

# BIOPHYSIC

<b>1</b>	Course Title:	BIOPHYSIC	
<b>2</b>	Course Code:	TIP1095	
<b>3</b>	Type of Course:	Compulsory	
<b>4</b>	Level of Course:	First Cycle	
<b>5</b>	Year of Study:	1	
<b>6</b>	Semester:	1	
<b>7</b>	ECTS Credits Allocated:	2.00	
<b>8</b>	Theoretical (hour/week):	2.00	
<b>9</b>	Practice (hour/week):	0.00	
<b>10</b>	Laboratory (hour/week):	0	
<b>11</b>	Prerequisites:	None	
<b>12</b>	Language:	Turkish	
<b>13</b>	Mode of Delivery:	Face to face	
<b>14</b>	Course Coordinator:	Doç. Dr. ENGİN SAĞDİLEK	
<b>15</b>	Course Lecturers:	Dr. öğr. Üyesi Engin Sağdılek	
<b>16</b>	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	
<b>17</b>	Website:		
<b>18</b>	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.	
<b>19</b>	Contribution of the Course to Professional Development:	Knowing the basis and structure of life is the basis of learning animal health and diseases.	
<b>20</b>	Learning Outcomes:		
		<b>1</b>	To be able to comprehend the cell, which is the basic structure of the living system.
		<b>2</b>	To be able to establish the relationship between cell and tissue, organ, system and organism.
		<b>3</b>	Understanding the communication of the cell with the organism.
		<b>4</b>	To understand the biological effects of ionizing and non-ionizing radiation and to draw the results.
		<b>5</b>	To be able to comprehend the dynamics of circulation.
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<b>21</b>	Course Content:		
		<b>Course Content:</b>	
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.	
22	Textbooks, References and/or Other Materials:	1. Herman IP. Physics of the Human Body. Springer; 2006. 2. Pehlivan F. Biyofizik. 11. baskı. Pelikan Yayınevi: 2021. 3. Çelebi G. Biyomedikal Fizik. 4. Baskı. İzmir; Barış Yayınları: 2008.
23	Assesment	
<b>TERM LEARNING ACTIVITIES</b>		
	<b>NUMBE R</b>	<b>WEIGHT</b>
Midterm Exam	1	40.00
Quiz	0	0.00
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		Test
24	<b>ECTS / WORK LOAD TABLE</b>	

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

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
<b>LO: Learning Objectives PQ: Program Qualifications</b>																
<b>Contribution Level:</b>	<b>1 very low</b>			<b>2 low</b>			<b>3 Medium</b>			<b>4 High</b>			<b>5 Very High</b>			