DISCIPLINE SHEET

1. Study programme

1.1.	"CAROL DAVILA" UNIVERSITY OF MEDICINE AND PHARMACY BUCHAREST
1.2.	FACULTY OF DENTISTRY
1.3.	DEPARTMENT Dentistry III
1.4.	DISCIPLINE Physiology
1.5.	STUDY DOMAIN: Health, sectoral regulated within the European Union
1.6.	STUDY LEVEL: I (Bachelor's degree) and II (Master's degree)
1.7.	STUDY PROGRAMME: DENTAL MEDICINE IN ENGLISH

2. Discipline

2.1.	Discipline name according to the study curriculum: PHYSIOLOGY I				
2.2.	Discipline code: MD01F03EN				
2.3.	Discipline type (FD/SD/CD): FD				
2.4.	Discipline optionality (COD/ED/FAD): COD				
2.5.	Lectures tenure: Prof. Daniela Gabriela Bălan, PhD Lecturer Iulia-Ioana Stănescu-Spînu, PhD				
2.6.	Practical classes / seminar tenure: Prof. Daniela Gabriela Bălan, PhD Lecturer Iulia-Ioana Stănescu-Spînu, PhD Teaching assistant Andra-Elena Balcangiu-Stroescu, PhD				
2.7. Year of study	I	2.8. Semester	I	2.9. Evaluation (E/C/V)	E

3. Estimated total time (hours/ semester of teaching and training activity /individual study)

I. University training						
3.1. Number of hours per week	3	from which:	3.2. lecture	1	3.3. practical class/ seminar	2
3.4. Total hours in the study curriculum	42	from which:	3.5. lecture	14	3.6. practical class/ seminar	28
II. Preparation/ individual study						
Time distribution						hours
Study of lecture materials, textbooks, books, study of the minimum recommended bibliography						42
Additional documentation activity in the library, on online platforms						8
Specific preparation activities for projects, practical classes, preparation of assignments, reports						20
Preparation for presentations or evaluations, preparation for the final examination						6
Tutoring activity						2
Other activities						0

3.7. Total hours of individual study	**78**
3.8. Total hours per semester (3.4.+3.7.)	**120**
3.9. Number of credits	**4**

4. Prerequisites (where appropriate)

4.1. curriculum	The student must have general knowledge of anatomy and physiology - high school level
4.2. proficiencies	-

5. Conditions (where appropriate)

5.1. for lecture activity	Amphitheater (minimum 100 seats), computer, video projector. Interactive exposure of the material according to the analytical program, using multimedia resources, PowerPoint presentations, educational films.
5.2. for practical class/ seminar activity	Laboratory, specific materials, and instruments for practical activities, computer, video projector. At each laboratory session there is a seminar on the subject of the lecture, the practical laboratory session is performed, and students present a report.

6. Learning outcomes*

Knowledge	Skills	Responsibility and autonomy
The student identifies, defines, and correctly describes the fundamental scientific terms and concepts that define physiological processes.	The student analyzes, evaluates, and applies the acquired knowledge of physiology to study literature and research in general and medical biology, as well as to identify abnormal conditions of functioning of the human body and, in particular, of the structures of the dento-maxillary apparatus.	The student can quickly and correctly analyze the functional parameters of the body's systems, in different stages of development or adaptation situations, differences between normal and pathological changes.
The student defines and describes the physiological mechanisms underlying the functioning of the organs and systems in the human body.	The student interprets the schemes, diagrams and graphic representations used to present functions and functional parameters, from the perspective of systemic interrelationships.	The student recognizes and interprets deviations from normal in functional biological parameters, their causes and dynamics.
The student identifies, defines and describes the physiological mechanisms underlying the functioning of the oro-facial system and its relationships with the other organs, apparatuses and systems in the human body.	The student understands, explains and evaluates the mechanisms by which the body's adaptation processes occur as a result of variations in the internal or external environment, in an extended, multidisciplinary context, in relation to the	The student correlates the theoretical and practical knowledge acquired in the discipline of physiology with that obtained in other fundamental disciplines and is prepared to use them for clinical training and dental practice.

	anatomical and histological structure and to cellular biochemical events.	

7. Discipline objectives (correlated with learning outcomes)

7.1. General objective	Understanding how the human body works and adapts to changes in the internal and external environment.
7.2. Specific objectives	- Adequate knowledge and use of the notions of physiology. - Knowledge of the functional mechanisms of the organs, apparatuses, and systems of the human body. - Knowledge of the specific way in which the oro-facial system works and understanding of the relations of this system with the other organs and systems. - The ability to explain and interpret theoretical and practical contents related to the functioning of the human body, in an interdisciplinary manner. - Knowledge of functional mechanisms, as a basis for understanding human pathology and for correlating to morpho-functional aspects.

8. Contents

8.1. Lecture	**Teaching methods**	**Observations**
1. Presentation of the Discipline Sheet. Introduction to physiology. Homeostasis. Body water. Hormones involved in the regulation of water in the body.	Interactive exposure of the material according to the analytical program, using multimedia resources, PowerPoint presentations and educational films. Systematic presentation and debate. Exemplification and clinical correlations. The content of the course is dynamic, and according to the latest discoveries in the field. At the end of each lecture, discussions with the students regarding the material presented take place.	-
2. Blood physiology. Blood volume - normal values, variations, regulatory mechanisms. Plasma constituents and their main functions.		-
3. Blood properties: acid-base balance.		-
4. Erythrocytes. Hemoglobin. The iron cycle.		-
5. Leukocytes – roles. Non-specific and specific defense mechanisms.		-
6. Platelets. Primary and secondary hemostasis. Fibrinolysis.		-
7. Renal physiology. Kidney functions. Mechanisms of primary and final urine formation. Regulation of renal function, juxtaglomerular apparatus.		-

Recent bibliography:

1. Lectures digital support available via e-learning platform.
2. Guyton And Hall - Textbook Of Medical Physiology, Saunders, 15th Edition, 2025, ISBN-13: 9780443111013, ISBN-10: 0443111014.
3. Walter Boron, Emile Boulpaep - Medical Physiology, Elsevier Health Sciences, 2016, ISBN-13: 9781455743773, ISBN-10: 1455743771.

8.2. Practical classes/ seminar	**Teaching methods**	**Observations**
1. Presentation of the schedule of practical classes. Rules for students in physiology labs with physical attendance. Rules and regulations regarding the professional activity of students.	At each laboratory session there is a interactive seminar on the subject of the lecture, the practical laboratory session is performed and students present a paper. Practical and theoretical applications (paraclinical and clinical investigations). Use of multimedia resources, didactic films and practical demonstrations.	-
2. Water intake and elimination. Water compartments of the body. Principle of measuring water compartments. Student reports		-
3. Blood properties: color, temperature, density (determination of blood and plasma density), viscosity, osmotic pressure, oncotic pressure. Student reports		-
4. Erythrocyte sedimentation rate (ESR). Hematocrit. Determination of hematocrit. Student reports		-
5. Erythrocytes (red blood cells). Erythrocyte count. Erythrocyte indices. Student reports		-
6. Hemoglobin. Hemoglobin concentration determination, hemoglobin derivatives. Teichmann crystals. Student reports		-
7. Causes of hemolysis. Erythrocyte fragility. Globular resistance in hypotonic solutions. Student reports.		-
8. Blood groups OAB and Rh. Determination of blood groups. Student reports		-
9. Leukocytes. The roles of different types of leukocytes. White blood cells count -		-

normal ranges, and variations. Leukocyte formula. Student reports		
10. Hemostasis - exploration of primary hemostasis and coagulation.		-
11. Complete blood count interpretation. Diagnosis of polycythemia and different blood types of anemia using blood tests. Student reports		-
12. Exploration of the kidney function: urinalysis and 24-hour collection tests, microbiological examination of urine and urine culture test. Urine dilution and concentration tests. Renal clearance. Student reports		-
13. Discussions related to practical exam topics. Absences recovery		
14. Practical exam		-

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1. Practical classes digital support available via e-learning platform.
2. Guyton And Hall - Textbook Of Medical Physiology, Saunders, 15th Edition, 2025, ISBN-13: 9780443111013, ISBN-10: 0443111014.
3. Walter Boron, Emile Boulpaep - Medical Physiology, Elsevier Health Sciences, 2016, ISBN-13: 9781455743773, ISBN-10: 1455743771.

9. Assessment

Activity type	**9.1. Evaluation criteria**	**9.2. Evaluation methods**	**9.3. Percentage of final grade**
9.4. Lecture	- Correctness of acquired knowledge and ability to correlate - Review of recommended bibliography - Attention paid to the information presented - Correct use of specialized terms - Accuracy of explanations regarding essential aspects for dental medical practice	**Exam** The written exam consists of 40 single- choice and multiple-choice questions. Participation in the written exam is conditioned by passing the practical exam.	**60%**

9.5. Practical classes/ seminar	- Ability to understand the functional, regulatory and integration mechanisms studied - Correct interpretation of paraclinical test results - Clear and correctly argued communication of knowledge	**Evaluation during the semester:** At each practical class - oral examination +/- written examination or single-choice questions **Test paper**	**20%**
		Practical and theoretical exam at the end of the semester - concepts discussed in the practical classes	**20%**
9.5.1. Individual project (if any)	-	-	-
Minimum performance standard			
The minimum performance standard is represented by the elementary knowledge of the notions of blood physiology and renal physiology: total water volume; body water compartments; water intake and elimination; blood volume (normal values and variations), plasma volume (composition and normal values of usual parameters); hematocrit and ESR (definitions, determination, normal values, variations); hemoglobin (normal values, normal and pathological derivatives, concentrations and variations); erythrocytes, leukocytes and platelets (roles, normal values, variations and effects of variations); body defense mechanisms (enumeration and how it is performed; normal leukocyte formula in adults; hemostasis (stages of hemostasis, factors involved and hemostasis exploration tests); OAB and Rh systems (agglutinogens, agglutinins; transfusion); primary and final urine formation, diuresis (definition, values, variations).		