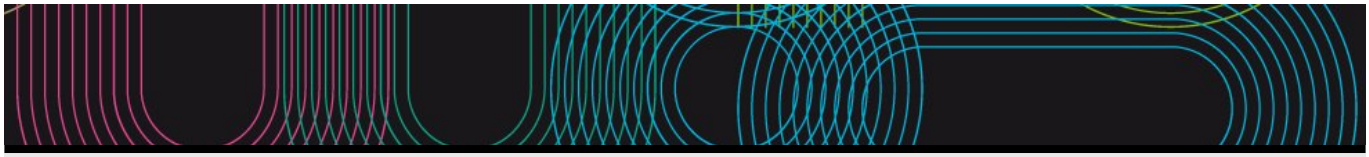

IDENTIFYING DATA				
Physiology of Marine Organisms				
Subject	Physiology of Marine Organisms			
Code	V02M098V01106			
Study programme	Máster Universitario en Biología Marina			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	1st	1st
Teaching language	#EnglishFriendly Spanish Galician			
Department				
Coordinator	Míguez Miramontes, Jesús Manuel			
Lecturers	Blanco Imperiali, Ayelén Melisa Conde Sieira, Marta González Rodríguez, Luis Lopez Patiño, Marcos Antonio Míguez Miramontes, Jesús Manuel Soengas Fernández, José Luis			
E-mail	jmmiguez@uvigo.es			
Web				
General description	Study of the functioning of marine organisms (animals and plants) and the mechanisms that enable their relationship with the environment. Special attention to those physiological aspects more related to the integration of the information coming from the marine environment and the searching for specific reponses.			

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
C10	Inspección y asesoramiento técnico en la evaluación, explotación y gestión de pesquerías, extracción de recursos e instalaciones de acuicultura
C13	Divulgación de conocimientos de la biología y el medio marinos: programas de formación y docencia; planificación y dirección de acuarios, museos, centros de interpretación ambiental, parques naturales y espacios naturales protegidos

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
D6	Desarrollo de las capacidades de reflexión sobre responsabilidades sociales y éticas

Expected results from this subject

Expected results from this subject	Training and Learning Results
(*)Know the characteristics of the sensory systems and of the nervous system and the *sús importance in the *adaptacón the marine means.	A1 A3 B1 B2 C2 C3 D1
(*)Capacity for *evaluar and interpret the operation of the systems *fisiolóxicos	A1 A2 B2 B6 C2 C3 C13 D1 D2
New	A2 A3 B1 B2 C10 D4
(*)Capacity to analyse samples of animal and vegetal origin	A1 A2 B3 C8 D1 D2 D3
(*)And interpret experimental results applying knowledges *fisiológicos.	A2 A5 B2 C8 C10 D3 D4
(*)*Capacidad To obtain information and interpret experimental results applying knowledges *fisiológicos.	A3 A4 A5 B5 C10 D2 D3 D5 D6
(*)Capacity for *presentacion and discussion of works in public	A4 B6 C13 D5

Contents

Topic	
MODULE I. PHYSIOLOGY OF MARINE PLANTS	Topic 1. Adaptations to the marine environment Topic 2. Mechanisms of inorganic carbon uptake Topic 3. Stress responses: oxidative stress in the marine environment

MODULE II. PHYSIOLOGY OF MARINE ANIMALS	Topic 1. Sensory physiology in marine animals. Topic 2. Neuroendocrine and endocrine systems in marine animals. Integrated responses in fish: stress response; reproductive activity; biological rhythms. Topic 3. Circulation in aquatic animals. Topic 4. Aquatic respiration Topic 5. Excretion, water and ion balance in marine animals.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	30	45	75
Laboratory practical	6	9	15
Seminars	6	30	36
Mentored work	2	0	2
Case studies	1	9	10
Research based methodologies	2	8	10
Essay questions exam	2	0	2

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

Methodologies

	Description
Lecturing	Classroom session in which the teacher will present the basic contents of the subject matter. The student must follow the presentation and may intervene when additional information is required and/or when there is a debate, whether it is generated by the teacher or at the initiative of the students themselves.
Laboratory practical	The students will have the opportunity to participate in laboratory sessions with an eminently practical content. Different experimental and analytical protocols will be tested, to later discuss them in a reasoned way from the point of view of their physiological significance.
Seminars	Classroom sessions in which specific topics of the subject will be developed in relation to the proposed topics. The students will have to carry out bibliographic works on topics proposed by the teacher and/or by the students themselves and that will be the object of exposition and later debate in class.
Mentored work	Follow-up by the teaching staff of the students' work corresponding to the seminars and the internship report.
Case studies	Classroom work with questions to be answered by the students.
Research based methodologies	From real situations the students must search for bibliography to find adaptive solutions of plant organisms to their environment.

Personalized assistance

Methodologies	Description
Lecturing	The teachers will receive comments and questions from the students during the lecture sessions, and can also attend to the students during the tutorial hours.
Seminars	During the seminar sessions the students can interact with the teachers individually and can also make use of the tutorial hours in case of doubts or need of information, especially for the preparation of the assignments.
Laboratory practical	Although the practicals are done in small laboratory groups, there will be the possibility to interact individually with the teachers whenever necessary to solve doubts or receive more precise information
Mentored work	The teachers follows up the seminar work and the elaboration of the internship report.
Research based methodologies	The teachers will attend to any questions that may arise during the elaboration of the work.

Assessment

	Description	Qualification	Training and Learning Results			
Laboratory practical	There will be 2 laboratory practices of Animal Physiology. The evaluation of these practices will include: -50% of the grade for attendance to the practical sessions. -50% of the grade for the practical report.	13.333	A1 A2	B1 B3 B5	C8 C10	D3 D5

Seminars	In conjunction for the two modules, Animal Physiology and Plant Physiology. Group work (2-3 students) on a topic proposed by the professor and brief presentation of the same in a class session at the end of the course. Integration seminar at the end of the course on adaptations of organisms to the marine environment.	30	A1 A4 A5	B1 B2 B5 B6	C2 C3	D2 D3 D4 D5
Case studies	Integration seminar at the end of the course on adaptations of organisms to the marine environment.	3.333	A1 A2 A4	B2 B5 B6	C8 C13	D4 D6
Research based methodologies	The questions are corrected and returned to the students with the result of the solution found. The final result of the deliveries is evaluated according to the solution found by the students.	20	A1 A2 A4	B2 B5 B6	C3 C13	D3 D5
Essay questions exam	It constitutes the final exam and is focused on the theoretical contents of the subject in the part of Animal Physiology. It may include multiple-choice questions, development questions and case resolution.	33.333	A1	B5	C2 C3	D1

Other comments on the Evaluation

Qualifications, minimum scores and second chance

Students must complete all the proposed activities. In case of not doing any of them, the grade will be zero, and as such it will be considered in the final grade of the subject.

CALCULATION OF THE FINAL SCORE: the score obtained by the student in each module will be taken into account, applying the following ponderation according to the weight of the module: Final overall grade = 0.66 x (grade of the module Animal Physiology) + 0.33 x (grade of the module Plant Physiology).

To succeed in the subject it will be essential to obtain a minimum grade of 4 (out of 10) in each of the modules separately. In addition, in the FA module it is essential to obtain a minimum of 3.5 points out of 10 in the final exam. In case of not achieving this score, it will be that grade that will appear in the overall grade of the subject.

SECOND CHANCE: The components of the final grade in the first opportunity are maintained for the second opportunity. However, neither the practicals nor the seminars will be recoverable in the second opportunity. Attendance to these activities is mandatory within the deadlines established in the calendar, and the grade obtained in the first opportunity will be maintained for the second opportunity.

Global evaluation

Students may request a global evaluation, which will entail the waiver of the continuous evaluation. The global evaluation will allow obtaining 100% of the score of the subject by means of a test on the official date set for the final exam, both in the first opportunity and in the second one.

The test may include: - Objective response questions, ii) Developmental questions, iii) Case studies, iv) Case studies.

The global evaluation does not exempt the completion of the internships and seminars of the subject. The grade obtained in these activities will be part of the overall evaluation grade, with the percentage previously indicated. If these activities are not carried out, the final grade of the subject will be 0 points.

Sources of information

Basic Bibliography

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Complementary Bibliography

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Recommendations