



## IDENTIFYING DATA

### Molecular Pathology and Biomarkes

Subject	Molecular Pathology and Biomarkes			
Code	V02M123V01201			
Study programme	(*)Máster Universitario en Ciencias Biolóxicas: Biología Molecular, Computacional e Ambiental e Bio-Industrias			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	1st	2nd
Language				
Department				
Coordinator	Valverde Pérez, Diana			
Lecturers	de Chiara Prada, Loretta Spuch Calvar, Carlos Valverde Pérez, Diana			
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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
(*)(*)	Know How	B1 B2 B3 B4
(*)(*)	Know How	A3 A4 A6 A10

**Contents**

Topic	
1.-Genetics and biochemical basis of disease	Physiopathology of disease Molecular basis of diseases
2.-The Nature and Mechanisms of Human Gene Mutation	Germline and somatic mutations Type of mutations
3.-Protein Folding and Misfolding in different pathologies	Three dimensional structure Molecular aspects
4.-Epigenetic changes in disease	DNA Methylation Histone modifications RNA silencing Epigenetic and diseases
5.- Animal models in human diseases	Transgenesis Induced mutation Pits and falls
6.- Identification and validation of new biomarkers	New Technologies and approaches

**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
Case studies / analysis of situations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	12	0	2.3	27.6	39.6
Seminars	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8	0	1.5	12	20
Master Session	<input type="checkbox"/>	<input type="checkbox"/>	30	0	1.35	40.5	70.5
Long answer tests and development	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	0	2.55	5.1	7.1
Systematic observation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5	0	0	0	5
Case studies / analysis of situations	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3	0	1.6	4.8	7.8
Total hours E:							150
Work load in UVIGO ECTS credits:							6

### Methodologies

	Description
Case studies / analysis of situations	Activity in which problems arise and / or exercises to the students. Students must develop the right solutions and right through exercitation routines, application of formulas or algorithms, the application of procedures for processing the information available and the interpretation of results. It is often used to complement the lectures with.
Seminars	Formulated, discussed and resolved issues related to the subject.
Master Session	Presentation by the teacher of the content on the subject under study, theoretical bases and / or guidelines of a job, exercise or project to be developed by the student.

### Personalized attention

	Description
Case studies / analysis of situations	Teacher resolve the doubts of the students to the proper conduct of the proposed activities
Seminars	Teacher resolve the doubts of the students to the proper conduct of the proposed activities
Case studies / analysis of situations	Teacher resolve the doubts of the students to the proper conduct of the proposed activities

### Assessment

	Description	Qualification
Long answer tests and development	x	50
Systematic observation	x	10
Case studies / analysis of situations	x	40

### Other comments and second call

### Sources of information

Strachan and Read, Human Molecular Genetics, 4rd edition, Garland Publishing(2010)  
 William B. Coleman Gregory J. Tsongalis , Molecular Pathology: The Molecular Basis of Human Disease, 2009, .(Editor)  
 Academic Press

### Recommendations