



**“CAROL DAVILA” UNIVERSITY
OF MEDICINE AND PHARMACY BUCHAREST**
Faculty of Dentistry
Dental Medicine in English



DISCIPLINE GRID

1. Programme:

1.1.	CAROL DAVILA UNIVERSITY OF MEDICINE AND PHARMACY BUCHAREST
1.2.	FACULTY OF DENTISTRY / 3rd DEPARTMENT
1.3.	DIVISION: PHYSIOLOGY
1.4.	STUDY DOMAIN: Health, sectoral regulated within European Union
1.5.	STUDY LEVEL: LICENCE
1.6.	STUDY PROGRAMME: DENTAL MEDICINE IN ENGLISH

2. Discipline:

2.1.	DISCIPLINE NAME: PHYSIOLOGY I						
2.2.	LOCATION: Faculty of Medicine, 8 Eroilor Sanitari Blvd., 1st Floor, Sector 5, Bucharest						
2.3.	Lectures tenure: Daniela Gabriela Bălan – Associate Professor						
2.4.	Practical classes tenure: Daniela Gabriela Bălan – Associate Professor Iulia-Ioana Stănescu-Spînu – Lecturer Andra-Elena Balcangiu-Stroescu – Teaching assistant Liviu Vasile Chiperi – Teaching assistant						
2.5. Study year	I	2.6. Semester	I	2.7. Evaluation	Exam	2.8. Type of discipline	CD/FD

3. Estimated total time (hours/semester)

No. hours/week	3	out of which	Lectures: 1	Laboratory session: 2
Total hours out of learning schedule	42	out of which	Lectures: 14	Laboratory sessions: 28

Time distribution	hours
Textbook study, lecture support, bibliography and notes	30
Supplementary documentation activity in the library, on online platforms	13
Practical activity support material, homework, portfolio and essays	12
Tutorial activity	-
Examinations	3
Other activities	-
Total hours of individual study	58
Total hours per semester	100
Credits	4

4. Preconditions

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

5. Conditions

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 laboratory 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. Accumulated skills

6.1. Proficiencies (<i>knowledge and abilities</i>)	I. Knowledge (cognitive dimension) - acquiring the ability to explain the physiological mechanisms underlying the functioning of the organs, apparatus, and systems of the human body - knowledge of the functional mechanisms of the oro-facial system and its relationship with other organs, apparatus, and systems - description of the mechanisms of adaptation to different variations of the internal or external environment -acquiring a minimum of practical knowledge on laboratory techniques and the ability to interpret the obtained results and to establish the relationship between biological constants and the etiopathogenesis of oral and systemic diseases II. Abilities (functional dimension) - recognition and interpretation of deviations of normal biological functional parameters - clinical interpretation of functional parameters
6.2. Transversal skills (<i>role, professional and personal development</i>)	III. Role skills - concern for professional development - efficient use of information sources - ability to work effectively in a team - clear, rigorous communication of knowledge - development of basic biomedical scientific language IV. Professional and personal development skills - ability to use and correlate assimilated notions in a new context - ability to apply theoretical notions in medical practice - ability to establish interdisciplinary correlations

7. Objectives (based on the grid of acquired specific skills)

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 morphofunctional aspects

8. Content

8.1. Lectures	No. hrs/topic	Teaching method	Obs.
1. Presentation of the Discipline Grid. Introduction to physiology. Homeostatic mechanisms of the major functional systems. Transport of substances through the cell membrane. Fluid volume regulation. Homeostasis of water.	2	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 course, discussions with the students regarding the presented material take place.	
2. Blood volume and composition. Constituents of plasma and their main functions.	2		
3. Properties of blood. Acid-base balance and regulation of acid-base balance (intervention of the buffer systems, kidney, and lungs).	2		
4. Red blood cells: structure, function, life cycle, normal range, and variations. Hemoglobin: structure and function, normal and abnormal levels. Normal and pathological types of hemoglobin. Iron metabolism.	2		
5. Leukocytes. Resistance of the body to infection. Innate and acquired immunity.	2		
6. Thrombocytes. The mechanisms of primary hemostasis and blood coagulation. Hemostasis disorders.	2		
7. Renal physiology. Kidney functions. Urine formation: glomerular filtration and tubular transport. Micturition reflex.	2		

8.2 Laboratory Sessions	No. hrs/topic	Teaching method	Obs.
1. Presentation of the schedule of courses and practical works. Rules for students in the physiology labs with physical attendance. Rules and regulations regarding the professional activity of students	2	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.			
3. Body fluid compartments. Intake and elimination of water. Measurement of fluid volumes in the different body fluid compartments. The principle of measuring water compartments -dilution principle. Student reports	2		
4. Properties of blood and plasma: color, density, pH, and plasma buffer capacity. Acid-base balance parameters. Acid-base disorders and use of the acid-base nomogram for diagnosis. Student reports	2		
5. Erythrocyte sedimentation rate. Blood volume and hematocrit –measurement method, normal ranges, and variations. Student reports	2		

6. Erythrocytes. Erythrocyte count, normal ranges, and variations. Red blood cell indices. Student reports	2		
7. Methods for the measurement of hemoglobin, normal ranges, and variations. Spectroscopy of hemoglobin combining forms. Teichmann crystals. Student reports	2		
8. Causes of hemolysis. Erythrocyte fragility. Globular resistance in hypotonic solution. Student reports.	2		
9. OAB and Rh blood types. Transfusion. OAB and Rh blood types' agglutination test. Student reports	2		
10. Leukocytes. The roles of different types of leukocytes. White blood cells count - normal ranges, and variations. Leukocyte formula. Student reports	2		
11. Blood coagulation tests. Evaluating assays for primary and secondary hemostasis. Student reports	2		
12. Complete blood count interpretation. Diagnosis of polycythemia and different blood types of anemia using blood tests. Student reports	2		
13. Kidney function tests: urine samples tests, microbiological examination of urine and urine culture test. The test to assess the ability of the kidneys to dilute and concentrate urine. Use of clearance tests to assess kidney function. Student reports	2		
14. Discussions related to practical exam topics. Recovery of absences	2		
15. Evaluation of the laboratory activity – practical exam	2		

8.3. Bibliography for lectures and laboratory/practical sessions

1. Guyton And Hall - Textbook Of Medical Physiology, Saunders, 14th Edition, 2020.
2. Walter Boron, Emile Boulpaep - Medical Physiology, Elsevier Health Sciences (2016).
3. Fiziologia s ngelui –B lan Daniela-Gabriela, Balcangiu-Stroescu Andra-Elena, R ducu Laura. Editura Medical , 2018. ISSN 976-973-39-0645-6
4. Fiziologia aparatului respirator. Fiziologia aparatului reno-urinar. (pentru studen ii Facult ţii de Medicin  Dentar ). B lan Daniela-Gabriela, Balcangiu-Stroescu Andra-Elena, St nescu Iulia-Ioana. Editura Medical , 2018. ISBN: 978-973-39-0854-8.

9. Corroborating the contents of the discipline with the expectations of epistemic community representatives, professional associations and employers in the fields representative for the program

Physiology is the link between the basic sciences and medicine, integrating the individual functions of all the body's different cells, tissues, and organs into a functional whole. The human body is much more than the sum of its parts. The main goal of the physiology teaching is to emphasize as accurate as possible the effectiveness of the body's homeostasis mechanisms.

10. Evaluation

10.1 Evaluation			
Activity type	Evaluation Criteria	Methods of evaluation	% out of final grade
Lecture	A. Knowledge for mark 5: - Basic degree of assimilation and knowledge of the notions of general and orofacial physiology, according to the analytical program. B. Additional knowledge for mark 10: - Very good accuracy of the notions presented in the lectures, assimilation and understanding. Good ability to apply and to correlate the knowledge acquired with those specific to other fundamental disciplines.	Exam The written exam consists of a: Grid exam (single choice +/- multiple choice questions) and/or written subjects. Participation in the written exam is conditioned by passing the practical exam.	60%
Laboratory Sessions	A. Knowledge for mark 5: - Understanding the basic aspects, essential for future doctors and useful in the practice of dentistry, knowing the normal and pathological limits of paraclinical tests. - Presentation of papers in seminars and participation in student scientific sessions B. Additional knowledge for mark 10 - Very good knowledge of the studied functional, regulation and integration mechanisms; correct interpretation of test results; clear and correct communication of knowledge	Practical assessment Periodic evaluation of the student through seminars and tests during the semester. The practical exam is a written/oral exam.	40% (20% the practical exam and 20% the grades from examinations throughout the semester)
Minimum performance standards			
According to the analytical program, elementary knowledge and understanding of the main physiological mechanisms that allow the body to functioning as a whole. Knowledge of the basic functioning mechanisms of the orofacial system.			

Date:
02.09.2024

Chair of Physiology Division,
Associate Prof. Bălan Daniela-Gabriela

Date of the approval in
Department Board:

Department director,
Prof. Ionescu Ecaterina