

**Medical Immunology**

Code: 102928  
ECTS Credits: 4

Degree	Type	Year	Semester
2502442 Medicine	OB	3	0

**Contact**

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**Use of Languages**

Principal working language: catalan (cat)  
Some groups entirely in English: No  
Some groups entirely in Catalan: No  
Some groups entirely in Spanish: No

**Other comments on languages**

Es donaran classes i / o seminaris amb anglès (s'especifica al programa de l'assignatura)

**Teachers**

Marta Vives Pi  
Oscar de la Calle Martin  
Juan Francisco Delgado de la Poza  
Manuel Hernández González  
Andrés Baucells de la Peña  
Aina Teniente Serra  
Laura Martinez Martinez  
Germán Julia Agullo  
Maria Iglesias Escudero  
Maria Esther Moga Naranjo  
Roger Colobran Oriol  
Mónica Martínez Gallo

**External teachers**

Anaïs Mariscal Rodriguez  
Bibiana Quirant Sanchez  
Clara Franco Jarava  
Federico Fondelli  
Janire Perurena Priento  
Joan Climent Marti

## Prerequisites

It is advisable that the student has attained basic skills in cell biology, biochemistry, genetics and molecular biology before enrolling in the immunology course.

It is absolutely necessary to have acquired sufficient knowledge in: general and specific anatomy and physiology of different organs and systems.

The student will preserve the confidentiality and professional secrecy of the data to which he / she may have access through to the learning process in the health care provider facilities. In addition, he/she behavior will follow the professional ethical code.

## Objectives and Contextualisation

- 1) To know the essentials features of the molecular, cellular, anatomical elements of the immune system (SI) and their function in the healthy individual.
- 2) To understand the role of the immune system in the following pathological processes:
  - a. Common infections
  - b. Allergies and hypersensitivity in general
  - c. Immune-mediated diseases, autoimmune, autoinflammatory and other
  - d. Immunodeficiencies
  - e. Cancer
  - F. Transplantation
- 3) To understand the basic action mechanisms of immune-based therapies:
  - a) Vaccines,
  - b) Immunosuppressants,
  - c) Immunomodulators
- 4) To learn and understand the basis of the laboratory and clinical tests that have diagnostic value for the immune mediated diseases

## Competences

- Demonstrate basic research skills.
- Demonstrate knowledge of the principles and physical, biochemical and biological processes that help to understand the functioning of the organism and its disorders.
- Demonstrate understanding of the basic sciences and the principles underpinning them.
- Demonstrate understanding of the functions and interrelationships of body systems at different levels of organisation, homeostatic and regulatory mechanisms, and how these can vary through interaction with the environment.
- Demonstrate understanding of the manifestations of the illness in the structure and function of the human body.

- Demonstrate understanding of the mechanisms of alterations to the structure and function of the systems of the organism in illness.
- Demonstrate understanding of the organisation and functions of the genome, the mechanisms of transmission and expression of genetic information and the molecular and cellular bases of genetic analysis.
- Demonstrate understanding of the structure and function of the body systems of the normal human organism at different stages in life and in both sexes.
- Demonstrate understanding of the structure and function of the human organism in illness, at different stages in life and in both sexes.
- Establish the diagnosis, prognosis and treatment, basing decisions on the best possible evidence and a multidisciplinary approach focusing on the patient's needs and involving all members of the healthcare team, as well as the family and social environment.
- Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
- Indicate the basic diagnosis techniques and procedures and analyse and interpret the results so as to better pinpoint the nature of the problems.
- Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
- Organise and plan time and workload in professional activity.
- Put forward suitable preventive measures for each clinical situation.

## Learning Outcomes

1. Demonstrate basic research skills.
2. Describe the main forms of preventive immunotherapy, especially vaccines and the mechanism by which they provide protection.
3. Describe the particular genetic mechanisms that generate unique genes in each lymphocyte during development.
4. Describe the position and objectives of immunology among the basic health sciences.
5. Describe the therapy principles applicable to immunomediated diseases.
6. Differentiate the functions of the immune system and how it interacts with other organ systems and reacts to germs by developing immune defence responses.
7. Enumerate the main injuries and functional changes that the immune system can cause.
8. Explain the biochemical and biological bases of the functioning of the immune system.
9. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
10. Identify the indications of immunological tests.
11. Identify the main mechanisms by which the immune system can cause or contribute to illness.
12. Identify the paradigmatic diseases of the different types of immunomediated diseases.
13. Identify the role of should structures and system with organs and and system.
14. Interpret in the physiological and pathological context the main techniques for determining the state of the immune system and diagnosing immunomediated diseases.
15. Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
16. Organise and plan time and workload in professional activity.
17. Understand the role of genetic polymorphisms in the immune response.

## Content

Contents of the subject by teaching units

Block 1 Basic Immunology

UD1 Introduction to immunology

UD2 Natural Immunity

UD3 Clonal receptors and their ligands

UD 4 Cells of the immune system

UD5 The immune response, regulation and effectors

Block 2 Immunopathology

UD6 The immune response in the whole organism and disease

UD7 immune responses in special clinical situations

UD8 Diagnostic tests in clinical immunology

UD9 immunology based therapies

## Methodology

This guide describes the contents, methodology and general rules of the course, in accordance with the current curriculum.

The Medical Immunology course runs during a semester and contains many new concepts and therefore attending lectures and daily study is strongly encouraged. Periodically on-line questionnaire will be used to assess the progress in the understanding by the students of the concepts presented and discussed in the lectures and seminars. Attending at least six keynote lectures is compulsory.

Immunological concepts will be applied by the student to paradigmatic clinical cases presented in seminars.

Some aspects of the organization of the teaching activities e.g. dates of the practicals and exams, will depend on the particular circumstances and facilities of the different teaching facilities that the university has in each of the UAB affiliated hospitals where the course is imparted.

For the current academic year, the responsible faculty designated by the department are:

Overall coordination Prof: Eva Martínez Cáceres

Hospital coordinators

Vall d'Hebron: Manuel Hernandez

Germans Trias i Pujol: Eva Martínez Cáceres

Sant Pau: Óscar de la Calle Martín

Parc Taulí: Juan Francisco Delgado de la Poza

In the current exceptional circumstances, at the discretion of the teachers and also depending on the resources available and the public health situation, some of the theoretical classes, practicals and seminars organized by the Teaching Units may be taught either in person or virtually.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Activities

Title	Hours	ECTS	Learning Outcomes
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Type: Directed

CLASSROOM PRACTICES (PAUL)	2	0.08	7, 9, 11, 12, 14
CLINICAL CASE SEMINARS (SCC)	3	0.12	5, 9, 11, 10, 12, 14
LABORATORY PRACTICALS (PLAB)	3	0.12	10, 14
Specialized seminars (SEM)	2	0.08	17, 3, 5, 2, 6, 7, 8, 13, 11, 10, 12, 14, 15
THEORY (TE)	26	1.04	17, 3, 5, 4, 2, 6, 7, 8, 9, 11, 12, 15
Type: Autonomous			
SELF STUDY.READING ARTICLES/REPORTS OF INTEREST	58.5	2.34	17, 3, 5, 4, 2, 6, 7, 8, 9, 11, 10, 12, 15

## Assessment

Continuous evaluation:

a.-Written tests (75% of the grade of the subject):

-A partial exam (comprising the basic teaching units) consisting of a multi-choice questionnaire and a short-question questionnaire. It represents 30% of your final grade. The partial will be liberatory with a minimum score of 6.

- A final exam comprising two parts: a part of the basic units (if they have not been previously released) and a part of the clinical units, including theoretical aspects of the practices and seminars (45% of the final grade).

To pass the subject it will be necessary to reach a minimum final score of the written tests of 5.

b.-Other continuing education activities (25% of the grade of the subject):

Exercises of practices, works and questionnaires; presential or in moodle

To be evaluable the student must pass the practices and seminars (in all cases) with attendance and minimum grade of 5.

Final evaluation:

Students who have not passed the subject through the continuous evaluation of written tests, may be presented to a retrieval exam of the written tests, provided that they have the attendances and evaluations of seminars and practices approved. This exam consists of topics (50%) and short questions(50%) that include all didactic units, seminars and practices and is necessary overcome it with a 5 to pass the subject. It represents 75% of the grade of the subject.

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Attendance and active participation in classes and seminars evaluated with face-to-face and/or online questionnaires	10%	0.5	0.02	17, 3, 5, 4, 2, 6, 7, 8, 9, 13, 11, 12, 15, 16
Evaluation through case studies, reports and problem solving seminars, evaluated with face-to-face and / or online questionnaires	15%	2.5	0.1	1, 5, 2, 9, 10

## Bibliography

### Main Textbooks

Kuby - Immunology. 8a edició Ed. WH Freeman 2018

Abul K. Abbas, Andrew H. Lichtman, and Shiv Pillai. Cellular and Molecular Immunology: 9à edició. Elsevier Saunders, 2017. Amb access on line per estudiants; ISBN-13: 978-0323479783

Janeway's Immunobiology. 9th ed. Kenneth Murphy and Casey Weaver (Author) Garland Science, 2017, ISBN-13: 978-0815345053

### Other recommended textbooks

Roitt's Essential Immunology, Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. Roitt Wiley-Bolcall, 2016. ISBN-13: 978-1118415771

Kuby - Immunology. 7a edició en espanyol.

Peter Parham; The Immune System, Garland Science, 4rd edition, 2014.

### Additional reading

Clinical Immunology, Principles and Practice. Robert R Rich. 4ª edició Mosby, 2019. ISBN-13: 978-0723436911

Federation of Clinical Immunology Societies (FOCIS) ([www.focisnet.org](http://www.focisnet.org)).

### Internet resources

<http://www.roitt.com>, Figures, and questionnaires for self assessment

### Videos on line

[Els increïbles videos de microscopia multifotònica de Ronal N Germain](https://www.youtube.com/watch?v=...)

<https://www.niaid.nih.gov/research/ronald-n-germain-md-phd>

## Software

power point