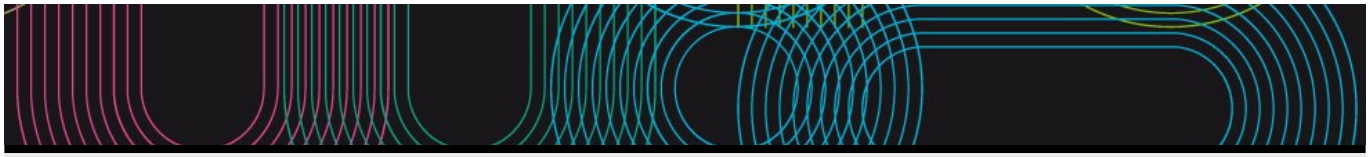

IDENTIFYING DATA				
Fish and shellfish biology				
Subject	Fish and shellfish biology			
Code	V10G060V01902			
Study programme	(*)Grao en Ciencias do Mar			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	3rd	2nd
Teaching language	Spanish			
Department				
Coordinator	Domínguez Martín, José Jorge			
Lecturers	Domínguez Martín, José Jorge Fernández Marchan, Daniel			
E-mail	jdguez@uvigo.es			
Web				
General description	This is a special Zoology which studies the main fish and shelfish in the spanish coast			

Competencies	
Code	
A1	Students have demonstrated knowledge and understanding in a field of study that builds upon their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study
A2	Students can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study
A3	Students have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include reflection on relevant social, scientific or ethical issues
A4	Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences
A5	Students have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy
C4	To know the basic techniques to sample the water column, organisms, sediments and sea bottom, as well as the surveying methods for dynamic and structural variables
C8	To understanding the fundamentals of the laws that regulate the use of the marine environment and its resources
C10	To know the problems and the basic principles of sustainability in relation to the use and exploitation of the marine environment
C11	To manage the use of littoral and coastal region and their resources in a sustainable way
C13	To acquire, evaluate, process and interpret oceanographic data within the theories currently in use
C17	Ability to survey in the field and to work in the laboratory responsibly and safely, encouraging team work
C18	To transmit writing, verbal and graphical information for audiences of various types
C19	To map and characterize the seabed and the underground in marine and coastal areas
C20	To find and evaluate marine resources of various kinds
D1	Analysis and synthesis ability
D3	Written and oral communication in the official languages of the University
D6	Problem management and solving skills
D8	Teamwork ability

Learning outcomes	
Expected results from this subject	Training and Learning Results

Ability to apply knowledge in practice	A1 A2 A3 A4 A5	C4 C8 C10 C11 C13 C17 C18 C19 C20	D1 D3 D6
To know the basic techniques of sampling in the water column, organisms, sediments and bottoms, as well as of measurement of dynamic and structural variables.	A1 A2 A3 A4 A5	C4 C8 C10 C11 C13 C17 C18 C19 C20	D1 D3 D6
Research skills.	A1 A2 A3 A4 A5	C4 C8 C10 C11 C13 C17 C18 C19 C20	D1 D3 D6
Identification of fish and shellfish. Knowledge of the external and internal morphology of fish and shellfish. Knowledge of the distribution, habitat and lifestyles of fish and shellfish. Knowledge of reproduction and life cycles of fish and shellfish. Management of fishery resources and shellfish. Biological bases necessary for the study of Fisheries and Aquaculture.	A1 A2 A3 A4 A5	C8 C18 C20	D1 D3 D6 D8

Contents	
Topic	
Introduction	Fish and shellfish in the tree of life Shellfish species Fish species Life-cycle strategies
Biology of Molluscs	General characteristics of molluscs Classification
Biology of bivalves	External morphology: shell, mantle and foot Habits and life styles: soft bottom excavators, fixed surface inhabitants, surface free inhabitants. Feeding and growth. Digestion, circulation, respiration, excretion. Nervous system and sense organs. Reproduction. Embryonic and larval development. Classification.
Commercial bivalves	Mytilus galloprovincialis Cardium edule Tapes decussatus Venerupis pullastra Ostrea edulis Pecten maximus Chlamys opercularis Chlamys varia

Biology of cephalopods	Distribution and habitat External morphology Habits and life styles. Locomotion and buoyancy. Migrations. Color and bioluminescence. Predators Feeding and growth. Digestion, circulation and gas exchange and excretion Nervous system and organs of the senses Reproduction Embryonic and larval development. Classification
Commercial cephalopods	Sepia officinalis Loligo vulgaris Illex coindetti Octopus vulgaris
Biology of crustaceans	General characteristics Classification Decapods Distribution and habitat External morphology Habits and life styles Locomotion Feeding and growth. Moult Nervous system and organs of the senses Excretion Reproduction and Embryonic and larval development
Commercial crustaceans	Palaemon serratus Palinurus elephas Homarus gammarus Necora puber Maja squinado Nephros norvegicus Pollicipes pollicipes
Biology of fishes	General characteristics Phylogeny, systematic and taxonomy General biology of fishes
Pelagic fishes	General characteristics Distribution and Habitat Feeding and growth Biological cycle Reproduction: nesting areas, larvae and larval mortality, absolute fertility Sardine Anchovy Herring Mackerel Horse Mackerel
Demersal fishes	Hake Cod Plueronectiforms Labrids Others

Planning

	Class hours	Hours outside the classroom	Total hours
Laboratory practical	20	40	60
Seminars	6	18	24
Lecturing	20	40	60
Problem and/or exercise solving	1	1	2
Objective questions exam	1	1	2
Essay questions exam	1	1	2

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

Methodologies

	Description

Laboratory practical	Lab classes are organized according to the following scheme: at the beginning of each class, the theoretical concepts needed to understand the examples to be observed are briefly explained, and a script is given to the student in which these concepts are remembered, and the techniques to follow and the objectives to be achieved explained.
Seminars	The students must carry out an independent and supervised work that they will expose to their classmates. The work will be done accompanied by the teacher in three seminars, the first will propose the subject and will be directed to the students to seek information on the subject. In the second seminar we will discuss the content found by the students and clarify doubts, and in the third one the presentation will be oriented. The seminars will evaluate the independent work of the students. The topics of the work will be varied, and subjects suggested by the students are welcome.
Lecturing	In these classes the teacher will present the different topics of the program using different formats according to the subject to be studied, formats that will be: theory, case studies and / or general examples. The teacher can be supported by audiovisual and computer media, but in general, students do not need to handle them in class. Attendance to these classes, although it is not mandatory, is highly recommended for the proper follow-up of the course.

Personalized assistance

Methodologies	Description
Lecturing	During them discussions are held on some of the most relevant topics. Tutoring: Mondays and Wednesdays from 12 to 2. Students willing so could attend personal tutorials to solve doubts and/or uncertainties, which will mainly take place during the timetables indicated. To better optimise the procedure, the student is requested to previously contact his/her teacher with reasonable anticipation.
Laboratory practical	At the beginning of each practice, the theoretical concepts necessary for the understanding of the specimens to be observed are briefly explained. All issues that are raised during the practice are resolved. Students willing so could attend personal tutorials to solve doubts and/or uncertainties, which will mainly take place during the timetables indicated. To better optimise the procedure, the student is requested to previously contact his/her teacher with reasonable anticipation.
Seminars	The working groups are chosen and the work topics discussed. They are tracked. A critical review and a general discussion of each work is done. Students willing so could attend personal tutorials to solve doubts and/or uncertainties, which will mainly take place during the timetables indicated. To better optimise the procedure, the student is requested to previously contact his/her teacher with reasonable anticipation.
Tests	**Description**
Problem and/or exercise solving	The student has to complete and pass very short questions, with four possible answers and chose the correct ones.
Objective questions exam	The studen has to answer short questions in his/her own words, including specific and objective questions and some in the form of sintesis, refection and elabrotaion of well constructed arguments.
Essay questions exam	Here, the students have to develop a long topic, including an important amount of info, but being able to make it in a well explained and siinthetic way in order to offer a whole vision and including the important details of the topics, mainly being these different lyfe ccyles of fishes and invertebrates.

Assessment

	Description	Qualification	Training and Learning Results		
Laboratory practical	Exam	15	A1	C4	D1
			A2	C8	D3
			A3	C18	D6
			A4	C20	D8
			A5		
Seminars	Written or expository work	10	A1	C4	D1
			A2	C8	D3
			A3	C18	D6
			A4	C20	D8
			A5		
Lecturing	Exam	75	A1	C4	D1
			A2	C8	D3
			A3	C18	D6
			A4	C20	D8
			A5		

Problem and/or exercise solving	Exam	40	A1	C4	D1
Objective questions exam	Exam	30	A1	C4	D1
			A2	C18	D3
			A3		D6
			A4		
Essay questions exam	Exam	30	A1	C4	D1
			A2	C18	D3
			A3		
			A4		

Other comments on the Evaluation

Date, time and place of exams will be published in the official web of Marine Sciences Faculty:

http://mar.uvigo.es/index.php/en/alumnado-actual-2/examenes-3

Students are strongly requested to fulfil a honest and responsible behaviour. It is considered completely unacceptable any alteration or fraud (i.e., copy or plagiarism) contributing to modify the level of knowledge and abilities acquired in exams, evaluations, reports or any kind of teacher□s proposed work. Fraudulent behaviour may cause failing the course for a whole academic year. An internal dossier of these activities will be built and, when reoffending, the university rectorate will be asked to open a disciplinary record.

Sources of information

Basic Bibliography

C.P.J. Hickman, **Principios integrales de Zoología**, 14, McGraw-Hill, 2009

Complementary Bibliography

Recommendations

Subjects that continue the syllabus

Aquaculture/V10G060V01801

Contingency plan

Description

=== EXCEPTIONAL PLANNING ===
Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes an extraordinary planning that will be activated when the administrations and the institution itself determine it, considering safety, health and responsibility criteria both in distance and blended learning. These already planned measures guarantee, at the required time, the development of teaching in a more agile and effective way, as it is known in advance (or well in advance) by the students and teachers through the standardized tool.

=== ADAPTATION OF THE METHODOLOGIES ===
* Teaching methodologies maintained
ALL
* Teaching methodologies modified
If necessary, the same contents will be maintained by using the virtual classroom for the realization of the master classes and tele-teaching tools will be used for the seminar work and the practical classes.
* Non-attendance mechanisms for student attention (tutoring)
Tutoring may be carried out by telematic means (e-mail, videoconference, FAITIC forums, ...) after prior consultation.
* Modifications (if applicable) of the contents
No
* Additional bibliography to facilitate self-learning
It will be provided via telematic platform FAITIC.
* Other modifications

=== ADAPTATION OF THE TESTS ===
Test will be the same with the same quotation.