

Degree Course in Medicine and Surgery 2023/2024

Integrated Teaching: **Immunology and Immunopathology**

SSD Course: **MED/04**

CFU number: **4**

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PREREQUISITES

Although there are no preparatory courses, basic knowledge of Human Anatomy, Biology, histology, and Biochemistry is required.

LEARNING OBJECTIVES

The integrated teaching of Immunology and Immunopathology aims to provide the student with the fundamentals for knowledge and understanding of the cellular and molecular mechanisms underlying the immune response. In particular, the student will have to learn:

- the general features of antigens, antibodies, and cytokines; the cells, tissues, and organs of the immune system; the regulatory mechanisms of central and peripheral tolerance; the components and molecular mechanisms of innate and adaptive immune responses
- the main immunopathologic mechanisms, in particular: hypersensitivity reactions, immunodeficiencies, autoimmune disorders, transplantation, and tumor immunology.

LEARNING OUTCOMES

The expected learning outcomes are consistent with the general provisions of the Bologna Process and the specific provisions of Directive 2005/36/EC. They are found within the European Qualifications Framework (Dublin descriptors) as follows:

Knowledge and understanding

At the end of the teaching, the student must be able to:

- Know and explain the basic concepts of immunology
- Know and explain the cellular and molecular mechanisms underlying the activation of the innate and adaptive immune response
- Know and explain the main immunopathologic mechanisms

Applying knowledge and understanding

At the end of the teaching, the student must be able to:

- Use the acquired knowledge for in-depth study of several aspects related to the specific field to which the student will dedicate herself/himself as part of her/his professional activity
- Apply the acquired knowledge to analyze and understand the alterations of the cellular, immunological, and genetic mechanisms underlying human pathologies

Communication skills

At the end of the teaching, the student should demonstrate the capability to:

- Clearly and unambiguously communicate information, ideas, problems, and solutions, related to the main molecular mechanisms of immune response activation as well as immunopathologic mechanisms to both expert and non-expert recipients
- Use the scientific terminology as appropriate

Making judgments

At the end of the teaching, the student must be able to:

- Independently make general assessments related to the topics covered
- Independently use the acquired knowledge to identify and explain the molecular, immunological, and pathophysiological mechanisms that lead to a disease.

Learning skills

At the end of the teaching, the student must be able to:

- Acquire the appropriate learning methods for studying and updating
- Improve skills in the field of Immunology and Immunopathology by consulting texts, scientific literature, and databases

COURSE SYLLABUS

Immunology

General features of the immune response. Innate immunity. Cells and tissues of the immune system. Leukocyte migration. The Complement System: activation and biological functions. Antibodies. The Major Histocompatibility Complex Molecules and Antigen Presentation. Antigen receptors (BCR and TCR): rearrangement and repertoire diversity. T and B lymphocyte development and activation. Cell-mediated and humoral immunity.

Immunopathology

Hypersensitivity disorders. Immunologic tolerance and autoimmunity. Congenital and acquired immunodeficiencies. Transplantation immunology. Tumour Immunology.

COURSE STRUCTURE

The teaching comprises 40 hours of lectures, with mandatory attendance (67%). Lectures will be structured in 2 or 3-hour theoretical lessons according to the academic calendar. The teaching material will be organized in PowerPoint slides illustrating and resumming updated program topics that will allow students to achieve the learning objectives. Interactive discussion with the students will be encouraged to improve active learning.

COURSE GRADE DETERMINATION

The knowledge acquired by the student will be evaluated through a written and oral exam.

- Written exam: 30 multiple-choice questions. One point will be assigned for each correct answer. Eighteen points will be required to be admitted to the oral exam.
- Oral exam: the students should take the final oral exam consisting of questions on the program's covered topics. Considering the learning objectives, the examining committee will assess the acquired student's knowledge and judgment ability, by evaluating the ability to argue and reason on the contents. The student's communication skills by using the appropriate scientific terminology will be also evaluated.

The final grade will be expressed out of thirty

The exam will be assessed according to the following criteria:

Not suitable: Poor or lacking knowledge and understanding of the topics; limited capacity for analysis and synthesis, frequent generalizations of the requested contents; inability to use technical language.

18-20: Just enough knowledge and understanding of the topics, with obvious imperfections; just sufficient capacity for analysis, synthesis, and autonomy of judgment; poor ability to use technical language.

21-23: Sufficient knowledge and understanding of the topics; sufficient ability to analyze and synthesize with the ability to reason with logic and coherence the required contents; sufficient ability to use technical language.

24-26: Fair knowledge and understanding of the topics; discrete ability to analyze and synthesize with the ability to rigorously argue the required contents; good ability to use technical language.

27-29: Good knowledge and understanding of the required contents; good ability to

analyze and synthesize with the ability to rigorously argue the required contents; good ability to use technical language.

30-30L: Excellent level of knowledge and understanding of the required content with excellent ability to analyze and synthesize with the ability to argue the required content in a rigorous, innovative, and original way; excellent ability to use technical language.

OPTIONAL ACTIVITIES

To further clarify, the Teachers are available to meet the students through appointments taken by e-mail.

READING MATERIALS

- Learning materials delivered by the teacher on the WebApp
- Textbook: Cellular and Molecular Immunology, 9th Edition, Abul Abbas, Andrew H. Lichtman, Shiv Pillai. Elsevier.

COORDINATOR AVAILABILITY

Office hours by appointment, by e-mail

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