



IDENTIFYING DATA

The Marine Environment: Physical Oceanography

Subject	The Marine Environment: Physical Oceanography			
Code	V02M098V01101			
Study programme	Máster Universitario en Biología Marina			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Mandatory	1st	1st
Teaching language	Spanish Galician			
Department				
Coordinator	García Estévez, José Manuel Besteiro Rodríguez, Celia			
Lecturers	Besteiro Rodríguez, Celia García Estévez, José Manuel			
E-mail	jestevez@uvigo.es celia.besteiro@usc.gal			
Web				
General description	Main properties of the oceanic basins and the sediments that the ocean. Physical properties of the seawater. Chemical Properties of the seawater. The movements of the sea: the marine currents and the oceanic circulation; the waves; the tides. The coast: coastal waters and sea magins.			

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			
B5	Desarrollo de la habilidad de elaboración, presentación y defensa de trabajos e informes técnicos			
C1	Conocimiento físico-químico del medio oceánico y costero			
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			
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			
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
Comprise the meaning of Oceanography and know the main sources of his knowledge.	A1 A2 A3 A5 B1 B2 B5 C1 D1 D2
Purchase knowledges on the main strokes of the oceanic basins and his evolution to the step of the time.	A1 A3 A5 B1 B2 C1 D1 D2 D3
Understand the origin and distribution of the sediments and his relation with other oceanic processes.	A1 A2 A3 B1 B2 C1 D1 D2
Know the penetration of the solar radiation in coastal and oceanic waters.	A1 A2 A3 A4 A5 B1 B2 C1 D5
Explain the behaviour of the temperature and the salinity of the waters of the ocean.	A1 A2 A3 A4 A5 B1 B2 B5 C1 C13 D1 D2 D5
Know the applications of the diagram T-S in the analysis of the masses of water.	A1 A2 A3 A4 A5 B1 B2 C1 D1 D2 D3

Purchase knowledges of the basic strokes of the oceanic circulation, superficial and subsuperficial, waves and tides.

A1
A2
A3
A4
A5
B1
B2
C1
C13
C14
D1
D2
D5

Contents	
Topic	
The OCEANOGRAPHY.	Concept and divisions. Historical development of the Oceanography.
The OCEANIC BASINS.	Origin and evolution of the oceans. The oceanic basins. The geological regions of the ocean. Geography of the current oceanic basins.
The OCEANIC SEDIMENTS.	Origin. Classification. Mechanisms of control of the accumulation of oceanic sediments. Distribution of the oceanic sediments.
PHYSICAL PROPERTIES OF THE WATER OF THE Mar.	Temperature. Salinity. Density. Solar radiation and illumination. Transparency and penetration of the light. Viscosity and superficial tension. Pressure. Propagation of the sound.
CHEMICAL PROPERTIES OF THE WATER OF THE Mar.	Chemical properties of the pure water. Chemical composition of the water of the mar. Classification of the chemical elements. Greater and lower constituents. Micronutrients. Gases dissolved. Organic matter.
The MOVEMENTS OF THE SEA: The MARINE CURRENTS And The OCEANIC CIRCULATION.	The marine currents. Types of currents. The oceanic circulation. Superficial circulation. Deep circulation. Circulation thermohaline and the big oceanic conveyor.
The MOVEMENTS OF THE SEA: The WAVES	Definition. Characteristics. Classification and types of waves. Origin of the waves. Interaction with the coast. Measurement and forecast of the wave regime. Energy of the waves and its usages. Biological importance of the waves.
The MOVEMENTS OF THE SEA: The TIDES	Definition. Characteristics. Origin of the tides. Explanatory theories. Classification of the tides. Oceanic tides and anfidr6mic systems. Measurement and forecast of the tides. Energy of the tides and its industrial use. Biological importance of the tides.
The COAST: COASTAL WATERS And SEA MARGINS.	The COAST. Coastal terminology. Classification and development of the coast. Coastal waters and sea margins. Deep seas.

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	15	35	50
Mentored work	5	10	15
Presentation	3	7	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	Exposition of the main concepts of the course and approach of interactive activities, where the students will be able to formulate questions and comments
Mentored work	Destined interactive sessions to integrate and apply the knowledges purchased in the masterclasses
Presentation	Development of the competitions that allow the put in practice of the oceanographic knowledges purchased

Personalized assistance

Methodologies	Description
Lecturing	It attended the *totalas questions risen pole students in real time
Mentored work	It follows the *desenvolvimento of the work in the classroom of personal and interactive way
Presentation	It helps *à presentation of the contained that owes to have a correct exhibition.

Assessment							
	Description	Qualification	Training and Learning Results				
Lecturing	Continuous evaluation of the assistance and attitude of the students in the lecture sessions	10	A1 A2 A3 A4 A5	B1 B2 B5	C1 C14	D1 D2 D3 D5	
Mentored work	Evaluation of the knowledges purchased by means of the manufacture in group of one work related with the contained of the subject. The relation of works will be proposed by the professor.	25				D1 D2	
Presentation	Continuous evaluation of the knowledges purchased by means of the public presentation of the work previously mentioned	15	A4 A5			D2	
Essay questions exam	Evaluation of the knowledges purchased by means of the realization of an examination written in regard to the contained of the subject	50	A1 A2 A3 A4 A5	B1	C14	D1 D2	

Other comments on the Evaluation

In the first opportunity we take into account the four methodologies. In the second one, to assessment will realize it by means of a written proof, keeping the assessments of the continuous avaliation continuous obtained along the course. For the students that do not developed the activities of continuous avaliation (assistance to sessions and elaboration and presentation of the homework), the written proof will suppose the 100% of the qualification.

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Other comments

It is recommended to work actively the subject in a continuous way during the course.