



## (\*)Facultade de Bioloxía

### Presentación

<http://bioloxia.uvigo.es/en/faculty/presentation>

### Dean Team

(\*)  
<http://bioloxia.uvigo.es/gl/facultade/equipo-decanal>

### Web

<http://bioloxia.uvigo.es/en/>

## Máster Universitario en Biología Marina

### Subjects

#### Year 2nd

Code	Name	Quadmester	Total Cr.
V02M098V01301	Internships	1st	18
V02M098V01302	Final Year Dissertation	1st	12

**IDENTIFYING DATA****Internships**

Subject	Internships			
Code	V02M098V01301			
Study programme	Máster Universitario en Biología Marina			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	18	Mandatory	2nd	1st
Teaching language	Spanish Galician			
Department				
Coordinator	García Estévez, José Manuel			
Lecturers	García Estévez, José Manuel			
E-mail	jestevez@uvigo.es			
Web	<a href="http://masterbiologiamarina.uvigo.es/gl/">http://masterbiologiamarina.uvigo.es/gl/</a>			
General description	This matter gathers the majority of the competitions posed in the title since in her apply the knowledges purchased in the first year in some labour surroundings. It contemplates all the formative and professional activities and/or researchers that program and develop with one accord between the universities and the companies or institutions with which have established a specific agreement for the realisation of the External Practices.			

**Training and Learning Results**

Code	
A1	(*)Posuír e comprender coñecementos que acheguen unha base ou oportunidade de ser orixinais no desenvolvemento e/ou aplicación de ideas, adoito nun contexto de investigación.
A2	(*)Que os estudantes saiban aplicar os coñecementos adquiridos e a súa capacidade de resolución de problemas en contornos novos ou pouco coñecidos dentro de contextos máis amplos (ou multidisciplinares) relacionados coa súa área de estudo.
A3	(*)Que os estudantes sexan capaces de integrar coñecementos e se enfrontar á complexidade de formular xuízos a partir dunha información que, sendo incompleta ou limitada, inclúa reflexións sobre as responsabilidades sociais e éticas vinculadas á aplicación dos seus coñecementos e xuízos.
A4	(*)Que os estudantes saiban comunicar as súas conclusións, e os coñecementos e razóns últimas que as sustentan, a públicos especializados e non especializados dun xeito claro e sen ambigüidades.
A5	(*)Que os estudantes posúan as habilidades de aprendizaxe que lles permitan continuar estudando dun xeito que terá que ser, en grande medida, autodirixido e autónomo.
B1	Utilización de criterios y métodos científicos en el planteamiento y resolución de problemas aplicando los conocimientos adquiridos
B2	Búsqueda, análisis e integración de información a partir de diferentes fuentes y capacidad para su interpretación y evaluación
B3	Aprendizaje de diversas técnicas y métodos analíticos tanto en el medio natural como en el laboratorio
B4	Desarrollo de habilidades en el manejo y tratamiento de herramientas, matemáticas, estadísticas e informáticas
B5	Desarrollo de la habilidad de elaboración, presentación y defensa de trabajos e informes técnicos
B6	Desarrollo de la curiosidad científica, de la iniciativa y la creatividad
B7	Entendimiento de la proyección social de la ciencia
D1	Desarrollo de las capacidades comprensivas, de análisis y síntesis
D2	Desarrollo de la capacidad de razonamiento crítico y autocrítico
D3	Desarrollo de las capacidades de trabajo en equipo, enriquecidas por la pluridisciplinariedad
D4	Desarrollo de la capacidad para actualizar el conocimiento de forma autónoma
D5	Desarrollo de las habilidades de comunicación y discusión de planteamientos y resultados
D6	Desarrollo de las capacidades de reflexión sobre responsabilidades sociales y éticas
D7	Desarrollo de habilidades para la divulgación de ideas en contextos tanto académicos como no especializados
D8	Desarrollo de la habilidad para hablar bien en público

**Expected results from this subject**

Expected results from this subject	Training and Learning Results
That the student acquires physico-chemical knowledge of oceans and coasts, of the diversity of marine organisms and its adaptative strategies and those interactions with the marine and coastal ecosystems.	A1
	B1
	D1
That the student was able to pursue the potential economic and biotecnológica interest of marine organisms, to know the principles of their exploitation and sustainability and the planning and supervision of its management.	A2
	D3
	D5

That the student identifies and evaluates the environmental quality of the sea upon current legislation. Be able to carry out the direction of environmental consultings and evaluate the quality and security of foods and secondary products of marine origin	A3 B2 D3 D6
That the student was able to catalog, evaluate, conserve, restore and manage the marine protected areas, as well as know how to elaborating, assessing and executing coastal management plans.	A3 B1 B4 D4 D5
That the student knows how to handle the methodology of investigation, the technics of sampling the instrumental usage and the analysis of data applied to the marine environment.	A3 B3 D1 D4
That the student can inspect and advise technically in the evaluation, exploitation and management of fisheries, as well as in the extraction of resources and installations of aquaculture	A4 B2 B5 D2 D7
That the student can perform studies of populational dynamics, genetic improvement and selection of stocks in fisheries, aquaculture and programs of restocking and can schedule and direct aquariums, museums, centres of environmental interpretation, natural parks and natural spaces protected	A1 A2 A3 A4 A5 B1 B2 B3 B4 B5 B6 B7 D1 D2 D3 D4 D5 D6 D7 D8
That the student was able to elaborate, argue, interpret, and evaluate scientific reports-technical, ethical, legal and socioeconomic related with marine fields and fisheries and manage coastal activities of leisure and tourism.	A1 A2 A3 A4 A5 B1 B2 B3 B4 B5 B6 B7 D1 D2 D3 D4 D5 D6 D7 D8

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## Contents

Topic

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Topics will be those offered in the laboratory, department, area or plant of the institution receptor of the student. The contents on Marine Biology will be handled in the centre receptor, previous agreement between the student, the internal tutor and the external tutor. The thematic offered to carry out the external practices will be varied, to cover the distinct formation expectancies of the student i.e. marine biotechnology, management of fisheries, coastal pollution and bioremediación, evaluation of resources, etc.

In line with the precise work in which the student will work at the receptor centre he/she will handle elements, processes and affine concepts to the education apprehended in the title, in terms of amplitude and multidisciplinary. The background obtained in the first year of the title, allows to adapt to any discipline demanded in the company, centre or institution of received of students in external practices. The extension of subjects during the practic period has the support of internal and external tutors, to ensure the suitable training of the trainee.

## Planning

	Class hours	Hours outside the classroom	Total hours
Practicum, External practices and clinical practices	404	45.0056	449.006
Report of practices, practicum and external practices	0.9944	0	0.9944

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

## Methodologies

	Description
Practicum, External practices and clinical practices	<p>The practical will be of forced *tutela by an External Tutor of the centres and institutions with specific agreement with the *MBM (see in Criterion 5, general Explanation of the Plan of Studies) and by an Internal Tutor, necessarily Doctor and educational of the *Máster of Marine Biology. Each one of the centres receptors will be able to receive to several students in function of his annual demand.</p> <p>The student will integrate in the labour dynamics of an institute or department of investigation or in a company or centre of services.</p> <p>The student has to develop autonomous and cooperative works, to scale computational or experimental and on scientific appearances, technicians, economic or politicians applied to the study and exploitation of the half marine .</p>

## Personalized assistance

Methodologies	Description
Practicum, External practices and clinical practices	<p>The practical will be of forced *tutela by an External Tutor of the centres and institutions with specific agreement with the *MBM (see in Criterion 5 of the Memory of the Title the general Explanation of the Plan of Studies) and supervised by an Internal Tutor, necessarily Doctor and educational of the *Máster. They explain besides with the personalised attention of the central services of attention to the student, of the universities and of the faculties of *matrícula, in addition to the coordinators of matter and of degree, local and autonomic. It will ensure the achievement of the external practices for the achievement of the title, *redestinando if it was necessary, to the student to a centre of destination in which develop fully his capacities and expectations.</p>
Tests	Description
Report of practices, practicum and external practices	<p>The student will have at all times advice and scientific follow-up-technical of his tutors, for the preparation of the report of the external practices.</p>

## Assessment

Description	Qualification	Training and Learning Results
Practicum, External practices and clinical practices.	70	A1 B1 D1 A2 B2 D2 A3 B3 D3 A4 B4 D4 A5 B5 D5 B6 D6 B7 D7 D8

Report of practices, practicum and external practices	Assessment by the Jury of the quality of the memory of practices, its brief presentation and its defence. The report will be brief although it is advised that it collects all the formative aspects that the student wish to reflect, e.g. his experience in the host centre. The report must contain the place of destination, the dates and length of the practices and the name and signature of the external tutors. Also it must contain a reflection on the degree of achievement of the goals and competences pursued, the technics handled and the professional or academic improvement perceived by the student. The student can accompany graphic information and the report can be summarized, lectured and defended at the interuniversity court wich will publish the annual rules in December each year.	30	A1 B1 D1 A2 B2 D2 A3 B3 D3 A4 B4 D4 A5 B5 D5 B6 D6 B7 D7 D8
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### **Other comments on the Evaluation**

Do not describe the specific competitions evaluated as they are specific of the thematic tackled in the centre centre receptor, stranger a priori, of the work assigned to the student and of the economic nature of the company or institution \*conveniada to realise the practices.

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### **Sources of information**

#### **Basic Bibliography**

#### **Complementary Bibliography**

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### **Recommendations**

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### **Other comments**

The external practices are the more visible professional aspect of the Master and place the student in very fist-line professional situation. Thus, it is of great relevance the selection of the destination centre upon the capacities of the student, his potentialities and his preferences. The Master offers more than 20 agreed companies which will receive students from the Master as well as all the academic Departments from SUG and centres associated to Galician universities and several Spanish universities. Along the second semester each student, tutorized by his internal tutor of the PAT will outline his preferences with regard to the centres of destination offered or will promote agreements with new ones better fitting his expectancies.

**IDENTIFYING DATA****Final Year Dissertation**

Subject	Final Year Dissertation			
Code	V02M098V01302			
Study programme	Máster Universitario en Biología Marina			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	12	Mandatory	2nd	1st
Teaching language	Spanish Galician			
Department				
Coordinator	García Estévez, José Manuel			
Lecturers	García Estévez, José Manuel			
E-mail	jestevez@uvigo.es			
Web	<a href="http://masterbiologiamarina.uvigo.es/gl/">http://masterbiologiamarina.uvigo.es/gl/</a>			
General description	The Work of End of *Máster is a fundamental activity in the training of the students of the title, since it includes all the process of approach, development and defence of a professional project. This involves the staged of all the competitions pursued by the student his evaluation by diverse the groups of interest (educational, court, tutors, and entrepreneurs).			

**Training and Learning Results**

Code	
A1	(*)Posuír e comprender coñecementos que acheguen unha base ou oportunidade de ser orixinais no desenvolvemento e/ou aplicación de ideas, adoito nun contexto de investigación.
A2	(*)Que os estudantes saiban aplicar os coñecementos adquiridos e a súa capacidade de resolución de problemas en contornos novos ou pouco coñecidos dentro de contextos máis amplos (ou multidisciplinares) relacionados coa súa área de estudo.
A3	(*)Que os estudantes sexan capaces de integrar coñecementos e se enfrontar á complexidade de formular xuízos a partir dunha información que, sendo incompleta ou limitada, inclúa reflexións sobre as responsabilidades sociais e éticas vinculadas á aplicación dos seus coñecementos e xuízos.
A4	(*)Que os estudantes saiban comunicar as súas conclusións, e os coñecementos e razóns últimas que as sustentan, a públicos especializados e non especializados dun xeito claro e sen ambigüidades.
A5	(*)Que os estudantes posúan as habilidades de aprendizaxe que lles permitan continuar estudando dun xeito que terá que ser, en grande medida, autodirixido e autónomo.
B1	Utilización de criterios y métodos científicos en el planteamiento y resolución de problemas aplicando los conocimientos adquiridos
B2	Búsqueda, análisis e integración de información a partir de diferentes fuentes y capacidad para su interpretación y evaluación
B3	Aprendizaje de diversas técnicas y métodos analíticos tanto en el medio natural como en el laboratorio
B4	Desarrollo de habilidades en el manejo y tratamiento de herramientas, matemáticas, estadísticas e informáticas
B5	Desarrollo de la habilidad de elaboración, presentación y defensa de trabajos e informes técnicos
B6	Desarrollo de la curiosidad científica, de la iniciativa y la creatividad
B7	Entendimiento de la proyección social de la ciencia
C1	Conocimiento físico-químico del medio oceánico y costero
C2	Conocimiento de la diversidad de organismos marinos y sus estrategias adaptativas
C3	Conocimiento y comprensión de las interacciones de los organismos marinos y los ecosistemas marinos y costeros
C4	Conocimiento y búsqueda del potencial interés económico y biotecnológico de los organismos marinos
C5	Conocimiento de los principios de explotación y sostenibilidad del medio marino y planificación y supervisión de su gestión
C6	Conocimiento, identificación y evaluación de la calidad ambiental del medio marino y de la legislación vigente. Dirección de consultorías ambientales
C7	Catalogación, evaluación, conservación, restauración y gestión de áreas marinas y litorales protegidos. Elaboración, asesoramiento legal y ejecución de planes de ordenación del litoral
C8	Conocimiento y manejo de la metodología de investigación, de las técnicas muestreo e instrumentales y de análisis de datos aplicados al medio marino
C9	Conocimientos de instituciones, organismos y legislación relacionados con el medio marino y sus recursos empresariales y económicos
C10	Inspección y asesoramiento técnico en la evaluación, explotación y gestión de pesquerías, extracción de recursos e instalaciones de acuicultura
C11	Estudios de dinámica poblacional, mejora genética y selección de stocks en pesquerías, acuicultura y programas de repoblación
C12	Control de calidad y seguridad de alimentos y de productos de transformación y biotecnológicos de origen marino
C13	Divulgación de conocimientos de la biología y el medio marinos: programas de formación y docencia; planificación y dirección de acuarios, museos, centros de interpretación ambiental, parques naturales y espacios naturales protegidos

C14	Elaboración, discusión, interpretación, asesoramiento y peritaje de informes científico-técnicos, éticos, legales y socioeconómicos relacionados con el ámbito marino y pesquero
C15	Gestión de actividades de ocio y turismo en el medio marino y litoral
D1	Desarrollo de las capacidades comprensivas, de análisis y síntesis
D2	Desarrollo de la capacidad de razonamiento crítico y autocrítico
D3	Desarrollo de las capacidades de trabajo en equipo, enriquecidas por la pluridisciplinariedad
D4	Desarrollo de la capacidad para actualizar el conocimiento de forma autónoma
D5	Desarrollo de las habilidades de comunicación y discusión de planteamientos y resultados
D6	Desarrollo de las capacidades de reflexión sobre responsabilidades sociales y éticas
D7	Desarrollo de habilidades para la divulgación de ideas en contextos tanto académicos como no especializados
D8	Desarrollo de la habilidad para hablar bien en público

### Expected results from this subject

Expected results from this subject	Training and Learning Results
Capacity of synthesis and skills in the communication and critical discussion of ideas. Quality of the works or scientific reports. Acquisition of knowledges and methodologies advanced in a field of application or of biological investigation. Autonomy in the preparation of new hypothesis, in the interpretation of results. Reflection on the limits of the technical employees, of the possible artefacts and of the need of standardisation of the technicians.	A1
	A2
	A3
	A4
	A5
	B1
	B2
	B3
	B4
	B5
	B6
	B7
	C1
	C2
	C3
C4	
C5	
C6	
C7	
C8	
C9	
C10	
C11	
C12	
C13	
C14	
C15	
D1	
D2	
D3	
D4	
D5	
D6	
D7	
D8	

### Contents

Topic	
The Work of End of Máster is a fundamental activity in the training of the students, since it includes all the processes of approach, development and defence to a professional project. Its content include the planning of tasks to resolve a work or project, the realisation of said tasks and finally the concretion of the results in an explanatory memory of the problem posed, the procedure followed for his study or preparation, the interpretation of the results or of the design implemented and finally the results shown in the final report.	All the contents that contemplate the educations of the title, related with the management and exploitation of the marine environment and its resources.

### Planning

	Class hours	Hours outside the classroom	Total hours
Project based learning	149.5	149.5	299
Presentation	1	0	1

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

### Methodologies

	Description
Project based learning	The methodology of the work of End of Master will change in function of the project posed i.e. more professional or more academic-scientific. Although conceptually they are similar, the methodology and the form to structure the information, can vary significantly between students, centres and interest and the supervisors. The methodology will be preferably the one of the Scientific Method, without prejudice that it can consist in a technical work, but yet will be methodologically rigorous in design, execution and presentation. The tasks to realise by the student will vary in function of the project realised and will reflect in the memory of the Work of End of Máster, that has to collect evidence of justification, methodology, results, discussion and comparison with other projects with similar results.

### Personalized assistance

Methodologies	Description
Project based learning	Each student will have at least an Internal Tutor of the Máster to direct the Report off Máster's End, that will have academic responsibilities (selection of centres, academic orientation, treatment of data, etc.) and which can be co-directed by a External Tutor, upon agreement subscribed before the initiation of the works, whenever the work is realised out of the university centres. The ultimate orientation of the formal presentation of the memory of the Master will be responsibility of the internal tutor that necessarily will be Doctor, without prejudice of an equivalent maximum implication of the external tutor, if applicable. The student will be able to resort to the orientation of his tutor of the PAT and of the educational staff of the title, to resolve specific elements of the development of his TFM, p.ej. Preparation of mathematical models.

### Assessment

	Description	Qualification	Training and Learning Results			
Project based learning	The interuniversity academic court will consider the qualification awarded to the student by the Tutor-s of the TFM, according to the available reports, the evaluation sheet of the student and the degree of professional training or scientific excellence reached by the student according to the evaluation by peers developed by his supervisors.	30	A1	B1	C1	D1
			A2	B2	C2	D2
			A3	B3	C3	D3
			A4	B4	C4	D4
			A5	B5	C5	D5
				B6	C6	D6
				B7	C7	D7
					C8	D8
					C9	
					C10	
					C11	
					C12	
					C13	
					C14	
					C15	
Presentation	The interuniversity academic court will value the quality of the contents of the memory *TFM and his organisation and written presentation, the clarity in the exhibition and the capacity of defence upon questions raised by the interuniversitary court.	70	A1	B1	C1	D1
			A2	B2	C2	D2
			A3	B3	C3	D3
			A4	B4	C4	D4
			A5	B5	C5	D5
				B6	C6	D6
				B7	C7	D7
					C8	D8
					C9	
					C10	
					C11	
					C12	
					C13	
					C14	
					C15	

### Other comments on the Evaluation

The Work End of \*Máster will be necessarily the last matter \*cursada in this degree, not being able to defend before the



\*superación of the rest of matters, and will give place to the application of the title by the student. They will be able to present and defend simultaneously the \*PE and the \*TFM, in the announcements of February or of July, both equivalent to effects qualifiers, or will be able to effect the presentation and defence of the \*PE in the announcement of February and the \*TFM in the one of July, but no to the reverse.

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### **Sources of information**

#### **Basic Bibliography**

#### **Complementary Bibliography**

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### **Recommendations**

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### **Other comments**

The TFM is the conclusion of the formative activities and rofesionalizantion awarded by the master, and his concretion and evaluation is a right and a duty of each student. Its preparation can be generated after data or processes developed originally by the student in the centre of destination of the external practices, in companies or insitutions, although they are not synonymous at all, as the PE include the learning of a series of competences very distinct to the ones pursued and evaluated in the TFM. If by reasons of confidentiality there were not possible to ellaborate a TFM report from results obtained during the external practices, the title will ensure the preparation of the memory TFM in a thematic affine to the máster, for example, in a Research Department from the SUG universities involved.

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