

ELECTROPHYSIOLOGY

1	Course Title:	ELECTROPHYSIOLOGY
2	Course Code:	TIP2073
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	1
6	Semester:	1
7	ECTS Credits Allocated:	3.00
8	Theoretical (hour/week):	1.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Dr. Öğr. Üyesi ENGİN SAĞDİLEK
15	Course Lecturers:	Dr. Öğr. Üyesi Engin SAĞDİLEK
16	Contact information of the Course Coordinator:	E-mail: esagdilek@uludag.edu.tr Tel: (0 224) 2954045 Bursa Uludağ Üniversitesi, Tıp fakültesi, Temel Tıp Bilimleri, Biyofizik Anabilim Dalı, 16059, Nilüfer, BURSA
17	Website:	http://bilgipaketi.uludag.edu.tr/Ders/IndexENG/1116596
18	Objective of the Course:	Changes in membrane potential plays an important role in signal transduction at excitable cells such as neuron and muscle cells. The purpose of this course; to examine the main events in the formation of membrane potentials, graded potentials and action potentials, to understand recording techniques of these potential changes and to know how to use bioelectric potentials applied in clinic such as ECG, EMG and EEG.
19	Contribution of the Course to Professional Development:	Knowing these properties of excitable cells and tissues will provide a more dominant perspective on the diseases of excitable tissues and organs in the clinic.
20	Learning Outcomes:	
	1	To explain the functions of the cell membrane
	2	To understand the resting membrane potential
	3	To predict how could be change of membrane potential
	4	To understand that the graded potentials and action potential are the transfer of signal/knowledge.
	5	To compare the recording techniques of bioelectric potentials
	6	To understand the basics of bioelectric potentials in use of clinical practice and its recording techniques.
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Cell membrane structure and functions	

2	Transport mechanisms of membrane, osmosis and diffusion			
3	Ion channels			
4	Membrane potentials			
5	Graded potentials			
6	Action potential			
7	Nerve pulse propagation			
8	Common action potentials			
9	Voltage and patch clamp methods			
10	Electroencephalography (EEG)			
11	Evoked Potentials			
12	Electromyography (EMG) and nerve conduction velocity			
13	Electrocardiography (EKG)			
14	General features of bioelectric signals			
22	Textbooks, References and/or Other Materials:	1. Widmaier EP, Raff H, Strang KT. Vander İnsan Fizyolojisi. 14. baskı. İzmir; Güneş Tıp Kitapevleri: 2018. 2. Herman IP. Physics of the Human Body. Springer; 2006. 3. Pehlivan F. Bivofizik. 11. baskı. Pelikan Yayınevi: 2021		
Activites		Number	Duration (hour)	Total Work Load (hour)
Theoretical		14	1.00	14.00
Practicals/Labs		0	0.00	0.00
Self study and preperation		14	1.00	14.00
Homeworks		2	15.00	30.00
Projects		0	0.00	0.00
Field Studies		0	0.00	0.00
Midterm exams		1	15.00	15.00
Others		0	0.00	0.00
Final Exams		1	15.00	15.00
TERM LEARNING ACTIVITIES		NUMBER	WEIGHT	
Total Work Load				93.00
Midterm Exam/ 30 hr	1	40.00		2.77
ECTS Credit of the Course				3.00
Home work-project	0	0.00		
Final Exam	1	60.00		
Total	2	100.00		
Contribution of Term (Year) Learning Activities to Success Grade		40.00		
Contribution of Final Exam to Success Grade		60.00		
Total		100.00		
Measurement and Evaluation Techniques Used in the Course		Multiple choice exam, classical exam, oral exam		
24	ECTS / WORK LOAD TABLE			

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	5	5	5	3	5	0	0	0	0	1	0	0	0	0	1	0
ÖK2	5	5	5	3	5	0	5	0	0	1	0	0	0	0	0	0
ÖK3	5	5	5	3	0	5	0	5	0	1	0	0	0	0	0	0
ÖK4	4	5	0	3	5	0	5	0	5	1	0	0	0	0	0	0
ÖK5	5	3	0	5	5	0	0	5	0	1	0	0	0	0	0	0
ÖK6	5	3	0	5	5	0	5	0	5	1	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			