

THE PRINCIPLES OF FLUID MECHANICS IN THE CIRCULATORY SYSTEM

1	Course Title:	THE PRINCIPLES OF FLUID MECHANICS IN THE CIRCULATORY SYSTEM	
2	Course Code:	TIP1090	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	1	
6	Semester:	2	
7	ECTS Credits Allocated:	2.00	
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:	Öğr.Gör. Tıp Fakültesi Öğrenci İşleri	
15	Course Lecturers:	Yrd. Doç. Dr. Engin SAĞDİLEK	
16	Contact information of the Course Coordinator:	Yrd. Doç. Dr. Engin SAĞDİLEK Uludağ Üniversitesi, Tıp fakültesi, Temel Tıp Bilimleri, Biyofizik Anabilim Dalı, 16059, Nilüfer, BURSA	
17	Website:	http://tip.uludag.edu.tr/egitimprogramlari.php	
18	Objective of the Course:	As a liquid and fluid blood, which is one of the basic branches of physics with the principles of fluid mechanics is the main objective of this course examination. Basic properties of liquids and fluids, hydrostatic laws, basic concepts of the hydrodynamics, blood pressure, blood flow, blood flow properties, aneurysms, and as a whole circulatory system dynamic's grasp of this course targets.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	To establish the basic characteristics of the liquids and fluids.
		2	To understand the basic laws of the hydrostatic and hydrodynamics.
		3	To establish the relationship between the blood and the principles of fluid mechanics.
		4	To understand the blood pressure and blood flow.
		5	To establish the relationship between the blood flow disorders and the circulatory system diseases.
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21	Course Content:		
		Course Content:	
Week	Theoretical	Practice	
1	Introduction, general properties of fluids		
2	Hydrostatic pressure, blood pressure		

3	The basic concepts of hydrodynamic, flow rate, flow, Continuity principle, Bernoulli's law	
4	Flow, pressure, resistance, Poiseuille law	
5	Viscosity	
6	Newtonian and non-Newtonian fluids, Laminar flow and Turbulent flow	
7	Wall stress and Laplace law	
8	Aneurysms	
9	Hemorheology	
10	Hemorheology	
11	Dynamics of the circulatory system	
12	Dynamics of the circulatory system	
13	Dynamics of the circulatory system	
14	Dynamics of the circulatory system	
22	Textbooks, References and/or Other Materials:	<p>1. Herman IP. Physics of the Human Body. Springer; 2006.</p> <p>2. Pehlivan F. Biyofizik. 2. baskı. Hacettepe-TAŞ; 2004.</p> <p>3. Çelebi G. Biyomedikal Fizik. 4. Baskı. İzmir; Barış Yayınları; 2008.</p> <p>4. Serway RA. Physics: For Scientists & Engineers. Saunders; 1992.</p> <p>5. Waite L, Fine J. Applied Biofluid Mechanics. McGraw-Hill Companies; 2007.</p> <p>6. Guyton AC, Hall JE. Textbook of Medical Physiology. 11th ed. Elsevier; 2007.</p> <p>7. Widmaier EP, Raff H, Strang KT. Vander İnsan Fizyolojisi. 10. baskı. İzmir; Güven Kitabevi; 2010.</p> <p>8. Barrett KE, Barman SM, Boitano S, Brooks HL. Ganong's Review of Medical Physiology. 23rd ed. USA: McGraw-Hill Companies; 2010.</p>
23	Assesment	
TERM LEARNING ACTIVITIES		NUMBER
		WEIGHT
Midterm Exam		1
Quiz		0
Home work-project		0
Final Exam		1
Total		2
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		
24	ECTS / WORK LOAD TABLE	

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	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	16.00	16.00
Others	0	0.00	0.00
Final Exams	1	16.00	16.00
Total Work Load			76.00
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	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	0	5	0	0	4	4	0	0	0	0	4	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							