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 II				
2.2.	Discipline code: MD01F11EN				
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	II	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	4	from which:	3.2. lecture	2	3.3. practical class/ seminar	2
3.4. Total hours in the study curriculum	56	from which:	3.5. lecture	28	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						56
Additional documentation activity in the library, on online platforms						10
Specific preparation activities for projects, practical classes, preparation of assignments, reports						14
Preparation for presentations or evaluations, preparation for the final examination						12
Tutoring activity						2
Other activities						0

3.7. Total hours of individual study	**94**
3.8. Total hours per semester (3.4.+3.7.)	**150**
3.9. Number of credits	**5**

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	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	The student correlates the theoretical and practical knowledge acquired in the discipline of physiology with that obtained in other fundamental disciplines and is

organs, apparatuses and systems in the human body.	extended, multidisciplinary context, in relation to the anatomical and histological structure and to cellular biochemical events.	prepared to use them for clinical training and dental practice.

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. The endocrine system. Hormone secretion and mechanisms of hormone action. Pituitary gland and its relation to the hypothalamus.	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. Thyroid hormones. Bone cells. Parathyroid hormones. Calcium and phosphate metabolism.		-
3. Adrenal gland hormones. Adrenal medulla and adrenal cortex.		-
4. Epiphyseal hormones. Endocrine pancreas.		-
5. The nervous system. Synaptic transmission. Properties of nerve centers. Pain sensitivity. Hunger and satiety.		-
6. Taste sensitivity. The digestive system. Salivary glands. Functions of saliva. Formation of saliva.		-
7. Salivary secretion reflex. Mechanisms of stimulation of salivary secretion. Mastication. Deglutition.		-

8. Gastric secretion. Pancreatic juice.		-
9. Bile. Intestinal juice. Intestinal absorption. Motility of the digestive tract.		-
10. The cardiovascular system. Heart properties: automatism, excitability, conductivity, contractility. Factors influencing the properties of the heart.		-
11. Law of the heart. Cardiac output. Hemodynamics – characteristics of arterial circulation.		-
12. Characteristics of capillary and venous circulation. Regulation of cardiovascular function.		-
13. The respiratory system. Pulmonary stage of respiration. Transport of respiratory gases through the blood. Regulation of respiration.		-
14. Regulation of body function in special conditions (physical exercise, high altitude etc.).		-

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. Human energy requirements. Energetic and metabolic rate. Basal metabolic rate (BMR) - measurement, estimation, individual differences. Student reports	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).	-
2. Exploration of the endocrine pancreas. Basal glycemia. Glucose loading tests. Glucosuria. Exploration of the phospho-calcium balance. Hypocalcemia. Trousseau's sign. Chvostek's sign.		-
3. Saliva collection, saliva composition, salivary flow,		-

salivary pH. Study of salivary compounds mucin, thiocyanate, calcium, phosphate - principle of determination, normal values and clinical significance. Salivary microscopic examination. Salivary amylase effects and the influence of temperature on the activity of salivary amylase. Student reports	Use of multimedia resources, didactic films and practical demonstrations.	
4. Exploration of gastric secretion. Collection of gastric juice and hydrochloric acid. Hydrochloric acid, and lactic acid - principle of determination, normal values and clinical significance. The effect of pepsin on hydrolysis of proteins. The chlorhydropeptic effect of gastric juice on proteins. Enzymatic coagulation of milk. Student reports		-
5. Exploration of bile secretion. Collection of bile secretion. Bile pigment and bile salts positive tests. The effect of bile salts on surface tension, emulsification of lipids, solubilization of cholesterol and fatty acids. Pancreatic juice assessment. Collection of pancreatic juice. Serum and urinary amylase - normal values and clinical significance. Urine amylase determination. Student reports		-
6. Vagal stimulation effects on heart. Cardiac cycle. Student reports		-
7. Auscultation of the heart and phonocardiogram. Radial and carotid pulse. Venous pulse. Apex beat. Student reports		-
8. The normal electrocardiogram I. Electrocardiogram recording. Flow of current around the heart during the cardiac cycle.		-

Electrocardiographic leads. Vectorial analysis. Student reports		
9. The normal electrocardiogram II. Analysis of waves, segments, and intervals of the electrocardiogram. Complete electrocardiogram analysis. Student reports		-
10. Arterial circulation. Blood pressure measurement. The cold pressor test. Orthostatic blood pressure test. Effect of physical activity on blood pressure. Student reports		-
11. Polysynaptic defense reflex. Monosynaptic myotatic stretch reflex. Electroencephalogram. Motor unit. Electromyogram. Student reports		-
12. Pneumographic recordings of respiratory movements. Pulmonary volumes and capacities recordings. Obstructive and restrictive lung disorders. Composition of alveolar and expiratory air. Student reports		-
13. Discussions on practical exam topics. Absence recovery.		-
14. Practical exam.		-

Recent bibliography:

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 standard of performance is represented by elementary knowledge of the notions of physiology of the endocrine, digestive, nervous, cardiovascular, respiratory systems and metabolisms:
1. Normal calcemia. Factors with a role in the regulation of calcemia – enumeration, effects.
2. Normal basal glycemia. Normal response to the glucose tolerance test. Hyperglycemic and hypoglycemic hormones – enumeration.
3. Pain sensitivity - receptors, conduction pathways, cortical projection; analgesia and control pathways; inhibition of transmission.
4. Taste sensitivity - receptors, conduction pathways, cortical projection; taste changes.
5. Saliva: roles, salivary flow and pH. Major salivary glands and excretory ducts.
6. Digestive enzymes – enumeration and their role.
7. Roles of HCl in gastric juice. Bile salts – where they are formed, where they act, role.
8. Cardiac cycle – stages of ventricular systole and diastole. Heart sounds 1 and 2.
9. Cardiac output – definition, normal values, determining factors.
10. Pressor and depressor reflexes and their effects.
11. Arterial pulse – definition. Exploration of the arterial pulse. Apex shock.
12. Normal ECG – leads, significance of waves, segments and intervals. determination of heart rhythm, heart rate and electrical axis of the heart.
13. Blood pressure – normal values, determining factors, measurement methods.
14. Tidal volume, vital capacity, FEV1, resting respiratory flow – definitions, normal values, variations.