BIOPHYSIC

1	Course Title:	BIOPHYSIC	
2	Course Code:	TIP1095	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	1	
6	Semester:	1	
7	ECTS Credits Allocated:	2.00	
8	Theoretical (hour/week):	2.00	
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:	Doç. Dr. Engin Sağdilek	
15	Course Lecturers:	Dr. öğr. Üyesi Engin Sağdilek	
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:		
18	Objective of the Course:	To evaluate the properties of the cell, the structure and functions of the cell membrane, the transmission of water and substances through the membrane and the signal transmission, membrane bioelectric potentials, the atomic and molecular organization of the living system, the biological effects of ionizing and non-ionizing radiation, the basic structure of the living system and its interaction with physical factors around it, knowing the dynamics of the circulatory system is the aim of this course.	
19	Contribution of the Course to Professional Development:	Knowing the basis and structure of life is the basis of learning animal health and diseases.	
20	Learning Outcomes:		
		1	To be able to comprehend the cell, which is the basic structure of the living system.
		2	To be able to establish the relationship between cell and tissue, organ, system and organism.
		3	Understanding the communication of the cell with the organism.
		4	To understand the biological effects of ionizing and non-ionizing radiation and to draw the results.
		5	To be able to comprehend the dynamics of circulation.
		6	
		7	
		8	
		9	
		10	
21	Course Content:		
	Course Content:		
Week	Theoretical		Practice

1	Introduction to biophysics. Atomic and molecular structure of matter.	
2	Intramolecular and intermolecular interactions. Basic structure and organization of living systems.	
3	Water, body fluids, electrolytes. Osmosis and diffusion.	
4	General properties of the cell. The structure of the cell membrane.	
5	Cell membrane functions. Membrane resting potential.	
6	Action potential, Graded potentials.	
7	Voltage clamp, Patch clamp, EMG, EKG.	
8	Fluid mechanics laws and circulation system.	
9	Dynamics of the circulatory system.	
10	Flow properties of blood and hemoreology.	
11	Electromagnetic spectrum and radiation. Radioactivity units and measurement methods.	
12	Ionizing radiation and its biological effects.	
13	Non-ionizing radiation and its biological effects.	
14	Basic Biophysical methods	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	1.00	14.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	2.00	2.00
Others	14	1.00	14.00
Final Exams	1	2.00	2.00
Total Work Load			60.00
Total work load/ 30 hr			2.00
ECTS Credit of the Course			2.00

2. Pehlivan F. Biyofizik. 11. baskı. Pelikan Yayınevi: 2021.
3. Çelebi G. Biyomedikal Fizik. 4. Baskı. İzmir, Barış Yayınları: 2008.

23	Assesment
Midterm Exam	40.00
Home work-project	0.00
Total	100.00
Success Grade	
Contribution of Final Exam to Success Grade	60.00
Total	100.00
Measurement and Evaluation Techniques Used in the Course	Test
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	0	2	0	0	0	0	0	0	0	3	2	0	0	0	0

ÖK2	5	0	2	0	0	0	0	0	0	0	3	2	0	0	0	0
ÖK3	5	0	2	0	0	0	0	0	0	0	3	2	0	0	0	0
ÖK4	3	0	1	0	2	0	3	0	0	0	3	2	0	0	0	0
ÖK5	5	0	2	0	0	0	0	0	0	0	3	2	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**