



IDENTIFYING DATA

Marine Zoology

Subject	Marine Zoology			
Code	V02M098V01103			
Study programme	(*)Máster Universitario en Bioloxía Mariña			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Mandatory	1st	1st
Teaching language	Spanish Galician			
Department				
Coordinator	García Estévez, José Manuel Urgorri Carrasco, Victoriano			
Lecturers	García Estévez, José Manuel Urgorri Carrasco, Victoriano			
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General description	In this matter expose : - The models of organisation of the main groups of marine animals - The morphological diversity and the adaptations to the different habitats, ways of life, feeding and reproduction. - The systematic of the main groups. - The fauna of the *sustratos rocky and **sedimentarios of the coastal and deep systems.			

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
B6	Desarrollo de la curiosidad científica, de la iniciativa y la creatividad
C2	Conocimiento de la diversidad de organismos marinos y sus estrategias adaptativas
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
D4	Desarrollo de la capacidad para actualizar el conocimiento de forma autónoma
D7	Desarrollo de habilidades para la divulgación de ideas en contextos tanto académicos como no especializados

Learning outcomes

Expected results from this subject	Training and Learning Results
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*Knowledge of wool *diversity of marine *organisms *and *his *adaptative *strategies	A1 A2 B1 D1 D2
New	A1 A2 B1 C2 D1 D2
New	A1 A2 B1 C2 D1 D2
New	A1 A2 B1 C2 D1 D2
New	A1 A2 B1 C2 D1 D2
New	A1 A2 A3 A4 A5 B1 B6 C2 C14 D1 D2 D4 D7

Contents

Topic	
Architectural patterns of the animals.	The form and the corporal design like adaptation to the means **bentónico and **peláxico . Colonial forms and **gregarias . The skeletal *structures . The movements. Systems of defence. **Coloracións . Shelters and territoriality. Interspecific *relations . The feeding. The asexual *reproduction .
**Poríferos	The *individualisation . The *sustrato and the **hidrodinamismo like *determinantes of the corporal form. The skeletal *trainings . The leak like way of life. Evolution of the types of organisation second the internal circuit of water. Asexual *and sexual reproduction.
*Metazoan **diblasticos	**Cnidarios . You form them *polyp and *jellyfish . Exclusive cells: the **cnidocitos . Classification.- **Hidrozoos . Individual and colonial forms. Colonies **hidroides **peláxicas . **Hidromedusas . Colonies **peláxicas mixed. Special structures for the *flotation , the trip and the capture of the food.- **Cubozoos .- **Escifozoos . Structure. The *swimming by **pulsacións **natatorias .- **Antozoos . Structure. Solitary forms, colonial and **pseudocoloniales . Colonies corneas . The coral reefs.- **Ctenóforos .
*Metazoan **triblasticos	**Turbelarios . **Gnatostomúlidos . **Gastrotricos . **Quinorrincos *Nematodes . **Nemertinos . **Priapúlidos . **Caracteres Singular . Ways of life. Ecology.

Molluscs	Mantle, cavity **paleal and *radula.- **Solenogastros. **Caudofoveados. **Monoplacóforos. **Poliplacóforos. **Carácteres Singular. Ways of life. Ecology.- *Gasteropods. The ventilation **paleal. The *solidez of the *gusanillo *asymmetric. The reduction of the shell in the **Opisthobranchios. *Locomotion, *swimming and *flotation. Feeding. The put.-Bivalve. The shell. The mantle. The *ornamentación. The feeding. The **sifóns and the welding of the mantle. Mechanisms of burial, fixation and **retropropulsión. Bivalve **epifáunicos, **perforadores and **xilófagos.- **Escafópodos. **Carácteres Singular. Ways of life. Ecology.- Cephalopods. The shell. The *swimming. The capture of the preys. The courtship and the posture.
*Annelids **Poliquetos	The corporal model generalised. The *locomotion **parapodial. The *elytrons. The movements *excavadores. **Poliquetos **tubícolas, **perforadores, **intersticiais and **simbiontes. The **depredación. **Sedimentívoros No **seletivos and **seletivos superficial and **subsuperficiais. The leak.
**Sipuncúlidos. **Equiúridos	**Carácteres Singular. Ways of life. Ecology.
Crustaceans	Generalities: the corporal regionalisation and the appendix **birrámico.- **Remipedios, **Cefalocáridos, **Maxilópodos. **Carácteres Singular. Ways of life. Ecology.- **Malacostráceos: **Filocáridos And **Eumalacostráceos. The *swimming **pleopodal and the fan discharge. Forms **reptantes: caves and shelters. Territoriality. **Decápodos **Braquiuros And **Anomuros: adaptative *diversity.
Lofoforados	**Briozoos. Colonies **estolonias, **incrustantes, **arbusculares and **foliáceas. Colonies **estenolaemadas, **ctenostomadas and **quilostomadas. **Avicularias And **vibracularias. The colonial growth. The *protrusion of the **lofóforo. The feeding.- Quotation of **Foronídeos, **Braquiópodos and **Ectoproctos.Quetognatos. **Carácteres Singular. Ways of life. Ecology.
*Echinoderms	The *shell **dermatoesquelético, the *symmetry and the orientation.- **Asteroídeos. The system **ambulacral. The burial. The carnivorous *feeding.- **Ofiuroídeos. The *locomotion **braquial. The burial. The feeding.- **Equinoídeos. The *shell: regular and irregular hedgehogs. The feeding **raspadora: the *torch of **Aristóteles. The *excavation. The feeding **sedimentívora: spines and podiums.- **Holoturoídeos. The corporal orientation: **bivio and *trivium. The different ways of life: buccal podiums. The feeding **suspensívora, **detritívora and **sedimentívora. The *tubules of **Cuvier.- Quotation of **Crinoídeos.- **Hemicordados. **Tunicados. **Carácteres Singular. Ways of life. Ecology.
Cefalocordados. Vertebrates	The **esqueleto *axial: **notocorda and vertebral column.- **Condriktios. *Swimming by waves of **contracción. The stability, direction and control of the *swimming. The predatory feeding.- **Osteíktios. The *swimming. Alimentary diets. The feeding *rapaz and **planctívora. Social behaviour. Cares **parentais.- Mammalian *Cetáceos. Modifications of the plan of organisation **mammaliano for the aquatic life. Adaptation to the variations of hydrostatic *pressure: **narcose and *decompression. The feeding **planctívora (Mistacocetos). The carnivorous *feeding (**Odontocetos). The **ecolocación. Communication and social behaviour.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	12.5	37.5	50
Laboratory practical	4	8	12
Presentation	2	6	8
Seminars	2	0	2
Problem and/or exercise solving	3	0	3

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

Methodologies

	Description
Lecturing	Kinds *presenciais stop the exhibition by part of the Professor of the contained of the *temario of theory.
Laboratory practical	Practices varied (*pizarra, problems, computer) in the that employ tools *manipulativas own of the subject.
Presentation	Presentation and debate of the contained and of the resulted of works developed pole student.

Seminars *Tutorías Customized. Resolution to the students of doubts envelope the theoretical content of the subject.

Personalized assistance

Methodologies	Description
Lecturing	They attend the questions posed poles students at the end of each concept.
Seminars	Resolution to the students of doubts envelope the theoretical content of the subject
Laboratory practical	*Faese A *seguemento of the practical development of each student and correct the defects of execution.
Presentation	It helps @perante orientation of the @docente to the correct design of the exhibitions, the *dicción and the defence of the works *expositivos.

Assessment

Description	Qualification	Training and Learning Results
Lecturing	15	
Presentation	35	
Problem and/or exercise solving	50	A1 B1 C2 D1 A2 B6 C14 D2 A3 D4 A4 D7 A5

Other comments on the Evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Barnes, R.D., **Zoología de los invertebrados.**, 1989,

Barnes, R.S.K., Callo, P., Olive, P.J.W., Golding, D.w. & Spicer, J.J., **The invertebrates: a synthesis.**, 2001,

Brusca, R.C. & Brusca, G.J., **Invertebrates**, 2002,

Castro, P. & M.E. Huber., **Biología marina.**, 2007,

Cognetti, G., Sará, M. & G. Magazzú., **Biología marina.**, 2001,

Díaz, J.A. & Santos, T., **Zoología: aproximación evolutiva a la diversidad y organización de los animales.**, 1998,

Fuente, J.A. de la, **Artrópodos. I: características generales.**, 1982,

Hickman, C.P., Roberts, L.S. & Larson, A., **Principios integrales de Zoología.**, 2009,

Kardong, K.V., **Vertebrados: anatomía comparada, función, evolución.**, 2007,

Mader, S.S., **Biología.**, 2008,

Moutou, F., **Los mamíferos en su medio.**, 1993,

Varios Autores., **Galicia. Natureza. Zooloxía. Tomo XXXVII: Zooloxía I; Tomo XXXVIII: Zooloxía II; Tomo XXXIX: Zooloxía III; Tomo XL: Zooloxía IV.**, 2002,

Ruppert, E.E. & Barnes, R.D., **Zoología de los invertebrados.**, 1996,

Young, J.Z., **La vida de los vertebrados.**, 1985,

Hondt, J.L.d', **Les invertebrés marins méconnus**, 1999,

Bayer, F.M. & H.B. Owre, **The free-living lower Invertebrates.**, 1968,

Campbell, A.C., **Guía de campo de la flora y fauna de las costas de España y de Europa.**, 1983,

Fretter, V. & A. Graham., **A functional anatomy of Invertebrates.**, 1976,

Gardiner, M.S., **Biología de los Invertebrados**, 1978,

Hayward, P.J. & J.S. Ryland., **Handbook of the Marine Fauna of North-West Europe.**, 1975,

Hayward, P.J. & J.S. Ryland., **The Marine Fauna of the British Isles and North-West Europe, vol 1: Introduction and Protozoans to Arthropods**, 1990a,

Hayward, P.J. & J.S. Ryland., **The Marine Fauna of the British Isles and North-West Europe, vol 2: Molluscs to Chordates.**, 1990b,

Hayward, P.J., T. Nelson-Smith & C. Shields, **Guía de identificación de la flora y fauna de las costas de España y Europa.**, 1998,

Kaestner, A., **Invertebrate Zoology, vol III.**, 1970,

Kaestner, A., **Invertebrate Zoology, vol I.**, 1967,

Recommendations

Subjects that continue the syllabus

Sampling Techniques for Identification of Marine Organisms and Communities/V02M098V01201

Subjects that are recommended to be taken simultaneously

Marine Botany/V02M098V01102

The Marine Environment: Physical Oceanography/V02M098V01101

Other comments

It recommends update the knowledges of Zoology purchased in the degree or the degree.

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 ===

1.- The theoretical classes of Marine Zoology (there are no seminars or practices in the subject) would be taught telematically, by the videoconference system or platform that is affordable to the three universities (Teams, Skype, etc). Once the class is over, students will be sent the pdf of the power point presentation via dropbox, as was done in previous courses.

2.- In the case of having to carry out a non-presential teaching of the subject, the evaluation would be done through a bibliographic academic work, so that the teacher would send each student a subject related to the subject of Marine Zoology, indicating the maximum length of the text and the deadline for delivery of the pdf work that would be sent via telematics.
