Subject Course/Teaching Guide

Subjetct	Immune Therapy		
Subjetct Area	Advances Therapies		
Module			
Degree	Bachelor´s Degree in Biomedicine and Advanced Therapies		
Plan	710	**Code**	47917
Teaching Period	Second Semester	**Type/ Character**	Mandatory
Level/ Cycle	Bachelor´s Degree	**Year**	3
ECTS Credits	6		
Language Instruction	English		
Responsible Professor(s):	David Bernardo (coordinator) Sara Cuesta Clara Meana		
Contact Information	David Bernardo 983185978 d.bernardo.ordiz@gmail.com / David.bernardo@uva.es		
Department	-Pediatría, Inmunología, Ginecología-Obstetricia, Nutrición-Bromatología, Psiquiatría e Historia de la Ciencia.		
Date of review by the Title Committee	4th July 2024		

1. Situation / Purpose

1.1 Contextualization

In the context of the discovery of Morphology, Structure, and Function of the Human Body, the Immune Therapy subject (taught in English) will provide basic foundations on how various ailments or pathologies can be treated through the modulation of our body's immune responses. To achieve this, students will be equipped with advanced knowledge on state-of-the-art immunomodulation techniques. Additionally, given the translational nature of this degree, the subject will also provide a profound knowledge base on biomedical research in the context of immunology by providing students with a laboratory work plan (to be presented in "paper" format), as well as enabling them to delve into independent study of a specific topic through the review of a scientific article and its subsequent critical presentation in "journal club" format.

1.2 Relationship withother subjects

The Immune Therapy subject, stemming from knowledge in immunology, is therefore intimately related to other subjects, primarily Human Anatomy and Physiology, but also genetics, biochemistry, metabolism, pharmacology, and microbiology.

1.3 Prerequisites

- Essential prior knowledge in Immunology (acquired in the "Human Immunology" subject in the second year of the degree).

- Desirable prior knowledge in Microbiology, Human Physiology, General Pharmacology, General Pathophysiology, Pathological Anatomy, and Proficiency in computer tools at the user level.

2. Competencias (RD 1393/2007) o Resultados del proceso de formación y de aprendizaje (RD 822/2021)

For study plans under RD 1393/2007, the General Competencies and Specific Competencies must be completed.
For study plans under RD 822/2021, knowledge or content, skills or abilities and competencies must be completed.

2.1 (RD1393/2007) General Competences

CG1 - Ability to analyze and synthesize basic problems related to Biomedicine and Advanced Therapies, solve them using the scientific method, and communicate them efficiently.
CG2 - Understanding the scientific and technical foundations of Biomedicine and Advanced Therapies, facilitating the learning of new methods and technologies, as well as developing great versatility to adapt to new situations.
CG3 - Acquiring the ability to solve problems with initiative and creativity, as well as to communicate and transmit knowledge, skills, and abilities, understanding the ethical, social, and professional responsibility of the biomedical activity.
CG4 - Working appropriately in a laboratory, including aspects of safety, material handling, and waste disposal.
CG5 - Acquiring, analyzing, interpreting, and managing information.
CG6 - Drafting reports and making judgments based on a critical analysis of reality.

2.2 (RD1393/2007) Specific Compenteces

CE7 - Understanding the normal and pathological mechanisms of the immune response to comprehend the pathogenesis of inflammatory diseases, immunodeficiencies, and cancer. Understanding the principles of immunotherapy as an advanced therapy and its application in the mentioned situations.
CE14 - Understanding the ways in which humans become ill and age. Understanding the cellular and molecular bases that explain processes such as cancer development, inflammation, and metabolic and degenerative diseases, as well as normal aging processes.
CE20 - Comprehending the cellular and molecular bases of neoplastic transformation and tumor progression, the diagnostic and therapeutic implications of these molecular mechanisms, and the experimental approaches used for their study. Knowing the strategies used in personalized cancer medicine.
CE21 - Acquiring a broad vision of new personalized therapies. Development, design, and application of such therapies.
CE22 - Understanding the principles of the scientific method, biomedical research, and clinical trials.
CE23 - Explaining the bases and different modalities of cellular, genetic, and tissue therapy, and identifying which human pathological alterations can be treated with advanced therapies.
CE41 - Knowing the main historical milestones of Biomedicine and Advanced Therapies and their influence on human societies, as well as the most innovative and recent developments in this field.
CE42 - Being capable of sufficient communication in the English language, a universal vehicle in scientific communication and information exchange.
CE43 - Acquiring skills that allow for the search and analysis of relevant scientific information. Being able to interpret and adequately communicate such information.

3. Objectives

Theoretical Objectives:

1. Identify the mechanisms for monitoring the immune response.
2. Understand the possibilities of modulating immune-active drugs.
3. Comprehend the possibilities of serum immunomodulation.
4. Recognize the role of vaccines as a central tool in immunotherapy.
5. Identify the different mechanisms of molecular immunotherapy.
6. Identify the different mechanisms of cellular immunotherapy.
7. Recognize immune transplantation as a tool in immunotherapy.
8. Identify various scenarios for the application of immunotherapy, as well as optimal strategies for each approach.
9. Understand the relevance of fecal transplantation as a mechanism of immunotherapy.
10. Recognize the relevance of immuno-nanotherapy and oncolytic viruses.
11. Understand the need for developing personalized medicine.

Practical Objectives:

1. Practically modulate the immune response. Interpret the results and present them in the format of a research article.
2. Consolidate teamwork, essential in biomedicine.
3. Consolidate the use of English as the vehicular language of biomedicine.
4. Consolidate skills in handling computer systems and the internet, as basic tools in biomedicine.
5. Conduct a literature search on an immunotherapy topic and present it in a research seminar format.
6. Analyze, synthesize, and convey acquired knowledge in scientific language.

4. Content and/or thematic blocks

Block 1: "Fundamentals and Introduction to Immunotherapy"

Work load in ECTS credits: 0.32

a. Contextualization and Justification

This introductory block will provide a comprehensive overview of the subject including methodology and work plan. Additionally, it will serve as a summary or reminder to reinforce previously acquired knowledge in the "Human Immunology" subject and introduce students to the field of immunomodulation.

b. Learning Objectives

To reinforce and retrieve previous knowledge of immunology and introduce students to the field of immune response monitoring and immunomodulation.

c. Contents

1. Introduction and basic concepts in the field of Immunotherapy: Immunosuppression, Immunomodulation, etc.
2. Monitoring of the immune response.
3. Immunopharmaceuticals: Immunosuppression and immunopotentiation.

d. Teaching Methods

Theoretical Classes, in face-to-face mode, Tutoring (face-to-face and non-face-to-face).

e. Work Plan

Theoretical classes of topics 1 to 3, each with a duration of 50 minutes.

f. Evaluation

Individual and within the overall assessment of the subject.
Tutoring Available upon request via email addressed to the professor.

g Teaching Materials

It is essential that the references provided this course are updated and comprehensive. Faculty members have access to the Leganto platform of the Library to update their recommended bibliography ("Reading Lists"). If you have already done so, you can include the permanent link to Leganto in both the teaching guide and the Virtual Campus.
The Library relies on the recommended bibliography in the Teaching Guide to adapt its collection to the teaching and learning needs of the degrees.
If you need to update your bibliography, the link is as follows: https://buc-uva.alma.exlibrisgroup.com/leganto/login?auth=SAML (access with your UVa credentials). This link takes you to the authentication page of the UVa directory, which redirects you to Leganto. Once there, the reading lists corresponding to the different subjects taught ("instructor" in Leganto / Alma terminology) will appear by default. From here, you could add new titles to existing lists, create sections within them, or create new lists of recommended bibliography.
You can consult existing reading lists using the search engine located in the menu at the top left, under the "search lists" option.
At the top right of each reading list, there is a button with an ellipsis symbol "..." through which a menu is displayed that, among other options, allows you to "Create a shareable link" that can either direct to the specific reading list or to the "Course" (subject). This link can be indicated both in the "g. Teaching Materials" section (and subsections) of the Teaching Guide and in the Bibliography section corresponding to the subject in the UVa Virtual Campus.

LINK LEGANTO;
https://buc-uva.alma.exlibrisgroup.com/leganto/public/34BUC_UVA/lists/8246023430005774?auth=SAML

For any questions, you can consult your center's library. Professor's Help Guide.

g.1 Basic Bibliography

- Inmunología. Biología y patología del sistema inmune. Regueiro JR, López-Larrea C, González S, Martínez E. Editorial Médica Panamericana. Madrid 2011 (4ª edición).

- Janeway's Immunobiology. Murphy K, Weaver C. Editorial "Garland Science". New York 2016 (9ª edición en inglés).
- Inmunobiología de Janeway. Murphy K, Weaver C. El Manuel Moderno, Ciudad de México 2019 (1ª edición en español de la 9ª edición en inglés).
- Immunology: an illustrated Outline. Editorial "Garland Science". New York 2013 (5ª edición en inglés).
- Inmunología de Kuby. Owen, Punt, Stranford. Editorial McGraw-Hill. México, 2020 (8ª edición).
- Inmunología celular y molecular. Abbas AK, Lichtman AH, Pillai S. Editorial Elsevier. Madrid 2022 (10ª edición).
- Clinical Immunology: Principles and practice. Robert R. Rich M. Elsevier Editorial (5th Edition)

g.2 Supplementary Bibliography

- Inmunología. Peña J. Libro "on line": https://inmunologiaenlinea.es
- Inmunología. D. Male, J. Brostoff, D.B. Roth, I. Roitt. Editorial Elsevier-Mosby. Madrid, 2013 (8ª edición).
- The Immune System. Parham P. Editorial "Garland Science". New York 2014 (4ª edición en inglés).
- Fundamental Immunology. William E. Paul. Ed. Lippincott Williams & Wilkins 2012
- Immunotechnology and its applications. Alvarez-Vallina L, González Fernández A, Hernández D, Kossida S, Magadán Mompó M, Reche PA, de los Toyos JR, Ybarra G. Editorial Universidad de Oviedo. Oviedo 2022

g.3 Other Online Resources

Online resources such as knowledge capsules, blogs, videos, digital magazines, and other resources will be updated on the Virtual Campus of the subject, organized by blocks and topics.

h. Necessary Resources

a. Presentation projector in the classroom.
b. Internet access.
c. Whiteboard.

i. Schedule

ECTS LOAD	PLANNED DEVELOPMENT PERIOD
Theoretical Block 1: 0.3 ECTS	Week 1

Block 2: "Main Methods of Immunotherapy"

Work load in ECTS credits: 0.82

a. Contextualization and Justification

After reinforcing the fundamentals of immunology and learning the basic notions of immunomodulation, this block will describe various mechanisms of immunotherapy, including cellular, molecular, genetic editing, and transplantation mechanisms.

b. Learning Objectives

To identify the different therapeutic arsenals that allow for proper immunotherapy.

c. Contents

4. Serotherapy: Anti-venom, anti-infectious, hyperimmune serum.
5. Immunotherapy and vaccines, adjuvants.
6. Molecular immunotherapy: Antibodies.
7. Molecular immunotherapy: Cytokines.
8. Cellular immunotherapy: Dendritic cells.
9. Cellular immunotherapy: Lymphocytes (TIL, LAK).
10. Cellular immunotherapy: CAR-T (gene immunotherapy).
11. Immune system replacement: Transplantation.

d. Teaching Methods

Theoretical Classes, in face-to-face mode.
Tutoring (face-to-face and non-face-to-face).

e. Work Plan

Theoretical classes of topics 4 to 11, each with a duration of 50 minutes.

f. Evaluation

Individual and within the overall assessment of the subject.
Tutoring: available upon request via email addressed to the professor.

g Teaching Materials

For any questions, you can consult your center's library. Professor's Help Guide.

g.1 Basic Bibliography

- Inmunología. Biología y patología del sistema inmune. Regueiro JR, López-Larrea C, González S, Martínez E. Editorial Médica Panamericana. Madrid 2011 (4ª edición).
- Janeway's Immunobiology. Murphy K, Weaver C. Editorial "Garland Science". New York 2016 (9ª edición en inglés).
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- Immunology: an illustrated Outline. Editorial "Garland Science". New York 2013 (5ª edición en inglés).
- Inmunología de Kuby. Owen, Punt, Stranford. Editorial McGraw-Hill. México, 2020 (8ª edición).
- Inmunología celular y molecular. Abbas AK, Lichtman AH, Pillai S. Editorial Elsevier. Madrid 2022 (10ª edición).
- Clinical Immunology: Principles and practice. Robert R. Rich M. Elsevier Editorial (5th Edition)

g.2 Supplementary Bibliography

- Inmunología. Peña J. Libro "on line": https://inmunologiaenlinea.es
- Inmunología. D. Male, J. Brostoff, D.B. Roth, I. Roitt. Editorial Elsevier-Mosby. Madrid, 2013 (8ª edición).
- The Immune System. Parham P. Editorial "Garland Science". New York 2014 (4ª edición en inglés).
- Fundamental Immunology. William E. Paul. Ed. Lippincott Williams & Wilkins 2012
- Immunotechnology and its applications. Alvarez-Vallina L, González Fernández A, Hernández D, Kossida S, Magadán Mompó M, Reche PA, de los Toyos JR, Ybarra G. Editorial Universidad de Oviedo. Oviedo 2022.

g.3 Other Online Resources

Knowledge capsules, blogs, videos, digital magazines, and other resources that will be updated on the Virtual Campus of the subject, organized by blocks and topics.

h. Necessary Resources

1. Presentation projector in the classroom.
2. Internet access.
3. Whiteboard.

i. Schedule

ECTS LOAD	PLANNED DEVELOPMENT PERIOD
Theoretical Block 2: 0.8 ECTS	Weeks 2 to 4.

Block 3: "Clinical Applications of Immunotherapy"

Work load in ECTS credits: 1.12

a. Contextualization and Justification

In the previous blocks, students will have identified the main mechanisms of immunomodulation. In this block, based on that knowledge, they will apply it to real cases focused on various diseases.

b. Learning Objectives

To understand that each disease is unique, and based on its particularities, it may require various strategies of immunomodulation, with some being more specific or associated with different diseases

c. Contents

12. Clinical Applications: Immunodeficiencies.
13. Clinical Applications: Autoimmunity and Autoinflammatory Diseases
14. Clinical Applications: Digestive Diseases.
15. Clinical Applications: Inflammatory Bowel Disease.
16. Clinical Applications: Allergy
17. Clinical Applications: Cancer I.
18. Clinical Applications: Cancer II.
19. Clinical Applications: Infectious Diseases.
20. Clinical Applications: Human Reproduction.
21. Immunotherapy through Fecal Transplantation.
22. Immuno-Nanotherapy and Oncolytic Viruses.

d. Teaching Methods

Theoretical Classes, in face-to-face mode.
Tutoring (face-to-face and non-face-to-face).

e. Work Plan

Theoretical classes of topics 12 to 22, each with a duration of 50 minutes.

f. Evaluation

Individual and within the overall assessment of the subject.
Tutoring: available upon request via email addressed to the professor.

g Teaching Materials

For any questions, you can consult your center's library. Professor's Help Guide.

g.1 Basic Bibliography

- Inmunología. Biología y patología del sistema inmune. Regueiro JR, López-Larrea C, González S, Martínez E. Editorial Médica Panamericana. Madrid 2011 (4ª edición).
- Janeway's Immunobiology. Murphy K, Weaver C. Editorial "Garland Science". New York 2016 (9ª edición en inglés).
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g.2 Supplementary Bibliography

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g.3 Other Online Resources

Knowledge capsules, blogs, videos, digital magazines, and other resources that will be updated on the Virtual Campus of the subject, organized by blocks and topics.

h. Necessary Resources

1. Presentation projector in the classroom.
2. Internet access.
3. Whiteboard.

i. Schedule

ECTS LOAD	PLANNED DEVELOPMENT PERIOD
Theoretical Block 3. 1.1 ECTS	Weeks 4 to 8.

Block 4: "Personalized Medicine"

Work load in ECTS credits: 0.22

a. Contextualization and Justification

After identifying the main tools of immunomodulation and their clinical application in various diseases, the need for personalized medicine will be studied.

b. Learning Objectives

To understand that although each disease is different, the underlying biological variability in the human species implies that each person is unique. Therefore, the response to various therapies of each person will depend on their genetic and environmental background, which is why it is necessary to identify biomarkers that allow for individualized therapy for each person.

c. Contents

23. Personalized Medicine: Polymorphisms and Immunotherapy.
24. Personalized Medicine: Biomarkers.

d. Teaching Methods

Theoretical Classes, in face-to-face mode.
Tutoring (face-to-face and non-face-to-face).

e. Work Plan

Theoretical classes of topics 23 to 24, each with a duration of 50 minutes.

f. Evaluation

Individual and within the overall assessment of the subject.
Tutoring: available upon request via email addressed to the professor.

g Teaching Materials

For any questions, you can consult your center's library. Professor's Help Guide.

g.1 Basic Bibliography

- Inmunología. Biología y patología del sistema inmune. Regueiro JR, López-Larrea C, González S, Martínez E. Editorial Médica Panamericana. Madrid 2011 (4ª edición).
- Janeway's Immunobiology. Murphy K, Weaver C. Editorial "Garland Science". New York 2016 (9ª edición en inglés).
- Inmunobiología de Janeway. Murphy K, Weaver C. El Manuel Moderno, Ciudad de México 2019 (1ª edición en español de la 9ª edición en inglés).
- Immunology: an illustrated Outline. Editorial "Garland Science". New York 2013 (5ª edición en inglés).
- Inmunología de Kuby. Owen, Punt, Stranford. Editorial McGraw-Hill. México, 2020 (8ª edición).
- Inmunología celular y molecular. Abbas AK, Lichtman AH, Pillai S. Editorial Elsevier. Madrid 2022 (10ª edición).
- Clinical Immunology: Principles and practice. Robert R. Rich M. Elsevier Editorial (5th Edition)

g.2 Supplementary Bibliography

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- The Immune System. Parham P. Editorial "Garland Science". New York 2014 (4ª edición en inglés).
- Fundamental Immunology. William E. Paul. Ed. Lippincott Williams & Wilkins 2012
- Immunotechnology and its applications. Alvarez-Vallina L, González Fernández A, Hernández D, Kossida S, Magadán Mompó M, Reche PA, de los Toyos JR, Ybarra G. Editorial Universidad de Oviedo. Oviedo 2022.

g.3 Other Online Resources

Knowledge capsules, blogs, videos, digital magazines, and other resources that will be updated on the Virtual Campus of the subject, organized by blocks and topics.

h. Necessary Resources

1. Presentation projector in the classroom.
2. Internet access.
3. Whiteboard.

i. Schedule

ECTS LOAD	PLANNED DEVELOPMENT PERIOD
Theoretical Block 4: 0.2 ECTS	Week 8.

Block 5: "Review and Presentation of a Scientific Article"

Work load in ECTS credits: 1.84

a. Contextualization and Justification

The Biomedicine and Advanced Therapies degree, in general, and the Immune Therapy subject, in particular, have a clear translational objective towards biomedical research. In this context, the critical reading of scientific articles published in indexed journals is the main source of knowledge in the field of human biomedicine. Therefore, it is necessary to emphasize not only the critical reading of scientific articles but also their correct interpretation

b. Learning Objectives

Students, grouped in pairs, will be assigned a topic detailed in section c) of this block. Under the supervision of a tutor, they must identify a current and high-impact article published in a peer-reviewed indexed journal. Once the article is identified, students will conduct a critical reading, identifying its strengths and weaknesses, and subsequently present it to the rest of their classmates in a "journal club" format.

c. Contents

1. Serotherapy: Anti-venom, anti-infectious, hyperimmune serum.
2. Immunotherapy and vaccines, adjuvants.
3. Molecular immunotherapy: Antibodies.
4. Molecular immunotherapy: Cytokines.
5. Cellular immunotherapy: Dendritic cells.
6. Cellular immunotherapy: Lymphocytes (TIL, LAK).
7. Cellular immunotherapy: CAR-T (gene immunotherapy).
8. Immune system replacement: Transplantation.
9. Clinical Applications: Immunodeficiencies.
10. Clinical Applications: Autoimmunity and Autoinflammatory Diseases
11. Clinical Applications: Digestive Diseases.
12. Clinical Applications: Inflammatory Bowel Disease.
13. Clinical Applications: Allergy
14. Clinical Applications: Cancer.
15. Clinical Applications: Infectious Diseases.
16. Clinical Applications: Human Reproduction.
17. Immunotherapy through Fecal Transplantation.
18. Immuno-Nanotherapy and Oncolytic Viruses

d. Teaching Methods

- Creation of work pairs for students.
- Assignment of a topic to the students to conduct a search for a paper and its subsequent presentation.

- Tutoring (both in-person and remote) by the tutor assigned to each topic.
- Presentation, interpretation and review of the presented work.

e. Work Plan

Students will be grouped into pairs to conduct a scientific article in "journal club" format. Under the supervision/tutorship of a professor, each pair of students will have to identify a study related to those outlined in this block. The students will critically read the study, after which they will make a presentation to the rest of their classmates summarizing and interpreting the article, as well as indicating its strengths, weaknesses, etc.

f. Evaluation

As part of a continuous evaluation process, the professors will assess the presentation of the work by each pair of students who will have individuals marks based on their outcome

The chosen article will be evaluated, as well as the ability to synthesize/summarize the article, presentation, identification of strengths and weaknesses, as well as interpretation of how the students would proceed with the study.

It will also be positively evaluated if students who have not presented the work are involved in the discussion after the work presented by their classmates.

g Teaching Materials

For any questions, you can consult your center's library. Professor's Help Guide.

g.1 Basic Bibliography

Not applicable as students will need to search various research articles on PubMed themselves to identify the one that best fits the assigned topic.

g.2 Supplementary Bibliography

Not applicable.

g.3 Other Online Resources

Not applicable.

h. Necessary Resources

Projector for presentations in the classroom. Internet access. Whiteboard.

i. Schedule

ECTS LOAD	PLANNED DEVELOPMENT PERIOD
Block 5: 1.84 ECTS	Weeks 1 to 13

Block 6: "Laboratory Practices"

Work load in ECTS credits: 1.68

a. Contextualization and Justification

As in the previous block, the Biomedicine and Advanced Therapies degree program, in general, and the Immune Therapy subject, in particular, have a clear focus on biomedical research. Therefore, it is essential to deepen laboratory practices where students will learn to modulate the immune system ex vivo.

b. Learning Objectives

In this practice, and always working under sterile conditions, students will learn to obtain peripheral blood mononuclear cells, perform ex vivo cultures, and evaluate the immune response using cellular and molecular techniques.

c. Contents

- The practices will take place over 4 days. Each batch of practices will include the presence of 4 pairs of students, with the evaluation being done jointly for both members of each group.
- On the first day, students will learn to obtain peripheral blood mononuclear cells (under biological safety conditions) and subsequently establish ex vivo cultures under various culture conditions.
- On the second day, the cultures will be finalized, including the cryopreservation of supernatants and cell recovery for subsequent analysis using cytometry techniques.

- On the third day of practices, the quantification of soluble inflammation mediators will be performed in each of the culture conditions.

Finally, on the last day, the analysis and interpretation of the results will be carried out jointly.

d. Teaching Methods

- Establishment of the work pairs (the same as in Block 5).
- Performance of laboratory practices in batches of 4 groups (8 students) under the supervision of at least 2 professors in each practice.
- Analysis and interpretation of the results.
- Tutoring (both in-person and remote) by the practice professors.
- Presentation of the practice report in scientific article format including introduction, materials and methods, results, discussion, and bibliography.

e. Work Plan

Students, grouped in the same pairs as in the previous block, will carry out laboratory practices. In these practices, they will perform immunomodulation assays. For this purpose, and under sterile conditions, they will learn to obtain peripheral blood mononuclear cells which will then be cultured ex vivo in the presence of various compounds. Finally, the results obtained will be analyzed and interpreted using various laboratory techniques. Upon completion, students will submit a practice report in the form of a scientific article (or "paper") including an abstract, introduction, materials and methods, results, discussion, and bibliography.

f. Evaluation

Similar to the previous block, this block constitutes a section of continuous assessment. In it, professors will evaluate the presentation of the work report of each pair of students. The score will be the same for both students.
In addition to the correct writing of the report, including background, methodology, results, and interpretation of the results, the discussion and integration with the current literature on the topic will be highly valued.

g Teaching Materials

For any questions, you can consult your center's library. Professor's Help Guide.

g.1 Basic Bibliography

Not applicable as the work protocols, methodology, etc., will be provided in the practice notebook.

g.2 Supplementary Bibliography

Not applicable.

g.3 Other Online Resources

Not applicable.

h. Necessary Resources

Practice laboratory including cell cultures, ELISA reading, and flow cytometer.
Students are expected to bring their own laptop on the last day for the use of bioinformatic analysis tools provided by the faculty.

i. Schedule

ECTS LOAD	PLANNED DEVELOPMENT PERIOD
Practical Block 6: 1.68 ECTS	Weeks 1 to 13.

5. Teaching Methods and Methodological Principles

5.1 Learning Resources:

- Theoretical Classes: The traditional method of lecture will be followed. The theoretical classes will be held on Mondays, Tuesdays, and Thursdays from 12:30 to 13:30 in the usual spaces provided by the Faculty of Medicine.

- Literature Search Work: Groups of 2 students will conduct the literature search work under the supervision of a tutor/professor of the course, responsible for one of the proposed topics.

- Laboratory Practices: Laboratory practices will be conducted in groups of 2 students, involving the execution of laboratory work and presentation of research findings.

- Materials Available on the Virtual Campus Uva: Materials related to theoretical classes (articles,

databases, web pages of interest) and literature search, in PDF format.

5.2 Tutorial Support.
Personalized tutoring sessions will be scheduled with the responsible professor/tutor for the follow-up of the syllabus, literature search, presentation of scientific articles, as well as the preparation of the practice report

6. Student Dedication Table of the Course

PRESENCE (or REMOTE PRESENCE) (1)	HOURS	NON-PRESENCE	HOURS
Theoretical Classes	24	Individual study	36
Laboratory Practices	16	Prepare practical memory	26
Research Seminars	12	Prepare journal club	36
Total In person	**52**	Total not in person	**98**
		TOTAL (person + non in person)	**150**

(1) Remote presence activity is when a group sitting in a classroom on campus follows a class via videoconference synchronously, taught by the teacher.

7. Evaluation System and Characteristics

INSTRUMENT/PROCEDURE	WEIGHT IN FINAL GRADE	REMARKS
Final Written Objective Test	60%	Multiple-choice test questions, including several questions per topic, and/or short-answer questions.
Presentation of a Bibliographic Search Assignment	20%	Presentation of the assignment (20 minutes) with questions and discussion (5 minutes) in "journal club" format.
Laboratory Practices and Presentation of Report	20%	Presentation of a report on laboratory practices in "paper" format.

GRADING CRITERIA
• **Ordinary Examination**: To pass the final evaluation, it is mandatory to pass the theoretical knowledge exam. • **Extraordinary Examination** (*): The grading criteria will be the same that the ordinary exam.

(*) The extraordinary examination refers to the second examination session.
[Reference: Article 35.4 of the Academic Regulations - ROA 35.4. Participation in the extraordinary examination will not be subject to class attendance or previous test attendance, except in cases of external practices, laboratories, or other activities whose evaluation would not be possible without the prior completion of the mentioned tests.]

https://secretariageneral.uva.es/wp-content/uploads/VII.2.-Reglamento-de-Ordenacion-Academica.pdf

8. Final Considerations

Before the start of the course, two documents will be uploaded (in English) on the virtual campus: the student guide and the laboratory workbook.
The student guide will include detailed instructions on how the course will be conducted, the evaluation process, guidelines on how to prepare the "journal club," etc.
On the other hand, the laboratory workbook will contain a detailed work protocol for all activities to be carried out in the laboratory (such as obtaining immune cells from peripheral blood and ex-vivo culture, determining cellular activation, production of soluble mediators, etc.), along with instructions on how to analyze and interpret the results, as well as guidelines on how to write the report in the form of a research article or "paper."