



Facultade de Bioloxía

Máster Universitario en Ciencias Biolóxicas: Bioloxía Molecular, Computacional e Ambiental e Bio-Industrias

Materias

Curso 2

Código	Nome	Cuadrimestre	Cr.totais
V02M123V01301	Proxecto Obrigatorio	An	48
V02M123V01401	Traballo Fin de Máster	2c	12

DATOS IDENTIFICATIVOS				
(*)Proxecto Obrigatorio				
Materia	(*)Proxecto Obrigatorio			
Código	V02M123V01301			
Titulación	(*)Máster Universitario en Ciencias Biolóxicas: Bioloxía Molecular, Computacional e Ambiental e Bio-Industrias			
Descritores	Creditos ECTS	Sinale	Curso	Cuadrimestre
	48	OB	2nd	An
Lingua de impartición	English			
Departamento				
Coordinador/a	Iglesias Briones, Maria Jesús			
Profesorado	Carvajal Rodríguez, Antonio Iglesias Briones, Maria Jesús Megías Pacheco, Manuel Pedrol Bonjoch, María Nuria Posada González, David Rodeiro Iglesias, Javier Salgueiriño Maceira, Verónica Valverde Pérez, Diana			
Correo-e	mbriones@uvigo.es			
Web				
Descrición xeral	Performing an extensive research or technical project of multidisciplinary nature within one of four tracks offered in the Master Programme: #Research focus, with greater emphasis on the research component; it can serve as initial step to further doctoral studies. #Professionalising focus, with greater emphasis on the implementation of those skills for improving their personal development.			

Competencies	
Código	
A1	Acquiring knowledge and understanding that provide a basis or an opportunity to be original in the development and/or application of ideas in the research environment
A2	That the students would be able to apply the acquired knowledge and their ability to solve problems to new or unfamiliar environments within broader (or multidisciplinary) contexts which are related to their study field
A3	That students would be able to integrate knowledge and to face the complex task of formulating judgments based on incomplete or limited information by incorporating social and ethical responsibilities which can be linked to their knowledge and judgments
A4	That students would be able to communicate their conclusions, and their inherent knowledge and rationale, to both specialist and non-specialist audiences in a clear and unambiguous way
A5	That students will acquire the learning skills that would enable them to continue their learning progress in a way that must be largely self-directed or autonomous
B1	Development of critical and self-critical thinking skills
B2	Development of comprehensive, analysis and synthesis skills
B3	Ability to use criteria and scientific methods when planning and solving problems by applying the acquired knowledge
B4	Capacity of planning and organization in order to define goals, objectives and priorities of the aimed work and of arranging time and resources
B5	Capacity to apply the acquired knowledge to new environments, especially within multidisciplinary contexts
B7	Development of scientific curiosity, initiative, creativity and entrepreneurship
B8	Ability for collecting, analysing and integrating information from different sources and capacity for its interpretation and evaluation
B11	Understanding the social projection of Biological Sciences
C2	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.
C3	Ability to manage and/or to develop basic tools for validating and analysing data by means of statistics and bioinformatics.
C4	To know the ethical and legal aspects governing the collection and the handling of biological samples, organisms and habitats.

C5	Ability to design, evaluate and implement models of biological structures, systems and processes.
C6	To learn the sampling techniques and the instrumental methodologies, in the field and laboratory, for their application in the Biological Sciences
C7	Acquiring an integrated view of the R&D processes and its possible transfer to industry. Planning and supervising facilities together with managing their human and economic resources.
C8	Ability to classify, evaluate, conserve, restore and manage natural and productive systems. Developing and implementing land management and sustainability plans.
C9	To understand and know how to apply quality control systems and safety protocols in any biological laboratory of the public or private sector.
C10	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.
D1	Dissemination of results and conclusions from biological studies in both oral and written English via complex presentations addressing ideas related to the R&D in Biology
D2	Managing computational, laboratory, field and industrial techniques to gain information and knowledge as well as abilities to process it and use it
D3	Spreading and dissemination of ideas in both academic and non-specialised contexts
D4	Awareness of social and ethical responsibilities

Learning outcomes

Resultados previstos na materia	Resultados de Formación e Aprendizaxe
Development of inductive/deductive skills	A1 A2 A3 A4 A5 B1 B2 B3 B5 B7 B11 C4 C5 C7 C9 D3 D4
Capacity for synthesis and communication and ability to critically discuss ideas	A1 A2 A3 A4 A5 B1 B2 B3 B4 C5 C10 D1 D3
Learning advanced methodologies to be implemented in basic and applied biological research.	A1 A2 A3 A4 A5 B3 B5 B8 C3 C5 C6 C8 C9 D2

Autonomy in the development of new hypotheses and when interpreting results

A1
A2
A3
A4
A5
B1
B3
B8

Awareness of the limits of the techniques employed, the existence of possible artifacts and the need for technique's standardisation

A1
A2
A3
A4
A5
B1
B3
C2
D2
D4

Contents

Tema

1. Introduction to the management of advanced equipment and to specialised literature	Acquiring knowledge on the use of several instrumental facilities and literature searching engines
2. Training in specific methodologies and techniques used in Biological Sciences.	Learning advanced methodologies of common use in basic and applied biological research

Planning

	Horas na aula	Horas fóra da aula	Horas totais
Introductory activities	5	45	50
Tutored works	15	525	540
Projects	10	600	610

*Os datos que aparecen na táboa de planificación son de carácter orientador, considerando a heteroxeneidade do alumnado.

Methodologies

	Descrición
Introductory activities	Desing and planning of the project. Time framework
Tutored works	Planning the tasks to develop the different steps of the project Following-up of the progress
Projects	Drawing conclusions and writting up of the final project

Personalized attention

Metodoloxías	Descrición
Introductory activities	Provide guidance Solving problems arisen with every task Discussion of the results
Tutored works	Provide guidance Solving problems arisen with every task Discussion of the results
Projects	Provide guidance Solving problems arisen with every task Discussion of the results

Assessment

	Descrición	Cualificación	Resultados de Formación e Aprendizaxe			
Tutored works	Tutor evaluation	20	A1	B1	C2	D1
			A2	B2	C3	D2
			A3	B3	C4	D3
			A4	B4	C5	D4
			A5	B5	C6	
				B7	C7	
				B8	C8	
				B11	C9	
					C10	

Projects	Written essay (30%)	80	A1	B1	C2	D1
	Public defense (50%)		A2	B2	C3	D2
			A4	B3	C4	D3
			A5	B4	C5	D4
				B5	C6	
				B7	C7	
				B8	C8	
				B11	C9	
					C10	

Outros comentarios sobre a Avaliação

Sources of information

Recommendations

Outros comentarios

The project must be supervised by a tutor and it would be performed at the institution/company where the availability of human and material resources are the most suitable for the chosen topic.

DATOS IDENTIFICATIVOS**The Final Master Degree Work**

Materia	The Final Master Degree Work			
Código	V02M123V01401			
Titulación	(*)Máster Universitario en Ciencias Biológicas: Biología Molecular, Computacional e Ambiental e Bio-Industrias			
Descritores	Creditos ECTS	Sinale	Curso	Cuadrimestre
	12	OB	2nd	2nd
Lingua de impartición	English			
Departamento				
Coordinador/a	Iglesias Briones, Maria Jesús			
Profesorado	Iglesias Briones, Maria Jesús Megías Pacheco, Manuel Rodeiro Iglesias, Javier Valverde Pérez, Diana			
Correo-e	mbriones@uvigo.es			
Web				
Descripción xeral	Practical exercise to instruct the student in the need for continuous updating and adaptation of state-of the art of knowledge and methodologies in order to provide innovative solutions to solve problems in Biological Sciences.			

Competencies

Código	
A1	Acquiring knowledge and understanding that provide a basis or an opportunity to be original in the development and/or application of ideas in the research environment
A2	That the students would be able to apply the acquired knowledge and their ability to solve problems to new or unfamiliar environments within broader (or multidisciplinary) contexts which are related to their study field
A3	That students would be able to integrate knowledge and to face the complex task of formulating judgments based on incomplete or limited information by incorporating social and ethical responsibilities which can be linked to their knowledge and judgments
A4	That students would be able to communicate their conclusions, and their inherent knowledge and rationale, to both specialist and non-specialist audiences in a clear and unambiguous way
A5	That students will acquire the learning skills that would enable them to continue their learning progress in a way that must be largely self-directed or autonomous
B1	Development of critical and self-critical thinking skills
B2	Development of comprehensive, analysis and synthesis skills
B3	Ability to use criteria and scientific methods when planning and solving problems by applying the acquired knowledge
B4	Capacity of planning and organization in order to define goals, objectives and priorities of the aimed work and of arranging time and resources
B5	Capacity to apply the acquired knowledge to new environments, especially within multidisciplinary contexts
B6	Ethical commitment when performing the work avoiding plagiarism; professional and researcher ethics
B7	Development of scientific curiosity, initiative, creativity and entrepreneurship
B8	Ability for collecting, analysing and integrating information from different sources and capacity for its interpretation and evaluation
B9	Autonomous capacity of continuously updating the current knowledge
B10	Teamwork skills, enriched by adopting multidisciplinary approaches
C3	Ability to manage and/or to develop basic tools for validating and analysing data by means of statistics and bioinformatics.
D1	Dissemination of results and conclusions from biological studies in both oral and written English via complex presentations addressing ideas related to the R&D in Biology
D2	Managing computational, laboratory, field and industrial techniques to gain information and knowledge as well as abilities to process it and use it
D3	Spreading and dissemination of ideas in both academic and non-specialised contexts
D4	Awareness of social and ethical responsibilities

Learning outcomes	
Resultados previstos na materia	Resultados de Formación e Aprendizaxe
Ability to synthesize the information gathered	A1 A2 A3 A4 A5 B1 B2 B6 B7 B8 B9
Handling of specialized literature and ICT	A1 A2 A3 A4 A5 B4 B8 B10 C3 D2
Ability to critical discussion and quantitative assessment of the state of the art of knowledge	A1 A2 A3 A4 A5 B1 B3 B4 B5 B6 B8 B9 D1 D3 D4

Contents

Tema	
1. Management of databases from different sources of information	Sources of information
2. Quantitative analysis of the information collected in a systematic manner and at a professional level	Statistical analyses of the compiled information
3. Critical analysis in its broadest context, maintain the argument and presentation of conclusions regarding the actual research or business environment	Selection of the most sounded and reliable data
4. Exhibition of work and effective communication	Preparing public dissertations

Planning

	Horas na aula	Horas fóra da aula	Horas totais
Practice in computer rooms	0	40	40
Autonomous troubleshooting and / or exercises	0	26	26
Presentations / exhibitions	9	225	234

*Os datos que aparecen na táboa de planificación son de carácter orientador, considerando a heteroxeneidade do alumnado.

Methodologies

	Descrición
Practice in computer rooms	Classwork with computer

Autonomous troubleshooting and / or exercises	Resolution of problems and questions. Data validation
Presentations / exhibitions	Writing up of the report. Presentation preparation

Personalized attention

Metodologías	Descripción
Presentations / exhibitions	The professor provides guidance regarding the content and the format

Assessment

Descripción	Cualificación	Resultados de Formación e Aprendizaxe			
Presentations / exhibitions	Written essay (30%) Public defense (70%)	100	A1	B1	D1
			A2	B2	D2
			A3	B3	D3
			A4	B4	D4
			A5	B5	
				B6	
				B7	
				B8	
				B9	
				B10	

Outros comentarios sobre a Avaliación

Sources of information

Recommendations

Outros comentarios

As a general rule, the content of this final Master project could be either related to the Mandatory Project or address a totally different topic and requires the supervision of an academic tutor (Master lecturer). However, if the student chooses a professional orientation, the tutor of the work could be a renowned professional. In any case, the role of the tutor will be to guide the student during the course of this work, to supervise and to ensure compliance with the objectives but not taking the role of principal investigator or an specialist in the field.