




DISCIPLINE SHEET

1.-Info about the program

FOUNDATION FOR DEVELOPMENT AND MANAGEMENT	
1.2-Faculty	FACULTY OF MEDICINE
1.3-Departament	Preclinical/Fundamental Discipline
1.4-Study domain	Health
1.5-Study cycle	Bachelor
1.6-Study program/ Calification	Medicine-English



2.- Info about discipline

2.1- Name of the discipline		PHYSIOLOGY_I						
2.2-Course lecturer		Lect. Dr. IOANID Nicolae , MD, PhD						
2.3-Laboratory lecturer		Univ. Teaching Assistant SEMEN Elena-Daniela , PhD(c), MD						
2.4-Year of study	II	2.5 Semester	I	2.6 Evaluation type	Exam	2.7. Discipline regime	Content	DF
							Mandatory	DOB

3.-Total time (hours of didactic activity per semester)

3.1-Number of hours per week	4	3.2-course	2	3.3-laboratory	2
3.4-Total hours of the curriculum	56	3.5-course	28	3.6-laboratory	28
Distribution of time					Hours
Study after manual, course support, bibliography and notes					35
Additional documentatin in the library, on the specialized electronic platforms and on the field					15
Training seminars/laboratories/projects, themes, papers,portofolios and essays					10
Tutoring					5
Examination					4
Other activities					-
3.7-Individual study hours	69				
3.8 -Total hours per semester	125				
3.9 -Credit number	5				

4.-Preconditions (where applicable)

4.1 -curriculum	To ensure a comprehensive understanding and effective progression of the educational process within the discipline of Physiology, the simultaneous study of Anatomy, Embryology, and Biochemistry is essential
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4.2 -skills	no
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5.-Conditions

5.1-course progress	- Lecture hall, equipped with whiteboard and laptop, video projector and suitable software - Power Point
5.2-course progress	- equipped with whiteboard and laptop, video projector and suitable software - Power Point; - specific laboratory equipment

6. Learning outcomes

Knowledge	Identifies, describes and explains fundamental notions regarding the characteristics of the healthy human body, structural (anatomical, histological, cellular and molecular) and functional (physiological, biochemical, biophysical) as well as the principles of methods for investigating biological functions.
Skills	Correctly interpret and apply fundamental notions regarding the structure and functions of the human body and methods for investigating biological functions
Responsibilities and autonomy	Integrates fundamental notions and methods of investigating biological functions, formulates and assumes reasoned conclusions regarding the state of health or disease.

7. -Objectives of the discipline

7.1 -The general objectives of the discipline	- The Physiology course and practical works have as main objectives: the presentation and explanation of the notions of general physiology, the presentation and explanation of the basic functions of the digestive system, the internal environment and the blood, as well as the integration of theoretical notions with medical practice - Identification, description, and explanation of the fundamental concepts regarding the characteristics of the healthy human organism, including structural (anatomical, histological, cellular, and molecular) and functional
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	(physiological, biochemical, biophysical) features, as well as the principles of methods for investigating biological functions;
7.2- Specific objectives	<ul style="list-style-type: none"> - Theoretical preparation of students to be able to assimilate knowledge through systematized information on the phenomena of functional integration, from the cell to the organism; - Illustrating some theoretical notions through the demonstrative presentation of some classical experiments within the framework of practical works; - Educating students in the spirit of the rigor of the medical act and understanding the determining role of fundamental sciences for its level, as well as for their professional training -Correct interpretation and application of the fundamental concepts regarding the structure and functions of the human organism and the methods for investigating biological functions. - Integration of fundamental concepts and methods for investigating biological functions, formulation and assumption of substantiated conclusions regarding health status or disease.

8.-Content

8.1-Course	Hours /week	Teaching methods
1. General Information. Components of the cardiovascular system. Types of cardiac fibers. Functional organization of the myocardial fiber. The fundamental properties of the heart.	2	Oral lecture delivered using structured, interactive PowerPoint presentations, enriched with rich and suggestive iconography, images, tables, explanatory diagrams, and even small animations that simulate the course of physiological processes in the body. The lectures are available on the university's Moodle e-learning platform. The taught material is reviewed and updated with relevant information up to the last moment.
2. Cardiac bioelectrical potentials The automaticity of the heart. Physiology of the nodal system. Cardiac excitability. The conduction function of the myocardium.	2	
3. The physiological basis of the electrocardiogram. Morphology of ECG elements. Normal ECG. Heart pump function.	2	
4. Excitation-contraction coupling. Myocardial contractility. Contractility indices. Preloading. Postload	2	
5. Cardiac cycle. Intracavitary pressures during the cardiac cycle. Correlation between mechanical and volumetric phenomena	2	



<p>that occur during the cardiac cycle. Sounds of the heart. Cardiac output.</p>			<p>Each lecture begins with the educational objectives and concludes with a summary of the presented concepts (key takeaways).</p>
<p>6. Physiology of coronary circulation. Coronary circulation parameters. Self-regulation and neuro-humoral regulation of coronary circulation. The work output of the heart. Myocardial metabolism.</p>		2	
<p>7. Pressure-flow-cross-section-velocity relationship. Physiology of arterial circulation. Hemodynamic parameters of arterial circulation. Blood pressure.</p>		2	
<p>8. Blood pressure determinants. Physiology of microcirculation. Physiology of venous circulation. Vascular distensibility and compliance. Physiology of lymphatic circulation.</p>		2	
<p>9. Cardio-vascular regulation 1. The spinal cord and the centers played a role in cardio-vascular regulation.</p>		2	
<p>10. Regulation of cardiac activity. Sympathetic and parasympathetic innervation of the heart. Reflexogenic areas and nerve centers involved in regulating cardiac activity.</p>		2	
<p>11. Vascular regulation: vasoconstrictor and vasodilator regulation. Receptors involved in the reflex regulation of cardio-vascular activity. The role of the higher nervous system in regulating CV</p>		2	
<p>12. Cardio-vascular regulation 2. Self-regulation of blood flow. Metabolic regulation. Endothelium-mediated regulation.</p>		2	
<p>13. Extrinsic control of vascular blood flow. The role of sympathetic and parasympathetic innervation. The role of reflex zones. Mood factors.</p>		2	
<p>14. Functional organization of the respiratory system. Mechanics of breathing. Lung volumes and capacities. Physiology of pulmonary ventilation. Physiology of pulmonary circulation. Ventilation/infusion ratio.</p>		2	



Mandatory Bibliography:

1. Boron, W.F., Boulpaep, E.L., Zăgrean, L. *Medical Physiology*, 3rd ed. Hipocrate Publishing House, Bucharest, 2017;
2. Căruntu, C., Scheau, C., & Bădărău, Ioana Anca. *Physiology: Nervous System, Muscular System, Cardiovascular System*. Carol Davila University Publishing House, Bucharest, 2020.

8.2 -Laboratory	Teaching methods	Hours /week	Observation
1. SimHeart – Langendorffe experiment (virtual physiology) on isolated rat heart. The effects of chemical mediators on the fundamental properties of the heart.	Interactive lecture Practical demonstrations Bulletin Interpretation solving	2	The oral lecture is supported by structured, interactive PowerPoint presentations, accompanied by rich and suggestive iconography, available on the university's Moodle e-learning platform. The taught material is reviewed and updated with current information. Each practical session outlines the educational objectives at the beginning and concludes with a summary of the presented concepts (key takeaways). Presentation of typical examples of interpretation reports and interactive discussions at the end of each practical session. Assessment of the acquisition of key knowledge through multiple-choice questions at the end of the practical session.
2. The automatism of the frog's heart. The effect of ions and chemical mediators. The effect of vagus nerve stimulation on the heart. Periodic inexcitability of the heart.		2	
3. Blood pressure measurement. Electrocardiogram I - genesis, waves, segments, intervals. Electrocardiogram recording		2	
4. Electrocardiogram II. Morphology of normal ECGgraphics . Electrocardiogram III: interpretation		2	
5. ECG recapitulation. Interpretation on exercises.		2	
6. ECG. Yes – online. Exploration of peripheral circulation.		2	
7. Carotid sphygmogram. Digital plethysmography.		2	



8. Functional exploration of vegetative tone . Phonocardiogram.		2	
9. Change in cardiovascular, respiratory and metabolic parameters during submaximal stress testing with a cycle ergometer		2	
10. Spirometry. Ventilometric parameters on volume-time curve and flow-volume loop.		2	
11. Interpretation of the ventilometric bulletin.		2	
12. Complementary techniques for respiratory functional exploration		2	
13. Review and recovery of laboratories.		2	
<p>Bibliography:</p> <p>1-Căruntu, C., Scheau, C., & Bădărău, Ioana Anca. <i>Physiology: Nervous System, Muscular System, Cardiovascular System</i>. Carol Davila University Publishing House, Bucharest, 2020.</p> <p>2-Căruntu, C., Scheau, C., & Bădărău, Ioana Anca. <i>Physiology: Respiratory System, Blood, Fluid Compartments, Renal-Urological System, Acid-Base Balance</i>. Carol Davila University Publishing House, Bucharest, 2020;</p>			

9.-Corroborating the contents of the discipline with the expectations of the representatives of the epistemic communities, professional associations and representatives employers in the field related to the program

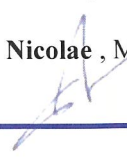
Knowledge and abilities are established as didactic objectives and specified as such in the analytic programs that are revised yearly. After their analysis by the study discipline staff, these are discussed and approved in the Curricular Committee, towards curricular harmonization among the various study disciplines. Along this entire process systematic evaluation is performed, directly if possible, regarding the correspondence of the contents to the expectations of the academic community and of the representatives of the social community, professional associations, and employers. As primary goal the discipline intends to offer the students optimal background for the following years of study in the program for License in Medicine, in the perspective of successfully hiring, immediately after graduation, in residence programs from Romania and other EU countries

10.-Evaluare



Activity Type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Weight of the final grade
10.4 Course	<ul style="list-style-type: none"> - Knowledge for grade 5: - Definition of the phenomenon; - The physiological mechanism of occurrence of the phenomenon; - The physiological limits of the phenomenon. - Knowledge for grade 10: - Definition of the phenomenon; - The physiological mechanism of occurrence of the phenomenon; - the physiological limits of the phenomenon; - Graphs relevant to the physiological phenomenon; - General regulatory mechanisms; - physiological and pathological variations; - Coping mechanisms; - Integration of the physiological phenomenon into the general functions of the body. 	1. Continuous evaluation – 2 seminars Final assessment – 50 multiple-choice questions	10% 50%
10.5 Laboratory	<ul style="list-style-type: none"> - Knowledge for grade 5: - The principle of the method; - Description of the practical methodology; - Normal values. - Knowledge for grade 10: - Principle of the method; - Description of the practical methodology; - Normal values; - physiological and pathological variations; - Bulletin interpretation; - Clinical significance. 	Final evaluation a skill test on a practical activity and 2 report interpretations (1 ECG and 1 spirometry) PowerPoint presentation on a specific topic..	30% 10%
10.6 Minimum Performance Standard			
<ul style="list-style-type: none"> • To pass the theoretical exam: students must obtain or minimum grade of 5, i.e. 25 out of 50 points • To pass the practical exam: students must obtain or minimum grade of 5. • To obtain the minimum passing grade (5), students must know the fundamental elements of theory and practice in Physiology. 			



Data: 15.05.2025	Discipline coordinator signature: Lect. Dr. IOANID Nicolae , MD, PhD 	Laboratory lecturer signature: Univ. Teaching Assistant SEMEN Elena-Daniela , PhD(c), MD
Date of approval in the Department Council:		
Signature of the department director:		

Reprezentant legal F.D.M.
Presedinte
Prof. Univ. Dr. POSTĂVARU Nicolae

