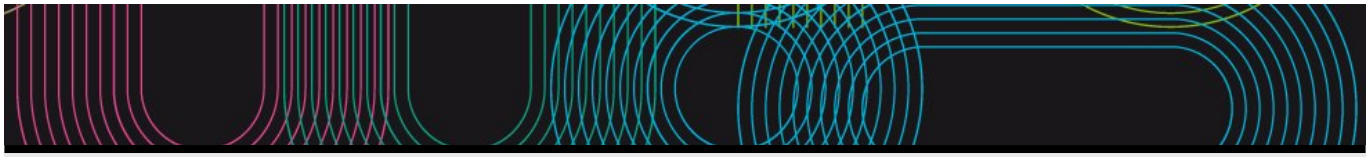
Universidade Vigo

Subject Guide 2023 / 2024



IDENTIFYING DATA

Techniques to Study Marine Organisms

Subject	Techniques to Study Marine Organisms			
Code	V02M098V01108			
Study programme	Máster Universitario en Biología Marina			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Mandatory	1st	1st
Teaching language	Spanish			
Department				
Coordinator	Pérez Fernández, Juan			
Lecturers	Galindo Dasilva, Juan González Sotelo, María del Carmen Pérez Fernández, Juan Suárez Alonso, María del Pilar			
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General description	It is a essentially practical subject, in which students will be familiar with histological, biochemical and genetic techniques. These techniques will be used in studying tissues, protein and gene expression, genetic markers, biomolecules purification and immunological techniques. Its main aim is that the student knows and evaluates the potentiality of a variety of techniques for the study of marine organisms.			

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
C2	Conocimiento de la diversidad de organismos marinos y sus estrategias adaptativas
C8	Conocimiento y manejo de la metodología de investigación, de las técnicas muestreo e instrumentales y de análisis de datos aplicados al medio marino
C11	Estudios de dinámica poblacional, mejora genética y selección de stocks en pesquerías, acuicultura y programas de repoblación
D1	Desarrollo de las capacidades comprensivas, de análisis y síntesis
D2	Desarrollo de la capacidad de razonamiento crítico y autocrítico
D4	Desarrollo de la capacidad para actualizar el conocimiento de forma autónoma

Expected results from this subject	
Expected results from this subject	Training and Learning Results
Application of histological, biochemical and genetic techniques to the study of marine organisms	A1 A2 A3 A4 A5 B1 B2 B3 B4 C2 C8 C11 D1 D2 D4

Contents	
Topic	
1.- Histological techniques	1a.- Processing of samples for microscopy studies: applications of microscopy. 2b.- Inmunohistochemistry and its combination with other techniques.
2. Genetic techniques	2a.- Detection of the genetic variation. 2b.- Genetic markers and their applications 2c.- Molecular resources in the internet
3.- Biochemical techniques	3a.- Extraction, separation and quantification of biomolecules. 3b.- Spectrophotometric electrophoretic, chromatographic, fluorometric and of enzymatic determination.
4.- Identification of species	4.- Use of molecular tools for the identification of fisheries products.

Planning			
	Class hours	Hours outside the classroom	Total hours
Laboratory practical	15	14.5	29.5
Presentation	2	8	10
Seminars	1.5	0	1.5
Problem solving	1.5	0	1.5
Lecturing	2	8.5	10.5
Problem and/or exercise solving	2	0	2
Essay	0	20	20
*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	The techniques proposed in the content section will be carried out. In advance, a script will be delivered to the students explaining the basis and objectives to develop each technique. During or at the end of the development of the protocol students will make problems and solve practical cases .
Presentation	A practical problem with a combination of techniques will be proposed to the students who will have to choose the techniques that are best suited to solve that problem and, explain the basis of their choice.
Seminars	There will take place two 2 group tutorials, in which the doubts and questions will be ask about different aspects of the subject. The teacher will guide in the elaboration of personal works.
Problem solving	There will be an online problem solving test.
Lecturing	The theorical aspects and the usefulness of the laboratory techniques will be treated in the master sessions.

Personalized assistance	
Methodologies	**Description**
Seminars	In the group tutorials will raise doubts and questions of the subject. The student will be advised to carry out their work

Assessment

	Description	Qualification	Training and Learning Results			
Laboratory practical	Continuous evaluation by monitoring the student's work and attendance.	30	A2	B1 B3	C8	D2
Lecturing	Continuous evaluation by monitoring the student's work and attendance.	10	A1 A3	B1 B3	C8	D2 D4
Problem and/or exercise solving	Test in which the student will have to solve practical problems based on the work carried out in the laboratory and ist theoretical framework. The test will be online.	30	A1 A2 A3 A4 A5	B1 B3 B4	C8 C11	D1
Essay	The student will have to read and make a summary of a scientific article related to the techniques performed.	30	A1 A3 A4	B2		D1 D4

Other comments on the Evaluation

Sources of information

Basic Bibliography

Montuenga Badía, L., Esteban Ruiz, F.J., Calvo González, A., **Técnicas en histología y biología celular + StudentConsult en español**, 2ª, Elsevier-Masson, 2014

Perera, J., Tormo, A., García, L., **Ingeniería genética. Preparación, análisis, manipulación y clonaje de DNA.**, 1ª, Síntesis DL., 2009

Complementary Bibliography

Bergmeyer, H.U., **Methods of Enzymatic Analysis**, 3ª, Academic Press., 1995

Recommendations