

# Teaching guide

## IDENTIFICATION DETAILS

Degree:	Biomedicine		
Scope	Biology and Genetics		
Faculty/School:	Experimental Sciences		
Course:	IMMUNOLOGY		
Type:	Basic Training	ECTS credits:	6
Year:	2	Code:	2145
Teaching period:	Fourth semester		
Subject:	Physiology		
Module:	Structural and Functional Bases of Biomedicine		
Teaching type:	Classroom-based		
Language:	Spanish		
Total number of student study hours:	150		

## SUBJECT DESCRIPTION

Immunology addresses the basic elements of the normal functioning of the immune system, the mechanisms for regulating the immune response and the bases and foundations of immune pathologies of various kinds. In addition, various immunological techniques and diagnostic techniques will be studied on the state of the immune system.

## GOAL

The main objective of this course is to provide the necessary knowledge to understand the mechanisms of the functioning of the immune system in conditions of health and illness.

That students know the fundamental notions of the immune response (both innate and adaptive), the cells and molecules that make up the immune system and the mechanisms of communication and cooperation that exist between different cell types.

This is essential since there are a large number of immune-based pathologies.

A global vision of the immune system is necessary for the prevention and treatment of these diseases.

The specific objectives of the course are: To know the morphology, structure and function of the different organs and cell types that constitute the immune system.

Understand the cellular and molecular basis of the different types of immune response (innate and adaptive).

Understand the cellular and molecular basis of the different pathologies associated with the immune system, immunodeficiencies, hypersensitivity or autoimmunity. To know the effector mechanisms of the immune system used in the response to infections or tumors.

Learn about the latest advances in immunotherapy.

## PRIOR KNOWLEDGE

In order to cope with the subject, prior knowledge of:

Cell Biology, and Biochemistry.

Have adequate knowledge of English, for the understanding of scientific texts.

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## COURSE SYLLABUS

Section I:

Topic 1. Introduction to Immunology. Basic concepts.

Theme 2. Immune system cells.

Theme 3. Primary and secondary lymphoid organs.

Topic 4. Recognition in the innate response. Molecular patterns of pathogens (PAMPs) and their receptors.

Topic 5. Effector mechanisms. Complement System.

Theme 6. Inflammatory response.

Topic 7. Immunoglobulins.

Topic 8. Major Histocompatibility Complex.

Topic 9. LT. Activation.  
 Topic 10. LB. Activation.  
 Topic 11. Congenital or primary immunodeficiencies.  
 Topic 12. Secondary immunodeficiencies. AIDS.  
 Topic 13. Hypersensitivity reactions.  
 Topic 14. Central and peripheral tolerance. Autoimmune diseases.  
 Topic 15. Transplant immunology.  
 Topic 16. Immune system and cancer.

## EDUCATION ACTIVITIES

Theoretical classes. The theoretical contents of the subject will be taught in master classes presented by the teacher or by guest teachers. Student participation in the development of the class will be encouraged by proposing questions to the attendees in order to ensure a greater understanding of the concepts taught. Additionally, self-evaluation, review and reinforcement exercises will be carried out in person both individually and together in the classroom. On the other hand, to strengthen content and promote critical thinking, students will find study material in the Virtual Classroom consisting of presentations (computer support), summaries, articles, links to web pages and additional teaching material.

Practical classes. There will be 4 sessions of practical laboratory classes. Attendance at practical classes is strictly mandatory to pass the course.

Tutoring. They are voluntary and have no content restrictions. They will take place in existing teaching spaces in the Departments involved in this subject.

## DISTRIBUTION OF WORK TIME

TEACHER-LED TRAINING ACTIVITIES	INDIVIDUAL WORK
69 Horas	81 Horas

## LEARNING RESULTS

Know the physiology of the skin, blood, circulatory, digestive, locomotor, reproductive, excretory and respiratory systems and systems, endocrine system, immune system and central and peripheral nervous system.

Know the general principles and molecular mechanisms of the body's defense against pathogenic elements and their relationship with epidemiology, prevention and control of diseases.

To know the changes in cellular and systemic physiology that take place in the most prevalent diseases in our society.

To know the pathophysiological processes as well as their manifestations and risk factors affecting health and disease in the human body throughout the life cycle.

## **SPECIFIC LEARNING RESULTS**

Identify the main protagonists of the immune response at the organic, cellular and molecular levels.

Understand how the different mechanisms of the immune response and their manipulation work in an integrated way under physiological and pathological conditions.

Understand the mechanisms and molecular bases of pathologies associated with the Immune System

Know and interpret the main immunological techniques in the diagnostic and research field.

## **LEARNING APPRAISAL SYSTEM**

Ordinary system:

ISE1. Evaluation of the theoretical content of the subject through exams (70%). It will be necessary to get a 5 in this section to average the rest of the grades.

IF 2. Evaluation of exercises, case studies, works in different formats: 15%.

SE8. Carrying out and evaluating the practical work carried out in the laboratory: 15%. Attendance/completion of the internship is mandatory and essential to be able to pass the subject. They will be evaluated through an exam and the preparation, by the student, of the complementary tasks proposed by the internship teacher (which must be delivered within the stipulated time for this purpose). Tasks submitted after the deadline will not be taken into account and, therefore, will remain unqualified. In case of duly justified absence, and impossibility of recovering with another group, a specific test will be taken on the day of the examination of the ordinary call. Unjustified non-attendance at any of the practices, manifest disinterest or inappropriate behavior in carrying them out will mean obtaining a final grade of not having passed the internship. This leads to the loss of the right to the evaluation of internships in the ordinary call and, therefore, a suspension in the subject in this call. If this part is approved and others are suspended, the grade will be saved for the extraordinary call for that same academic year.

To pass the course, it will be necessary to pass all the blocks of the course.

The score corresponding to the continuous evaluation will only be counted once the theoretical part has been passed.

Extraordinary evaluation:

If you have not passed the subject in the first call, the grades of the approved parts will be saved until the extraordinary call. The exam will consist of a written test with the same characteristics as the ordinary call exam.

If you have suspended the laboratory internship block in the ordinary call, a specific test of the same will be carried out in the extraordinary call. If the block of tasks/exercises has been suspended in an ordinary call, additional evaluation tests of a different format will be proposed to the student, involving that%.

Alternative system:

Only in the case of students in the second call and later, and students with academic exemption, can they choose

to take advantage of the previously specified Primary System (in which case they must meet all the requirements, including class attendance) or to take advantage of the alternative system in which the following percentages will be applied:

Final theory exam: 75%

Laboratory work: 15%. In the case of students in second enrollment or in academic dispensation, the internship note from the previous academic year will be saved if they passed that part, without having to repeat them, but they should contact the teacher for specific evaluation criteria and carry out the proposed tests/tasks if necessary. If this is a third enrollment, students will have to do the internship again.

Delivery of tasks (exercises, case analysis, infographics...) through the virtual classroom: 10%. It is essential to submit the tasks proposed by the teacher in order to take the exam.

It is necessary to have all blocks approved to pass the course.

The student must take one of the two options and request the corresponding authorization within five calendar days from the beginning of the semester. If you do not report, the evaluation will be taken over by the ordinary system.

Plagiarism, as well as the use of illegitimate means in evaluation tests, will be sanctioned in accordance with those established in the Evaluation Regulations and the University's Coexistence Regulations.

## ETHICAL AND RESPONSIBLE USE OF ARTIFICIAL INTELLIGENCE

1.- The use of any Artificial Intelligence (AI) system or service shall be determined by the lecturer, and may only be used in the manner and under the conditions indicated by them. In all cases, its use must comply with the following principles:

- a) The use of AI systems or services must be accompanied by critical reflection on the part of the student regarding their impact and/or limitations in the development of the assigned task or project.
- b) The selection of AI systems or services must be justified, explaining their advantages over other tools or methods of obtaining information. The chosen model and the version of AI used must be described in as much detail as possible.
- c) The student must appropriately cite the use of AI systems or services, specifying the parts of the work where they were used and describing the creative process followed. The use of citation formats and usage examples may be consulted on the Library website([https://www.ufv.es/gestion-de-la-informacion\\_biblioteca/](https://www.ufv.es/gestion-de-la-informacion_biblioteca/)).
- d) The results obtained through AI systems or services must always be verified. As the author, the student is responsible for their work and for the legitimacy of the sources used.

2.- In all cases, the use of AI systems or services must always respect the principles of responsible and ethical use upheld by the university, as outlined in the [Guide for the Responsible Use of Artificial Intelligence in Studies at UFV](#). Additionally, the lecturer may request other types of individual commitments from the student when deemed necessary.

3.- Without prejudice to the above, in cases of doubt regarding the ethical and responsible use of any AI system or service, the lecturer may require an oral presentation of any assignment or partial submission. This oral evaluation shall take precedence over any other form of assessment outlined in the Teaching Guide. In this oral defense, the student must demonstrate knowledge of the subject, justify their decisions, and explain the development of their work.

## BIBLIOGRAPHY AND OTHER RESOURCES

### Basic

Abbas, Abul K. Basic Immunology [Electronic Resource]: Functions and Disorders of the Immune System/5th ed. Madrid:Elsevier, 2018.

Abbas, Abul K. Cellular and Molecular Immunology [Electronic Resource]/9th ed. Madrid:Elsevier, 2018.

directors, José R. Regueiro... [et al.]; webmaster, Alfredo Corell Almuzara; Illustrator, Antonio López Vázquez. Immunology: Biology and Pathology of the Immune System/4th ed. rev. Madrid:Editorial Médica Panamericana, 2016.

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Salinas Carmona, Mario Cesar. Immunology in Health and Disease/2nd ed., 1st Reimp. Buenos Aires [etc.] : Panamericana, 2019.