



Information about the subject

Degree: Bachelor of Science Degree in Marine Sciences

Faculty: Faculty of Veterinary Medicine and Experimental Sciences

Code: 270217 **Name:** Paleoceanography

Credits: 6,00 **ECTS Year:** The course is not offered this academic year **Semester:** 1

Module: Optional Itinerary: Ocean Dynamics

Subject Matter: Paleoceanography **Type:** Elective

Department: Oceanography and Environment

Type of learning: Classroom-based learning

Languages in which it is taught:

Lecturer/-s:



Module organization

Optional Itinerary: Ocean Dynamics

Subject Matter	ECTS	Subject	ECTS	Year/semester
Dynamic Physical Oceanography	6,00	Dynamic Physical Oceanography	6,00	This elective is not offered in the academic year 21/22
Paleoceanography	6,00	Paleoceanography	6,00	This elective is not offered in the academic year 21/22
Mathematical Models	6,00	Mathematical Models	6,00	This elective is not offered in the academic year 21/22
Tracers in Oceanography	6,00	Tracers in Marine Sciences	6,00	This elective is not offered in the academic year 21/22
Atmosphere-Ocean Interaction	6,00	Atmosphere-Ocean Interaction	6,00	This elective is not offered in the academic year 21/22

Recommended knowledge

None



Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

- R1 The student knows how to highlight the mechanisms on which paleoceanographic reconstructions are based.
- R2 The student knows the oceanographic conditions of the past and their long-term evolution.
- R3 The student knows the importance of foraminifera and other microfossils in paleoceanographic reconstructions.
- R4 The student knows the oceanographic changes during the glacial cycles of the Quaternary.
- R5 The student knows oceanographic changes in response to rapid changes in the carbon cycle (e.g. Paleocene limit).
- R6 The student applies the record of past oceanographic changes to the forecast of future global change.
- R7 The student knows the variations in the ITCZ/ monsoon by orbital and millennial cycles, and their consequences for nutrient cycles and marine productivity.



Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB2	Students are able to apply knowledge to their work in a professional way and have the competences enabling them to state and defend views and opinions as well as perform problem-solving tasks in their field of study.			X	
CB4	Command of a foreign language			X	
CB5	Students develop the necessary learning skills to undertake further studies with a high level of autonomy.			X	

GENERAL		Weighting			
		1	2	3	4
CG1	Capacity to analyze and synthesize			X	
CG2	Capacity to organize and plan		X		
CG3	Mastering Spanish oral and written communication			X	
CG5	Knowing and applying Basic ITC skills related to marine science			X	
CG6	Capacity to manage information (capacity to look for and analyze information coming from different types of sources)			X	
CG7	Decision making		X		
CG8	Capacity to work in interdisciplinary and multidisciplinary team			X	
CG10	Critical and self-critical capacity			X	
CG11	Capacity to learn		X		



CE19 Deeply understanding operating systems of maritime orientated companies, identifying their problems and proposing solutions

x

CE22 Practical experience of methods of marine environmental impact assessment

x

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R3, R4, R5, R6, R7	50,00%	Written test with theoretical and practical questions
R1, R2, R3, R4, R5, R6, R7	20,00%	Delivery of guided assignments, whose objectives and contents will be proposed by the teacher
R1, R2, R3, R4, R5, R6, R7	20,00%	Problem-solving and issues related to the use of specific software
R1, R2, R3, R4, R5, R6, R7	10,00%	Oral presentation

Observations

MENTION OF DISTINCTION:

According to Article 22 of the Regulations governing the Evaluation and Qualification of UCV Courses, the mention of "Distinction of Honor" may be awarded by the professor responsible for the course to students who have obtained, at least, the qualification of 9 over 10 ("Sobresaliente"). The number of "Distinction of Honor" mentions that may be awarded may not exceed five percent of the number of students included in the same official record, unless this number is lower than 20, in which case only one "Distinction of Honor" may be awarded.



Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

- M1 Teacher presentation of contents, analysis of competences, explanation and in-class display of skills, abilities and knowledge.
- M2 Group work sessions supervised by the professor. Case studies, diagnostic tests, problems, field work, computer room, visits, data search, libraries, on-line, Internet, etc. Meaningful construction of knowledge through interaction and student activity.
- M3 Activities carried out in spaces with specialized equipment.
- M4 Supervised monographic sessions with shared participation.
- M5 Application of multidisciplinary knowledge.
- M6 Personalized and small group attention. Period of instruction and/or guidance carried out by a tutor to review and discuss materials and topics presented in classes, seminars, readings, papers, etc.
- M8 Set of oral and/or written tests used in initial, formative or additive assessment of the student.
- M9 Group preparation of readings, essays, problem-solving, seminars, papers, reports, etc. to be presented or submitted in theoretical , practical and/or small-group tutoring sessions. Work done on the university e-learning platform (www.plataforma.ucv.es)
- M10 Student's study: Individual preparation of readings, essays, problem-solving, seminars, papers, reports, etc. to be presented or submitted in theoretical, practical and/or small-group tutoring sessions. Work done on the university e-learning platform (www.plataforma.ucv.es).



IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
ON-CAMPUS CLASS M1	R1, R2, R3, R4, R5, R6, R7	32,00	1,28
PRACTICAL CLASSES M2	R1, R2, R3, R4, R5, R6, R7	6,00	0,24
LABORATORY M3	R1, R2, R3, R4, R5, R6, R7	12,00	0,48
SEMINAR M4	R1, R2, R3, R4, R5, R6, R7	3,00	0,12
GROUP PRESENTATION OF ASSIGNMENTS M5	R1, R2, R3, R4, R5, R6, R7	2,00	0,08
TUTORIAL M6	R1, R2, R3, R4, R5, R6, R7	3,00	0,12
ASSESSMENT M8	R1, R2, R3, R4, R5, R6, R7	2,00	0,08
TOTAL		60,00	2,40

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
GROUP WORK M9	R1, R2, R3, R4, R5, R6, R7	10,00	0,40
INDEPENDENT WORK M10	R1, R2, R3, R4, R5, R6, R7	80,00	3,20
TOTAL		90,00	3,60



Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
CONTENTS	Oceanic variability along geological time using micropaleontological tools (foraminifera, calcareous nanoplankton, radiolaria, diatoms, etc.), geochemical (stable isotopes, oxygen, carbon, etc.) and biogeochemical (alkenones, biomarkers Molecular, etc.).

Temporary organization of learning:

Block of content	Number of sessions	Hours
CONTENTS	30,00	60,00

References

- 1.- Elderfield, H., The Oceans and Marine Geochemistry, Elsevier. Volume 6 of the Treatise on Geochemistry, H.D. Holland and K.K. Turekian (eds), 2006.
- 2.- Sarmiento, J.L., N. Gruber, Ocean biogeochemical dynamics. - Princeton; Oxford: Princeton University press, 2006.
- 3.- Bradley, R. S., Paleoclimatology: Reconstructing Climates of the Quaternary. Academic Press 1999.
- 4.- Broecker, W.S. The Role of the Ocean in Climate, Yesterday, Today and Tomorrow, Eldigio Press 2005.