



## IDENTIFYING DATA

### Marine Ecology

Subject	Marine Ecology			
Code	V02M098V01105			
Study programme	(*)Máster Universitario en Bioloxía Mariña			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Mandatory	1st	1st
Teaching language	Spanish			
Department				
Coordinator	Fernández Suárez, Emilio Manuel			
Lecturers	Fernández Suárez, Emilio Manuel Martínez García, Sandra Riveiro Alarcón, María Isabel Teira Gonzalez, Eva Maria			
E-mail	esuarez@uvigo.es			
Web				
General description	The *asignatura Marine Ecology marks like aim boost the capacity of the students to comprise the processes of circulation of the matter and the flows of energy in the different marine ecosystems, as well as to comprise the bases of the diversity and the processes of organisation and structure of these ecosystems.			

## Competencies

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
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
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
D1	Desarrollo de las capacidades comprensivas, de análisis y síntesis
D2	Desarrollo de la capacidad de razonamiento crítico y autocrítico
D5	Desarrollo de las habilidades de comunicación y discusión de planteamientos y resultados

## Learning outcomes

Expected results from this subject	Training and Learning Results
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(\*)Capacity to comprise the scientific methodology and the technologies applied to the investigation in the area of the Ecology

A1  
A2  
A3  
A4  
A5  
B1  
B2  
B5  
B6  
C1  
C2  
C3  
D1  
D2

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(\*)Capacity to analyse and comprise the relation between the organisms and the environmental factors

A1  
A2  
A3  
A4  
A5  
B1  
B2  
B5  
B6  
C1  
C2  
C3  
D1  
D2  
D5

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(\*)Capacity to comprise the processes of circulation of the matter and the flow of energy in the Ecosystem

A1  
A2  
A3  
A4  
A5  
B1  
B2  
B5  
B6  
C1  
C2  
C3  
D1  
D2  
D5

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(\*)Capacity to comprise and analyse the basic processes of the relations between organisms (\*intra-  
\*interespecíficas).

A1  
A2  
A3  
A4  
A5  
B1  
B2  
B5  
B6  
C1  
C2  
C3  
D1  
D2  
D5

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(*)Capacity to comprise the bases of the diversity and the processes of organisation and structure of the ecosystems	A1 A2 A3 A4 A5 B1 B2 B5 B6 C1 C2 C3 D1 D2 D5
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(*)Skill for the handle of the bibliography related with the distinct fields of the ecology	A1 A2 A3 A4 A5 B1 B2 B5 C1 C2 C3 D1 D2 D5
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## Contents

Topic	
Introduction to Marine Ecology	Presentation of the subject. Methodological approximations to the study of marine ecosystems. Scales of the physical processes of interest in Marine Ecology.
Planktonic Ecosystems	Primary production: physical control and variability. Flows of nutrients. New and regenerated production. Secondary production. Food webs, herbivorous and microbial.
Nektonic ecosystems	Global nektonic production. Global data. Life strategies and migrations. Fish abundance and variability. Hydroclimatic processes: effects at the global change. Top-down effects: fishing and changes in community structure.
Soft substrate benthic Ecosystems	Shallow benthic communities on soft substrate. Reactions of oxidation of organic matter. Regression and resilience. Carbon capture. Habitat fragmentation.
Hard substrate benthic ecosystems.	Benthic communities on hard substrate. Factors of control of community structure. Global change and community structure.
Applications of "Omic" technologies in Marine Ecology	From gene to genome in Marine Ecology. Genomics, transcriptomics, proteomics and metabolomics: Sampling and analysis. Application of "omic" technologies in pure cultures: use of model organisms. "Omic" technologies in natural communities. A case of study in marine microbiology: Rhodospin.
Isotopic ecology	Bases of isotopic ecology. Carbon isotopes: determination of diets, remineralization processes. Nitrogen nitrogen: determination trophic levels, eutrophication. Sulphur Isotopes: sources of matter.

## Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	15	35.1	50.1
Presentation	1.8	7.2	9
Seminars	4	0	4
Problem and/or exercise solving	2	0	2
Case studies	0	2	2
Project	0	6	6

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

<b>Methodologies</b>	
	Description
Lecturing	It will use the methodology of session *magistral to work the fundamental contents of the matter
Presentation	Oral presentation and/or written of scientific works, technical reports or projects
Seminars	Meetings of the group of work with the/the educational to clear doubts and organise the work.

### **Personalized assistance**

<b>Methodologies</b>	<b>Description</b>
Lecturing	During the sessions *magistrales the students will receive personalised attention by part of the professor attending to all the questions that pose .
Presentation	Attention in the preparation and council for the presentation and defence
Seminars	Model of *corresponsabilidad in the educational exercise, *tutorías of *índole organisational or of academic interest.

<b>Tests</b>	<b>Description</b>
Case studies	*Tutorías Personalised for the resolution of cases

### **Assessment**

	Description	Qualification	Training	and Learning	Results
Problem and/or exercise solving	Evaluation of the process of learning by means of written or oral examinations in which it will evaluate the acquisition of the main theoretical concepts and the capacity of relation. They will be able to include proofs of diverse format: type test, proofs of essay, questions of reasoning, ask subject and short, resolution of problems, and/or practical cases	50	A2 A3 A4	B2 B5	C1 C2 C3 D1 D2
Case studies	Evaluation of the capacity to resolve practical suppositions on thematic own of the matter.	15	A2 A3 A4	B2 B5	C1 C2 C3 D1 D2
Project	Evaluation of the capacity to elaborate a proposal of scientific project from the explanations given in class and of the personal work of the *estudiantado.	35	A1 A2 A3 A4 A5	B1 B2 B5 B6	C1 C2 C3 D1 D2

### **Other comments on the Evaluation**

In the evaluation of July will take into account the merits obtained in the \*items that \*evaluan effected during the course, no like this the proofs written finals.

### **Sources of information**

#### **Basic Bibliography**

Mann, K.H., **Ecology of coastal waters with implications for management**, 2ª, Blackwell, 2000

#### **Complementary Bibliography**

### **Recommendations**

### **Contingency plan**

#### **Description**

Given the characteristics of the Máster, that typically operates as mixed teaching, with part of the students face-to-face and part on-line part, are not necessary particular adaptations to the new situation of mixed teaching. In the case of teaching non face-to-face, all the students will follow the course on-line.

\* educational Methodologies that keep

By the previously described reasons, the educational methodologies will be largely kept, with the exception of the on-line

teaching for all the students in the non face-to-face mode.

Since to date an educational platform that allow the access of the students of all the universities is not available, we will continue using a space in dropbox in which all the materials used in the course will be allocated.

\* Educational methodologies that modify

In the no face-to-face way, the theoretical teaching and will give through the Remote Campus of the University of Vigo, in the classrooms that assign for such end by part of the Faculty of Biology.

\* Mechanism no face-to-face of attention to the students (\*tutorías)

So much in the normal way, as in the mixed and no face-to-face, this course enable the \*tutorías on-line through the virtual dispatch of the professors in the Remote Campus.

\* Modifications (if they proceed) of the contents to give

do not contemplate modifications in the contents to give depending of the way of valid teaching.

\* Additional bibliography to facilitate the car-learning

do not contemplate modifications in the bibliography depending of the way of valid teaching.

=== ADAPTATION OF THE EVALUATION ===

do not contemplate adaptations in the evaluation in function the way of valid teaching

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