



IDENTIFYING DATA

Sampling Techniques for Identification of Marine Organisms and Communities

Subject	Sampling Techniques for Identification of Marine Organisms and Communities			
Code	V02M098V01201			
Study programme	Máster Universitario en Biología Marina			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	1st	2nd
Teaching language	Spanish Galician			
Department				
Coordinator	Ramil Blanco, Francisco José Besteiro Rodríguez, Celia			
Lecturers	Besteiro Rodríguez, Celia Parapar Vegas, Julio Peña Freire, Viviana Ramil Blanco, Francisco José Souto Derungs, Javier			
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Web				
General description	Methods of sampling for the obtaining of plankton, **bentos and **necton . Separation, fixation and conservation of the samples. Observation *in alive of the species **intermareais and **infralitorais more notable of the flora and marine fauna of Galicia. Main **carácter es **taxonómicos of the flora and marine fauna of Galicia. Identification of species. Recognition, statistical analysis and interpretation of communities.			

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
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
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
C8	Conocimiento y manejo de la metodología de investigación, de las técnicas muestreo e instrumentales y de análisis de datos aplicados al medio marino

C14 Elaboración, discusión, interpretación, asesoramiento y peritaje de informes científico-técnicos, éticos, legales y socioeconómicos relacionados con el ámbito marino y pesquero

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

Expected results from this subject

Expected results from this subject	Training and Learning Results
New	A1
	A2
	B1
	C2
	C3
	C8
	D1
New	D2
	A1
	A2
	B1
	C2
	C3
	C8
New	D1
	D2
	A1
	A2
	B1
	C2
	C3
New	C8
	D1
	D2
	A1
	A2
	B1
	C2
New	C3
	C8
	D1
	D2
	A1
	A2
	B1
New	C2
	C3
	C8
	D1
	D2
	A1
	A2
New	B1
	C2
	C3
	C8
	D1
	D2
	A1

Contents

Topic

Flora and fauna intermareal (rochedos and sediment)	Explanation in situ of the <i>zonation</i> and structure of the communities intermareais of <i>substrato</i> rocky and sedimentario . Harvest of material: review of the different methods, direct and indirect, employed for the <i>recolección</i> of the fauna and flora of rock, sand and slime. Collected on foot in the zone intermareal . Treatment, separation and preparation of the samples: it trace it back. Observation <i>in alive</i> and study in the laboratory of the flora and fauna obtained, with special dedication to the seaweeds.
Fauna and flora sublitoral (rochedos and sediment)	Explanation in situ, on board of the ship Polybius , of the methodology of recolección with escafandro autonomous: technicians and material. Collected by means of diving with escafandro autonomous of fauna and flora <i>infralitoral</i> of rock.- Explanation in situ, on board of the ship Polybius , of the methodology of recolección by means of indirect methods: <i>dragas</i> of horizontal and vertical performance; <i>dragas</i> qualitative and quantitative. Collected of sediment with the <i>draga</i> of Rectangular horizontal performance of Naturalistic with the <i>draga</i> of vertical performance go Veen . Collected of epifauna sedimentaria by means of the <i>draga</i> Agassiz trawl . Peneirado , separation and preparation of the samples.- Demonstration in laboratory of the methodology of study of the meiofauna . Separation and observation <i>in alive</i> of fauna interstitial .
Flora and fauna planctónicas	Harvest of material by means of sleeves of plankton. Observation <i>in alive</i> and study in the laboratory of the phytoplankton and zooplankto obtained.
Treatment of the information	Recognition and interpretation of the communities. Organisation of the data obtained for his back preparation.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	3	7.002	10.002
Presentation	10	30	40
Studies excursion	31	62	93
Seminars	3	0	3
Report of practices, practicum and external practices 1		3	4

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

Methodologies

	Description
Lecturing	Introduction of basic concepts and personal advice
Presentation	Preliminary presentation of the data of field obtained in campaign.
Studies excursion	Mission of sampling in craft of the marine station
Seminars	Resolution of doubts and approach of the tasks to make by the student of autonomous way out of the face-to-face hours.

Personalized assistance**Methodologies Description**

Seminars	The student will have of the necessary orientation for the preparation of the work.
Lecturing	Particular attention to the personal lagoons of knowledge of the half and marine taxonomy.
Presentation	Attention to the form of presentation of the data for his understanding, storage and transmission.
Studies excursion	Technological orientation in situ on processes, measures of security, tools, etc.

Assessment		Qualification	Training and Learning Results			
	Description					
Studies excursion	Continuous evaluation of the assistance, attitude, active participation and work of the student during the sessions in his classroom, the laboratory, the exits of field, the seminars and the *tutorías	20	A1 A2 A3 A4 A5	B3 B6	C8	D3 D4 D5
Report of practices, practicum and external practices	Along the week of length of this matter, the student will go filling up a fascicle of practices, that will deliver him to the start, with all the educational activities made and that it will have to deliver at the end of the week, to be evaluated by the professors of the matter: 40%. Each student will have to elaborate a work of results with the data obtained and with his corresponding discussion. It will give special importance to the quality and presentation of this work: 40%.	80	A1 A2 A3 A4 A5	B1 B2 B5	C2 C3 C14	D1 D2

Other comments on the Evaluation

The evaluation of the students will be based on three different methodologies/exams:

- Continuous evaluation of attendance and the work of the student during the course (20%)- Evaluation of the practicum notebook (40%)- Evaluation of the work of results obtained during the course (40%)

The practicum notebook, scanned, and the writing document, inpdf, will be sent to the coordinator of the subject in the two weeks following the end of teaching activity. The specific delivery date will be established for each academic year.

In the second opportunity, the evaluation of the students will make with the same methodology that at the earliest opportunity (20% - 40% - 40%).

Since it is an eminently practical course, attendance is mandatory. Non-attendance to the course will not allow evaluation in the second opportunity.

Sources of information

Basic Bibliography

Complementary Bibliography

Botosaneanu, L., **Stygofauna Mundi.**, 1986,

Braune, W. & Guiry, M.D., **Seaweeds.**, 2011,

Bunker, F., Brodie, J., Maggs, C.A., Bunker, A.Rker., **Seasearch guide to seaweeds of Britain and Ireland.**, 2017,

Cabioch, J.J., Floc'h, A., Toquin, C.F., Le, Ch., Boudouresque, F., Meinesz, A. & Verlaque., **Guía de las macroalgas y fanerógamas marinas del Mediterráneo occidental**, 2013,

Dawes, C.J., **Marine Botany.**, 1997,

Eleftheriou,A. & Mcintyre, A., **Methods for the study of marine benthos.**, 2005,

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Falciai, L. & Minervini, R., **Guía de los Crustáceos Decápodos de Europa.**, 1995,

Giere, O., **Meiobenthology.**, 2009,

Hayward, P.J. & Ryland, J.S., **The marine fauna of the British Isles and North West Europe. 2 vols.**, 1990,

Higgins, R.P. & Thiel, H., **Introduction to the study of meiofauna.**, 1988,

Horner, R.A., **A taxonomic guide to some common marine phytoplankton.**, 2002,

Kermack, D.M. & Barnes, R.S.K., **Synopses of the British Fauna.**, 1970-2009,

Ramos, A., **Fauna Ibérica. Vols. 2, 4, 21, 25, 27, 29.**, 1992-2006,

Riedl, R., **Fauna y flora del mar Mediterráneo.**, 2000,

Rodríguez Iglesias, F., **Galicia. Natureza. Zooloxía. Vols. 36, 37, 38 e 39.**, 2002,

Tomas, C.R., **Identifying marine phytoplankton.**, 1997,

Varios autores, **Serie Inventarios. Vols. 1, 4, 6, 7, 10, 11, 14.**, 1985-1991,

Warner, G.F., **Diving and Marine Biology.**, 1984,

Recommendations

Subjects that it is recommended to have taken before

Marine Botany/V02M098V01102

The Marine Environment: Physical Oceanography/V02M098V01101

Marine Zoology/V02M098V01103
