to perform viability tests				
	Practice	Methods to determine cell viability, cell counting, how to perform viability tests				
11	Theoretical	Preperation of cell plates for two and three dimentional experiments, cell innoculation				
	Practice	Preperation of cell plates for two and three dimentional experiments, cell innoculation				



12	Theoretical	Collection of sferoids in three dinemtional cultures, fixation and investigation of these materials using light and electron microscopy			
	Practice	Collection of sferoids in three dinemtional cultures, fixation and investigation of these materials using light and electron microscopy			
13	Theoretical	Contamination and cytotoxicity, the kinetics of cell death in cultures			
	Practice	Contamination and cytotoxicity, the kinetics of cell death in cultures			
14	Theoretical	Storage of frozen cultures			
	Practice	Storage of frozen cultures			
15	Final Exam	Final Exam			

# **Workload Calculation**

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	1	2	39
Lecture - Practice	13	1	2	39
Midterm Examination	1	10	2	12
Final Examination	1	10	2	12
		Т	otal Workload (Hours)	102
		[Total Workload (	Hours) / 25*] = <b>ECTS</b>	4

\*25 hour workload is accepted as 1 ECTS

# Learning Outcomes

1	Learn about the usage fields and general properties of cell cultures
2	To copmrehend the properties and growing conditions of different cell lines used in cell culture studies
3	Learn about general methods used in laboratories in cell culture studies, learn about cell counting and cell viability tests
4	Gain knowledge on important points in the studies with cell cultures, such as cytotoxicity
5	To gain the basic practical abilities related to cell culture studies

## Programme Outcomes (Biophysics Master)

i i ogi	anime outcomes (Biophysics Master)
1	To be able to acquire an up-to-date theoritical and pratical background on biophysical and electrobiophysical research
2	To be able to acquire a background needed for basic biophysical research and having the ability to use the teoritical 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 ocur 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 electromyigraphy (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 judjements and solving problems in the field of biophysics
17	To be able to 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 skill	s of the field; be able to evaluate data	, identify problems and propose solutions
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#### 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	5	5	5
P3	5	5	5	5	5
P4	5	5	5	5	5
P5	5	5	5	5	5
P6	2	2	2	2	2
P7	3	3	3	3	3
P8	3	3	3	3	3
P9	3	3	3	3	3
P10	3	3	3	3	3
P11	4	3	4	4	3
P12	3	3	3	3	3
P13	4	3	4	4	3
P14	3	3	3	3	3
P15	3	3	3	3	3
P16	3	3	3	3	3
P17	3	3	3	3	3
P18	3	4	3	3	4

