DISCIPLINE SHEET

1. Study programme

1.1.	"CAROL DAVILA" UNIVERSITY OF MEDICINE AND PHARMACY BUCHAREST
1.2.	FACULTY OF DENTISTRY
1.3.	DEPARTMENT II
1.4.	DISCIPLINE: IMMUNOLOGY
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: IMMUNOLOGY				
2.2.	Discipline code: MD02F11EN				
2.3.	Discipline type: FD				
2.4.	Discipline optionality: COD				
2.5.	Lectures tenure: Prof. Dr. Ștefan Sorin Aramă, Assoc. Prof. Dr. Cătălin Tilișcan, Lecturer Dr. Alexandru Croitoru				
2.6.	Practical classes / seminar tenure: Prof. Dr. Ștefan Sorin Aramă, Assoc. Prof. Dr. Cătălin Tilișcan, Lecturer Dr. Alexandru Croitoru				
2.7. Year of study	II	2.8. Semester	IV	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						25
Additional documentation activity in the library, on online platforms						15
Specific preparation activities for projects, practical classes, preparation of assignments, reports						15
Preparation for presentations or evaluations, preparation for the final examination						15
Tutoring activity						6
Other activities						2
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 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 (where appropriate)

5.1. for lecture activity	Amphitheater with a minimum capacity of 100 seats, computer, video projector.
5.2. for practical class/ seminar activity	Practical workroom, computer, video projector.

6. Learning outcomes*

Knowledge	Skills	Responsibility and autonomy
The student identifies, describes and classifies the mechanisms of disease production, risk factors, biological pathogens (bacteria, viruses, parasites), mechanisms of non-specific and specific immunity, the main immune pathologies: autoimmune diseases, immunodeficiency syndromes, neoplasias, as well as principles of pharmacological approach, with particularities for dentistry.	The student correctly interprets and applies the fundamental notions regarding the mechanisms of production of diseases with an immune component and the methods of investigating the functions of the immune system. He can correctly interpret analysis reports with pathological values.	The student integrates fundamental notions and methods of investigating the body's immune defense functions, formulates and assumes reasoned conclusions regarding the general mechanisms of immune diseases and the general principles of treatment.

7. Discipline objectives (correlated with learning outcomes)

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 suggested by signs and symptoms at the level of the oral cavity.

8. Contents

8.1. Lecture	**Teaching methods**	**Observations**
1. Organization of the immune system. Cells and mechanisms of the immune system - overview.	Exposition, heuristic conversation, explanation, guided dialogue, demonstration, problematization, algorithmization, case study.	
2. Non-specific immune system		
3. Specific immune system		
4. Antibodies		
5. Humoral and cell-mediated immune response.		
6. Malignant proliferations of lymphoid cells		
7. Autoimmune diseases		
Recent bibliography: 1. Abbas A., Lichtman A., Pillai S. Cellular and Molecular Immunology. 10th Edition (2021), Elsevier, ISBN: 9780323757485 2. Murphy K. M., Weaver C., Berg L.J. Janeway's Immunobiology 10th Edition (2022), W. W. Norton & Company. IISBN-13: 978-0393884913		
8.2. Practical classes/ seminar	**Teaching methods**	**Observations**
1. Challenges of the immune system	Exposition, heuristic conversation, explanation, guided dialogue, demonstration, problematization, algorithmization, case study, interpretation of laboratory tests.	
2. Lymphoid organs		
3. White blood cells. Non-specific and specific mechanisms for recognizing non-self structures		
4. Antigens		
5. The complement system		
6. HIV infection and acquired immunodeficiency syndrome		
7. Immune mechanisms of oral defence		
8. Oral manifestations in systemic diseases with an immune mechanism		
9. Physiopathological and immunological mechanisms in oral pathology		
10. Body immunization. Vaccination		
11. Defense mechanisms against infections (I)		
12. Defense mechanisms against infections (II)		
13. Interpretation of laboratory tests. Clinical cases		
14. Practical exam		
Recent bibliography: 1. Abbas A., Lichtman A., Pillai S. Cellular and Molecular Immunology. 10th Edition (2021), Elsevier, ISBN: 9780323757485 2. Murphy K. M., Weaver C., Berg L.J. Janeway's Immunobiology 10th Edition (2022), W. W. Norton & Company. IISBN-13: 978-0393884913		

9. Assessment

Activity type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Percentage of final grade
9.4. Lecture	**Knowledge for grade 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. **Additional knowledge for grade 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.	**50%**
9.5. Practical classes/ seminar	**Knowledge for grade 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. **Additional knowledge for grade 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.		**50%**
Minimum performance standard			
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.			