DISCIPLINE GRID

1. Programme:

1.1.	**CAROL DAVILA UNIVERSITY OF MEDICINE AND PHARMACY BUCHAREST**
1.2.	**FACULTY OF DENTISTRY / 2nd DEPARTMENT**
1.3.	DIVISION: **IMMUNOLOGY**
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: **IMMUNOLOGY**						
2.2.	LOCATION: **HIV ACADEMY – "MATEI BALȘ" NATIONAL INSTITUTE OF INFECTIOUS DISEASES**						
2.3.	Lectures tenure: **Prof. Dr. Ștefan Sorin Aramă, Assoc. Prof. Dr. Cătălin Tilișcan, Lecturer Dr. Alexandru Croitoru**						
2.4.	Practical classes tenure: **Prof. Dr. Ștefan Sorin Aramă, Assoc. Prof. Dr. Cătălin Tilișcan, Lecturer Dr. Alexandru Croitoru**						
2.5. Study year	**2**	**2.6.** Semester	**4**	**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	15
Supplementary documentation activity in the library, on online platforms	10
Practical activity support material, homework, portfolio and essays	2
Tutorial activity	2
Examinations	3
Other activities	1
Total hours of individual study	**33**
Total hours per semester	**75**
Credits	**3**

4. Preconditions

4.1. curriculum	The student must have knowledge of anatomy, physiology, physiolpathology, general biology, genetics, and biochemistry.
4.2. proficiencies	The student must be able to: – identify general aspects related to cellular activity and cellular metabolism; – know the fundamental functions of the human body; – understand the functional parameters associated with the activity of organ systems; – know the main pathophysiological mechanisms of diseases; – characterize the measurable values of the internal environment parameters.

5. Conditions

5.1. for lecture activity	Amphitheater with a minimum capacity of 100 seats, computer, video projector.
5.2. for laboratory activity	Practical workroom, laptop, video projector.

6. Accumulated skills

6.1. Proficiencies ***(knowledge and abilities)***	**I. Knowledge (cognitive dimension)** Identification and understanding of the body's defense mechanisms (innate and adaptive immunity). **II. Abilities (functional dimension)** – Understanding the implications of diseases with an immune mechanism (immune deficiencies, hypersensitivity reactions, neoplasms, autoimmune diseases) on dental medical procedures and the need for treatment adaptation. – Analyzing laboratory changes/hematological tests that can signal abnormalities of the immune system.
6.2. Transversal skills ***(role, professional and personal development)***	**III. Role skills** – Identifying the objectives to be achieved, available resources, and conditions for their completion, taking into account the patient's condition. – Developing skills for independent learning, analysis and synthesis, and making correct medical decisions. **IV. Professional and personal development skills** – Identifying roles and responsibilities within a multidisciplinary team and applying techniques for effective relationship building and teamwork based on the status of each individual patient. – Efficiently using informational sources and communication and assisted professional training resources.

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

7.1. General Objective	The Immunology course presents the mechanisms of innate and adaptive immunity, both systemically and within the oral cavity. Practical works will address aspects of the normal immune response and basic concepts related to the pathology of the immune system. Students learn the principles of immunity exploration methods and how to interpret analysis bulletins. Special attention is given to those diseases and syndromes that affect an individual's immune defense, which can lead to complications after some procedures performed in the dental office. Emphasis will be placed on immune system disorders that resonate in the oral cavity (autoimmune diseases, malignant hematological diseases, HIV infection, etc.).
7.2. Specific Objectives	– Establishing the optimal dental treatment plan in relation to the immune defense disorders of patients. – The ability to identify potential immunological disorders that produce signs and symptoms at the level of the oral cavity.

8. Content

8.1. Lectures	No. hrs/topic	Teaching method	Obs.
1. Organization of the immune system. Cells and mechanisms of the nonspecific immune system.	2	Exposition, heuristic conversation, explanation, guided dialogue, demonstration, problematization, algorithmization, case study.	
2. Antigens.	2		
3. Antigen-presenting cells and histocompatibility systems.	2		
4. Lymphocytes.	2		
5. Antibodies and humoral immune response.	2		
6. Cell-mediated immune response. Antitumor immunity.	2		
7. Immune defense at the level of the oral cavity.	2		

8.2 Laboratory Sessions	No. hrs/topic	Teaching method	Obs.
1. Challenges of the immune system	2	Exposition, heuristic conversation, explanation, guided dialogue, demonstration, problematization, algorithmization, case study, interpretation of laboratory tests.	
2. Lymphoid organs	2		
3. Non-specific mechanisms for recognizing non-self structures	2		
4. The complement system	2		
5. Immune tolerance. Transplant immunology	2		
6. Immunological reactions used in immunodiagnostics	2		
7. Physiopathological and immunological mechanisms in oral cavity pathology	2		
8. Oral manifestations in systemic diseases with an immune mechanism	2		
9. Body immunization. Vaccination	2		
10. Autoimmune diseases	2		
11. Malignant proliferations of lymphoid cells	2		
12. HIV infection and acquired immunodeficiency syndrome	2		
13. Defense mechanisms against infections	2		
14. Interpretation of analysis reports	2		

8.3. Bibliography for lectures and laboratory/practical sessions
1. S. Aramă, C. Tilișcan, ”Elements of Immunology”, ”Carol Davila” University Press, 2019, ISBN 978-606-011-032-3 2. Abbas A., Lichtman A., Pillai S. - Cellular and Molecular Immunology. 10th Edition (2021), Elsevier, ISBN: 9780323757485 3. Murphy K. M., Weaver C. - Janeway's Immunobiology 9th Edition (2016), W. W. Norton & Company. ISBN-10: 081534550X; ISBN-13: 978-0815345503 4. Hayat M. A. Immunology, Volume 1: Immunotoxicology, Immunopathology, and Immunotherapy, Academic Press (2018), ISBN 978-0-12-809819-6

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

Understanding the mechanisms of immune defense is essential for the logical comprehension of cellular events underlying the onset of diseases involving immune defense. This allows for the understanding and learning of the clinical and paraclinical expression of these diseases, making it possible to practically apply this knowledge in the dentist's practice.

10. Evaluation

10.1 Evaluation			
Activity type	**Evaluation Criteria**	**Methods of evaluation**	**% out of final grade**
Lecture	**A. Knowledge for mark 5:** The student will be able to: explain simple biological processes; demonstrate the basic mechanisms related to the immune response and the anomalies of the immune response. **B. Additional knowledge for mark 10** The student will be able to demonstrate a deep understanding of normal immune defense mechanisms and pathological situations, to support a debate on issues related to immune defense pathology, and to correlate the information obtained from practical work with the concepts taught in the lecture.	**Exam** Evaluation through multiple-choice test and written essay.	**60%**
Laboratory Sessions	**Periodic assessment – Colloquium** **A. Knowledge for mark 5:** The student will be able to reproduce the normal and pathological values of elementary biological constants, define specific processes of immunology, and simplistically explain mechanisms of classical immunology and immunopathology. **B. Additional knowledge for mark 10:** The student will be able to interpret the pathological changes of immunological tests and correlate the information obtained	**Practical assessment** Evaluation through multiple-choice test and written essay.	**20%**

	from practical work with the concepts taught in the lecture.		
	Periodic assessment – Practical exam **A. Knowledge for mark 5:** The student will be able to reproduce the normal and pathological values of elementary biological constants, define specific processes of immunology, and simplistically explain mechanisms of classical immunology and immunopathology. **B. Additional knowledge for mark 10:** The student will be able to interpret the pathological changes of immunological tests and correlate the information obtained from practical work with the concepts taught in the lecture.	**Practical assessment** Evaluation through multiple-choice test and written essay; interpretation of laboratory analyses.	**20%**
Minimum performance standards			
Acquiring the scientific information presented during the lectures and practical sessions at a passable level (grade 5). The student has to be able to reproduce the normal and pathological values of basic biological constants (e.g. normal values of immune blood cells count, interpretation of abnormal values of immune blood cells count, classes of antibodies) as well as to answer simple questions (e.g. function of antibodies). The student has to understand and to be able to explain the basic theoretical and practical concepts taught in the Immunology course.			

Date:
08.09.2023

Chair of Pathophysiology Division,
Prof. dr. Ștefan Sorin Aramă

Date of the approval in Department Board:

Department director,
Prof. dr. Alexandru Bucur