DISCIPLINE SHEET

ACADEMIC YEAR

2022- 2023

1. DATA ABOUT THE STUDY PROGRAM

1.1 Institution of higher education	UNIVERSITY OF MEDICINE AND PHARMACY OF CRAIOVA
1.2 Faculty	**MEDICINE**
1.3 Department	2
1.4 Study Domain	HEALTH
1.5 Study cycle	LICENCE
1.6 Study program/ Qualification	**MEDICINE**

2. DATA ABOUT THE DISCIPLINE

2.1 DISCIPLINE NAME				**IMMUNOLOGY**	
2.2. Discipline code				MED3108	
2.3 The holder of course activities				Professor Isabela Silosi	
2.4 The holder of seminar activities				Isabela Silosi/Mihail Virgil Boldeanu/Poenariu Ioan Sabin	
2.5.Academic degree				Professor / Associate Professor/Lecturer	
2.6. Employment (base norm/associate)				Base Norm	
2.7. Year of study	**III**	2.8. Semester	**I**	2.9. Course type (content) 2.10. Regime of discipline (compulsoriness)	**CDD**

3. THE ESTIMATED TOTAL TIME (teaching hours per semester)

3.1 Number of hours per week	**2**	3.2 From which - course	**1**	3.3 seminary/laboratory	**1**
3.4 Total hours in curriculum	**28**	3.5 From which: course	**14**	3.6 seminary/laboratory	**14**
Time found distribution (hours)					
Study from manual, course support, bibliography, and notes					**5**
Additional documentation in the library, specialized electronic platforms and, on the field					**6**
Training seminars / labs, homework, reports, portfolios, and essays					**4**
Tutoring					**1**
Examinations					**2**
Other activities... counselling, student scientific programs					**4**

3.7 Total hours of individual study	**22**
3.9 Total hours per semester	**50**
3.10 Number of credits	**2**

4. PREREQUISITES (where appropriate)

4.1 curriculum	Students must have a sound knowledge of biochemistry, biophysics, cell biology, histology.
4.2 competency	-

5. CONDITIONS (where appropriate)

5.1. of curse deployment	-
5.2. of seminary/ lab deployment	Prior training through individual study of practical work

6. SPECIFIC COMPETENCES ACCRUED

PROFESSIONAL COMPETENCES	**C1.** Identification the disease status and establishing the correct diagnosis. **C3.** Correct assessment of disease risk and context of occurrence of an individual / collective disease, followed by the selection and application of appropriate prophylaxis measures. **C5.** To initiate and conduct a scientific research activity and / or a training activity inside the field of competence.

TRANSVERSAL COMPETENCES	**CT1**. Autonomy and responsibility • to know, to respect and to contribute to the development of moral values and professional ethics; • to learn how to recognize the problems when they arise, and provide solutions for solving them. **CT2**. Social interaction • to have or to learn how to develop teamwork skills; • to communicate orally and in writing the manner of work requirements, the obtained results, to consult with the team; **CT3.** Personal and professional development • to have opening to lifelong learning, • to be aware for self-study as a basis of personal autonomy and professional development; • to derive the optimum and creative potential in their own collective activities; • to know how to use information and communication technologies.

7. DISCIPLINE OBJECTIVES (based on the grid of specific competences acquired)

7.1 The general objective of the discipline	This course extends your basic knowledge in Immunology going into more depth and giving you the fundamenta knowledge you need to understand how the immune system functions in health and disease and how immunological therapies can be devised. The evolution of the immune system has been shaped by its need to protect the host from infection and the majority of multicellular organisms have some form of organised immune system that increases in complexity in line with the organism.
7.2 The specific objectives of the discipline	To develop and extend knowledge of how cellular and molecular components of the immune system act together to protect against human disease and how their dysfunction may cause disease. To further develop practical laboratory skills of use in a general laboratory as well as those more specific to immunology. Understand the theories involved and to know how to do the methods

8. CONTENTS

8.1 Course (content units)	hours
1. Introduction to the Immune System. Innate immunity	**2**
2. Anatomy and cellular elements of the immune system. – Lymphoid organs: gross and microscopic anatomy and function – Specific cells: the ontogeny, structure, phenotype, function, and activation markers/receptors	**2**
3. Antigens: – Types, structure, processing, presentation, and elimination – Superantigens: types, site of binding, and effect on immune system **Major histocompatibility complex**: nomenclature, structure, function and immunogenetics **Immunoglubulins:** nomenclature, types, structure, function, and immunogenetics	**2**
4. Immune responses. Antigen capture and presentation to lymphocytes. Antigen recognition in the adaptive immune system. B cell receptors/immunoglobulins: structure, function, antigen binding, signaling, genetic basis, effector function T cell receptors: structure, function, antigen binding, signaling, genetic basis Receptor - ligand interactions: adhesion molecules, complement receptors, Fc receptors and signal transduction Cellular activation and regulation: for each cell type, understand mechanisms of activation and suppression of function	**2**
5. Types Immune responses **Humoral immune responses:** Activation of lymphocytes B ; Effector mechanisms **Cell-Mediated Immune Responses:** Activation of lymphocytes T; Effector mechanisms; Cellular interactions and immunomodulation **Cytokines:** origin, structure, effect, site of action, metabolism, regulation. **Mucosal immunity**: interactions between gut and bronchus-associated lymphoid tissue and secretory IgA **Immunoregulation** **Tolerance:** clonal selection, deletion, anergy, and antigen paralysis **Cell-cell interactions: help and suppression. Understand the collaboration among cells for control of the immune response**	**2**
6. Defensive mechanisms in action in: - infections - transplants - tumors	**2**
7. Immunopathology - Autoimmunity - Hipersensitivity diseases - Immunodeficiencies	**2**

BIBLIOGRAPHY – Isabela Silosi . Essentials of Immunology. Ed. Sitech, Craiova, 2017. – Isabela Silosi, Imunologie Curs, Editura Sitech, Craiova, 2014 – Helen Chapel, Mansel Haeney, Siraj Misbah, Neil Snowden, Essentials of Clinical Immunology, 6th Edition, January 2014, Wiley-Blackwell – Thao Doan, R.Melvold . Immunology Ed.R.Harvey, sec ed., 2013 – D.Male and al, Immunology, eighth ed.Elsevier Saunders, 2013 – Abul K. Abbas, Andrew H. H. Lichtman, and Shiv Pillai, Cellular and Molecular Immunology, 7th Edition, 2012 – Peter J. Delves, Seamus J. Martin D, R. Burton, Ivan Roitt , Roitt's Essential Immunology, 12th Edition, Wiley-Blackwell, 2011 – Klaus D. Elgert, Immunology: understanding the immune system., Jhon Wiley & Sons second edition, 2009	
8.2 Practical works (topics / themes)	
1. Harvesting and preparation for the imunoserological tests. Categories of dilutions used in serological reactions Washing and getting RBC suspensions used in antigen-antibody reactions.	**2**
2. Agglutination reactions: – agglutination on slide, agglutination in tubes, techniques to identify germ agglutination (Enterobacteriaceae, streptococci-coaglutinarea); – techniques used agglutination serological diagnosis of infections; – latex agglutination (identification of rheumatoid factor)	**2**
3. Immunoprecipitation: – precipitation in the liquid medium – radial Immunodiffusion reaction (Mancini –Carbonara) – the double immunodifusion reactions – determination of circulating immune complexes, identification of cryoglobulins	**2**
4. Reactions with RBCs: theory, materials and methods, interpretations – The haemagglutination inhibition – Passive hemagglutination – Coomb's Test (Antiglobulin Test) – Complement-fixation reactions	**2**
5. Neutralization reactions (reactions in vivo and in vitro). Anti-streptolysin O antibodies (ASO or ASLO)	**2**
6.The immunofluorescence reactions: direct and indirect. Techniques for the identification of autoantibodies	**2**
7. ELISA (Enzyme-Linked Immunosorbent Assay): theory, materials and methods, controls, interpretations. Immunoblot (Western blot) analysis Radioimmunoassay (RIA): Label with radioactive isotope (Iodine-125, sulfer-35, carbon-14, tritium)	**2**
BIBLIOGRAPHY – Isabela Silosi, Mihail V. Boldeanu, Cristian A. Silosi, Lidia Boldeanu. Principles and clinical relevance of immunological investigations. Ed. Sitech, Craiova, 2017. – Isabela Silosi. Ed II (2014). Investigaţiile de laborator in imunologia clinică Ed. Medicală Universitară, Craiova. – Isabela Silosi, M Cojocaru, C Silosi, Suzana Rogoz (2011). Relevanta clinica a investigarii autoanticorpilor. Editura Medicala Universitara, Craiova. – A.Abbas A.Lichtman, S.Pillai Laboratory techniques commonly used in immunology in Celullar and molecular Immunology.,seventh ed., 2012 – G.A. Gutman Im m u n o l o g y.core notes Medical immunology 544 fall 2011 School of medicine – University of California, Irvine(Copyright) 2011 Regents of the University of California – Robert R. Rich. Clinical Immunology: Principles and Practice, Mosby, 2008	

9. CORROBORATING THE DISCIPLINE CONTENT WITH THE EXPECTATIONS OF EPISTEMIC COMMUNITY REPRESENTATIVES, PROFESSIONAL ASSOCIATIONS AND EMPLOYEE REPRESENTATIVES RELATING TO THIS PROGRAM

- Department of Immunology is a fundamental subject compulsory for a student to become a doctor
- Knowledge, practical skills and attitudes learned in this discipline provides the basis for the study of pathological processes which will be detailed in other subjects and is the foundation for understanding and learning of any medical act preventive, diagnostic, curative and rehabilitation

10. MHETODOLOGICAL LANDMARKS

Types of activity	- Teaching Techniques / learning materials and resources: lectures, interactive group work, learning problems / projects etc. Lectures, analysis, synthesis, comparison, generalization, learning in order to achieve interactive feedback, explaining the problems highlighted by students, consultations, multimedia presentations. - In case of special situations (alert states, emergency states, other types of situations that limit the physical presence of students) the activity can be carried out online using computer platforms approved by the faculty / university. The online education process will be adapted

	accordingly to ensure the fulfilment of all the objectives provided in the discipline sheet.
Course	Use these methods combined: lecture, discussion, problem. For online activities lectures will be adapted using computer platform of the university.
Practical work	Experiments, interactive group work, learning problems. For online activities practical work will be adapted using computer platform of the university including video description of the experiments
Individual study	Before every course and every practical work

11. RECOVERY PROGRAM

Absences recoveries	**No. absences that can recover**	**Location of deployment**	**Period**	**In charge**	**Scheduling of topics**
	2	Immunology lab, 233 room / online	Last week of semestre	Assistant Professor	Chronologic/ 2 themes/day
Schedule consultations / Students' Scientific Program	2/hours/week/ teacher	Immunology lab, 233 room / online	weekly	All teachers	Theme of respective week
Program for students poorly trained	2/hours/week/ teacher	Immunology lab, 233 room / online	weekly	All teachers	Theme of respective week

12. ASSESMENT

Activity	**Types of assesment**	**Methos of evaluation**	**Percentage from final grade**
Lecture	Formative assesment during the semester Summative assesment during the exam	Written exam/ multichoice using online platform	**70%**
Summative assesment during the exam	Formative assesment during the semester Periodic assesment during the semester, Summative assesment in the last week of the semester	Written exam/ multichoice using online platform	**20%**
Periodic assesment			**5%**
Assement of individual activities			**5%**
Minimum performance standard			at least 50% for each component of the evaluation

13. GUIDANCE AND COUNSELLING PROGRAMS

Professional guidance and counselling programs (2 hours/monthly)

Scheduling the hours	**Location**	**In charge**
Last Friday of each month	Immunology lab, 233 room	All the teachers

Endorsement date in the department: 27.09.2022

Department Director,	**Coordinator of study program,**	**Discipline holder,**
Prof. Eugen OSIAC	**Prof. Marius Eugen CIUREA**	**Prof. Isabela SILOȘI**