



## IDENTIFYING DATA

### Reproductive and Developmental Biology

Subject	Reproductive and Developmental Biology			
Code	V02M123V01204			
Study programme	(*)Máster Universitario en Ciencias Biolóxicas: Bioloxía Molecular, Computacional e Ambiental e Bio-Industrias			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	1st	2nd
Language				
Department				
Coordinator	Megías Pacheco, Manuel			
Lecturers	Aguilar Prieto, Jesús Megías Pacheco, Manuel			
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General description	The course goal is to provide students with both, a general knowledge about animal reproduction and development, and, at the same time, a deeper insight into current topics. Thus, in the reproduction field, ..... will be addressed, and in the development field, stem cells, cell differentiation, and tissue engineering will be addressed.			

## 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	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	A2
To know the ethical and legal aspects governing the collection and the handling of biological samples, organisms and habitats.	know	A4
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
Managing computational, laboratory, field and industrial techniques in order to obtain, process and apply the acquired information.	know Know How	B2
Disseminating and broadcasting ideas in contexts both academic and non-specialised.	know Know How	B3
Reflecting on social and ethical responsibilities.	know Know How	B4

### Contents

Topic	
1.- Gametogenesis and fertilization.	1a. Spermiogenesis 1b. Polyspermy prevention 1c. Fertilization
2.- Cell and tissue differentiation. Organogenesis.	2a. Signaling and gene expression 2b. Paths of differentiation 2c. Cellular scaffolds
3.- Stem cells.	3a. Stem cell types 3b. Getting stem cells
4.- Cloning, cancer, apoptosis.	4a. Cell cycle 4b. Cell cycle flaws
5.- Regenerative medicine and tissue engineering	5a. Repairing tissues 5b. Making tissues 5c. Hopes and issues of regenerative medicine

### 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
Workshops	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	18	0	4	72	90
Others	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	0	4	8	10
Master Session	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12	0	3.16667	38	50
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.

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### Methodologies

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	Description
Workshops	Topics will be presented and discussed, particularly their impact in health and society. Participation of the students will be requested.
Others	Written assesment about one or several topics of the course.
Master Session	Individual lectures covering the topics of the course.

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### Personalized attention

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	Description
Workshops	In wokshop sessions, questions and suggestions from students will be addressed and discussed.

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### Assessment

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	Description	Qualification
Master Session	Continuos assessment	10
Workshops	Topics presentation and discussion.	40
Others	Short answer tests	50

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### Other comments and second call

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### Sources of information

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Gilbert, S.F., Developmental biology, 9th Edition (2010), Sunderland, Mass. : Sinauer Associates

Alberts, B, et al., Molecular biology of the cell, 5th Edition (2008), Garland Science

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### Recommendations

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#### Subjects that are recommended to be taken simultaneously

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Systems Biology/V02M123V01212

Structural Biology/V02M123V01211

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#### Subjects that it is recommended to have taken before

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Genetic Engineering/V02M123V01105

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