



IDENTIFYING DATA

Infection and Immunity

Subject	Infection and Immunity			
Code	V02M123V01107			
Study programme	(*)Máster Universitario en Ciencias Biológicas: Biología Molecular, Computacional e Ambiental e Bio-Industrias			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	1st	1st
Language				
Department				
Coordinator	Faro Rivas, Jose Manuel			
Lecturers	Faro Rivas, Jose Manuel González Fernández, María África Lorenzo Abalde, Silvia Stark Aroeira, Luiz			
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Web				
General description				

Competencies

Type A	Code	Competences Specific
	A1	(*)To know the scientific method and the correct use of the scientific terminology as well as to acknowledge the contribution that scientific research provides to the overall knowledge and professional practice.
	A2	(*)Ability to describe and to analyse biological diversity, the mechanisms determining the interactions with the biotic and abiotic environment and being able to select those which might have technical applications.
	A3	(*)Ability to manage and/or to develop basic tools for validating and analysing data by means of statistics and bioinformatics.
	A4	(*)To know the ethical and legal aspects governing the collection and the handling of biological samples, organisms and habitats.
	A5	(*)Ability to design, evaluate and implement models of biological structures, systems and processes.
	A6	(*)To learn the sampling techniques and the instrumental methodologies, in the field and laboratory, for their application in the Biological Sciences
	A7	(*)To have an integrated view of the R&D processes and their possible transfer to the industrial sector. Planning and supervising facilities together with managing their human and economic resources.
	A8	(*)Ability to classify, evaluate, conserve, restore and manage natural and productive systems. Developing and implementing land management and sustainability plans.
	A9	(*)To understand and know how to apply quality control systems and safety protocols in any biological laboratory of the public or private sector.
	A10	(*)To acquire the professional ability to teach and spread Biology and to offer expertise advice for elaborating scientific, technical and socioeconomic biology reports. Address environmental consulting.

A11 (*)To perform an individual Master Project (critical and in-depth study) under the supervision of a tutor in a research or working environment demonstrating that skills have been acquired.

Type B Code Competences Transversal

B1	(*)Dissemination of results and conclusions of the biological studies, in oral and written English, through complex presentations that address ideas related with R&D in Biology.
B2	(*)Managing computational, laboratory, field and industrial techniques in order to obtain, process and apply the acquired information.
B3	(*)Disseminating and broadcasting ideas in contexts both academic and non-specialised.
B4	(*)Reflecting on social and ethical responsibilities.

Learning aims

Subject competences	Typology	Competences
(*)To know the scientific method and the correct use of the scientific terminology as well as to acknowledge the contribution that scientific research provides to the overall knowledge and professional practice.	know Know How	A1
(*)Ability to describe and to analyse biological diversity, the mechanisms determining the interactions with the biotic and abiotic environment and being able to select those which might have technical applications.	know Know How	A2
(*)Ability to manage and/or to develop basic tools for validating and analysing data by means of statistics and bioinformatics.	know Know How	A3
(*)To learn the sampling techniques and the instrumental methodologies, in the field and laboratory, for their application in the Biological Sciences .	know Know How	A6
(*)To understand and know how to apply quality control systems and safety protocols in any biological laboratory of the public or private sector.	know Know How	A9
(*)Dissemination of results and conclusions of the biological studies, in oral and written English, through complex presentations that address ideas related with R&D in Biology.	know Know How	B1 B2 B3
Managing computational, laboratory, field and industrial techniques in order to obtain, process and apply the acquired information.		B4
Disseminating and broadcasting ideas in contexts both academic and non-specialised.		
Reflecting on social and ethical responsibilities.		

Contents

Topic	
1. Basic principles of the immune response.	Cells and molecules of the Immune System (IS). Anatomical organization of the IS. Intercellular interactions. Ontogeny of B and T lymphocytes. Tolerance. Materno-fetal interaction. Introduction to congenic and acquired immune related diseases (allergy, pathological autoimmunity, immunodeficiencies).
2. Immunopathological consequences of infections.	Immune responses against pathogens (bacteria, virus, multicellular parasites, fungi). Inflammatory responses to pathogens and pathogenic consequences: development of pathological autoimmunity.
3. Mechanisms used by microorganisms to evade the immune response.	Mechanisms of pathogen evasion of the immune response.
4. General bases of vaccination.	Vaccines: successes and current problems.

Planning

Personalized attention	Assessment	Ordinary class hours A	Face-to-face hours outside the classroom Guided academic environment B	Student's work factor C	Outside the classroom hours D	Total hours (A+B+D) E

Master Session	<input type="checkbox"/>	<input checked="" type="checkbox"/>	20	0	46.512	43	63
Workshops	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	26	0	47.2727	55	81
Short answer tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	0	50	4	6
Total hours E:							150
Work load in UVIGO ECTS credits:							6

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description
Master Session	Individual lectures of about 2 h will cover each of the topics included in the subject contents.
Workshops	Practical work will be carried out through resolution of problems, questions, and presentation and discussion of research papers from the literature related to some of the topics included in the subject contents.

Personalized attention

	Description
Workshops	Problems arising when solving the proposed exercises will be solved in a personalized manner.

Assessment

	Description	Qualification
Master Session	Follow up of student's performance at each Master session	10
Workshops	Achievement of objectives in practical work.	40
Short answer tests	Written exam on the subject contents.	50

Other comments and second call

Sources of information

Tak Mak, Mary Saunders, Bradley Jett (2014), Primer to The immune response, 2nd edition, London : Academic Cell
 Kenneth Murphy, Paul Travers, Mark Walport ; with contributions by Allan Mowat, Casey T. Weaver (201, Janeway's immunobiology, 8th edition, New York : Garland Science
 S. Plotkin & W. Orestein (2012), Vaccines, 6th edition, Elsevier

Recommendations

Subjects that continue the syllabus

Biomedical Applications of Nanotechnology/V02M123V01202

Subjects that are recommended to be taken simultaneously

Genetic Engineering/V02M123V01105
 Scientific Literature and Writing in Biological Sciences/V02M123V01101
 Molecular Pathology and Biomarkes/V02M123V01201

Subjects that it is recommended to have taken before

Experimental Design And Data Analyses/V02M123V01102
 Scientific Methodology for Biological Studies/V02M123V01103