



IDENTIFYING DATA

Geological oceanography I

Subject	Geological oceanography I			
Code	V10G060V01504			
Study programme	(*)Grao en Ciencias do Mar			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	3rd	1st
Teaching language	Spanish English			
Department				
Coordinator	Rey García, Daniel			
Lecturers	Bernabéu Tello, Ana María Rey García, Daniel			
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Web	http://193.146.32.240/tema1112/claroline/course/index.php			
General description	Geological oceanography (also called marine geology) is one of the broadest fields in the Earth Sciences and contains many subdisciplines, including geophysics, and plate tectonics, petrology and geochemistry, sedimentation processes, and micropaleontology and stratigraphy. Geological Oceanography I will focus on the study of basic earth processes affecting sedimentation in litoral areas, since sediments the main geological feature of these region. The subject will cover the fundamental techniques to study the topography, structure, sedimentation, and associated geological processes of these areas to discover how they were formed and how ongoing processes (coastal dynamics, climate change, human impact...) may change them in the future. The subject will deal with the peculiarity of combining terrestrial and marine data to study litoral and coastal processes.			

Competencies

Code	
A2	Students can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study
A5	Students have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy
C1	To know the vocabulary, codes and concepts inherent to the oceanographic scientific field
C2	To know and understand the essential facts, concepts, principles and theories related to oceanography
C5	Basic knowledge of research methodology in oceanography
C6	Ability to identify and understand the problems in the field of oceanography
C12	To be able to operate the instrumental techniques applied to sea
C13	To acquire, evaluate, process and interpret oceanographic data within the theories currently in use
C15	To recognize and implement good scientific practice in measurement and experimentation, both in the field and in the laboratory
C16	To plan, design and implement applied research from the recognition stage to the final evaluation of results and discoveries
C17	Ability to survey in the field and to work in the laboratory responsibly and safely, encouraging team work
C18	To transmit writing, verbal and graphical information for audiences of various types
D1	Analysis and synthesis ability
D2	Organization and planning skills
D3	Written and oral communication in the official languages of the University
D5	Information technology skills (search and data analysis)
D6	Problem management and solving skills
D8	Teamwork ability
D15	Ability to apply knowledge in practice
D16	Research skills

Learning outcomes

Expected results from this subject	Training and Learning Results		
1. Capacity to plan and execute field surveys in the coastal and litoral realm	A2	C1 C2 C5 C6 C12 C13 C15 C16 C17 C18	D2 D3 D5 D8 D15 D16
(*) To know different techniques to minimize the generation of by-products and wastes			
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2. Capacity to manage the basic techniques of observation, measurement and description of marine geological materials in these environments	A2 A5	C1 C2 C5 C12 C13 C15 C17	D2 D3 D5 D6 D8 D16
3. Capacity to manage the basic techniques of sampling and surveying	A2	C1 C5 C12 C13 C15 C17	D2 D8 D15 D16
4. Capacity to manage the basic techniques of sediment caracterización and analyses	A2 A5	C1 C2 C5 C6 C12 C15 C18	D2 D5 D6 D8 D15 D16
5. Geological mapping and representation skills	A2 A5	C1 C5 C6 C16 C18	D1 D2 D3 D5 D15 D16
6. Report elaboration and presentation skills	A2 A5	C1 C6 C16 C18	D1 D2 D3 D5 D8 D16

Contents	
Topic	
T01. Presentation	0.1 Aims 0.2 Activities 0.3 Program 0.4 System of qualification
T1. Introduction	1.1 Methods of geological investigation in the coastal and littoral realms 1.2 Structure and general protocols
T2 Coastal Morphodynamics	2.1. Basic concepts 2.2. Morphodynamics of coastal systems 2.3. Transport assesment
T3 Methods of sampling and subsampling	3.1 Grabbers 3.2 Corers 3.3 Fluids and gases 3.4 Samples curation

T4 Seismo-acoustic methods	4.1 Basic Principles 4.2 Echosounders 4.3 Side Scan Sonar 4.4 Seismic Methods (HR) 4.7 Processing
T5 Electrical logging: physical properties	5.1 Gamma density and natural gamma 5.2 Resistivity and poropermeability 5.3 Susceptibility and other magnetic properties 5.6 Color and imaging 5.7 X-Rays 5.8 Gorescanning: GEOTEK and 2G
T6 Geochemical Methods	6.1 Elemental analyses 6.1.1 LECO 6.1.2 Spectrometry 6.1.3 XRF 6.2 Mineralogical Analyses 6.2.1 XRD 6.2.2 SEM-EDAX 6.3 Corescanning: ITRAX
T7 Dating Techniques	7.1 Radiometry 7.1.1. ¹⁴ C 7.1.2. ²¹⁰ Pb 7.1.3. ¹³⁷ Cs 7.2. Other Methods 7.2.1. d18O 7.2.2. Magnetic 7.2.3. Thermoluminescence
P1.1 Survey Planning	How to plan a cruise (practical case) PA1.1 Objective definition PA1.2 Selection of methodologies PA1.3 Definition of tasks and scope PA1.4 Time Planning PA1.5 Economic assessment and budgets PA1.6 Reports
P2.1. RV Mytilus Mini Cruise	PA2.1 Administrative requirements and basic security norms in oceanographic cruises PA2.2 Onboard life PA2.3 Sediment sampling techniques and operations PA2.4 Geophysical surveying techniques and operations PA2.5 Data management and archives

Planning

	Class hours	Hours outside the classroom	Total hours
Seminars	7	10	17
Outdoor study / field practices	5	5	10
Group tutoring	0	15	15
Introductory activities	2	4	6
Case studies / analysis of situations	15	30	45
Master Session	23	32	55
Long answer tests and development	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
Seminars	2:20 h long seminars on complementary topics
Outdoor study / field practices	It includes ship minicruises oriented to experience oceanographic work in real conditions
Group tutoring	Activities associated to the lectures, seminars and practicals
Introductory activities	It comprises the activities carried out during the two first lectures, like subject presentation, time schedule, qualification procedures and other pertinent indications for the course well-being.
Case studies / analysis of situations	Preparation of a project in real terms: analysis of the problematic, definition of aims, methodological planning, timing and economic estimate.
Master Session	Lectures comprising the seven major topics of the course program

Personalized attention

Methodologies	Description
Master Session	The tutorials will preferably take place Monday to Friday from 13:00 14:00 in the office D44 , Block C , 3rd floor of the building CC Experimental , as long as the lecturer does not have to attend other academic obligations. It is recommended to check availability in this time slot by email, and / or to arrange alternative dates before if necessary.
Seminars	The tutorials will preferably take place Monday to Friday from 13:00 14:00 in the office D44 , Block C , 3rd floor of the building CC Experimental , as long as the lecturer does not have to attend other academic obligations. It is recommended to check availability in this time slot by email, and / or to arrange alternative dates before if necessary.
Outdoor study / field practices	The tutorials will preferably take place Monday to Friday from 13:00 14:00 in the office D44 , Block C , 3rd floor of the building CC Experimental , as long as the lecturer does not have to attend other academic obligations. It is recommended to check availability in this time slot by email, and / or to arrange alternative dates before if necessary.
Group tutoring	The tutorials will preferably take place Monday to Friday from 13:00 14:00 in the office D44 , Block C , 3rd floor of the building CC Experimental , as long as the lecturer does not have to attend other academic obligations. It is recommended to check availability in this time slot by email, and / or to arrange alternative dates before if necessary.
Introductory activities	
Case studies / analysis of situations	The tutorials will preferably take place Monday to Friday from 13:00 14:00 in the office D44 , Block C , 3rd floor of the building CC Experimental , as long as the lecturer does not have to attend other academic obligations. It is recommended to check availability in this time slot by email, and / or to arrange alternative dates before if necessary.

Assessment						
	Description	Qualification	Training and Learning Results			
Seminars	Individual written report on the seminar activities. May include tests.	10	A2	C1 C5 C12 C13 C15 C16 C17	D2 D3 D5 D6 D8 D15 D16	
Outdoor study / field practices	It comprises an individual brief written summary. It has to reflect the activities performed in the field trip.	10	A2	C1 C5 C12 C13 C15 C16 C17	D1 D2 D5 D8 D15 D16	
Case studies / analysis of situations	Group report that comprise the practical activities, including objectives, methodology, results and conclusions	10 ó 20	A2	C5 C12 C13 C15 C16	D2 D5 D8 D15 D16	
Master Session	Written individual test of 2 to 4 hours, whose aim will be the global evaluation of the process of learning and the acquisition of skills and knowledge. It will comprise one or several of the following types of assessments: long questions to elaborate, short questions, tests, problem resolution, interpretation of images, maps and diagrams. It will require a minimum of 4 over 10 to be able to compute with the rest of evaluation elements.	60	A2 A5	C1 C2 C6 C18	D1 D2 D3 D6	
Long answer tests and development	Individual written report on an additional activity derived from the lectures, practicals or seminars, pursuing the students own interest. It does not have compulsory character. Its execution takes 10% off the laboratory practicals.	10 ó 0	A2 A5	C1 C2 C5 C6 C18	D1 D2 D3 D6	

Other comments on the Evaluation

The assistance to the field trip, seminars and practical is compulsory. Falling to attend to 20% or more of the lectures will automatically disqualify. It is necessary to attain at least 40% of the maximum mark in each block to compensate. If no student reaches a qualification of 9, the possibility to celebrate an additional test will be considered. Only the top 4 students with qualification above 7,5 will be invited. Students failing the course will have to retake all the parts the following year.

It is required of the students who pursue this matter to observe a responsible and honest conduct.

It is deemed inadmissible any form of fraud (i.e. copy and / or plagiarism) aimed to distort the level of knowledge or skill achieved by a student in any type of test, work or report designed for this purpose. This fraudulent conduct will be sanctioned with firmness according to current regulations.

Sources of information

E.A. Hailwood, R. Kidd, **Marine Geological Surveying and Sampling**, Springer,

E. J. W. Jones, **Marine Geophysics**, Wiley,

Horst D. Schulz, Matthias Zabel, **Marine Geochemistry**, Springer,

García Estevez, Jose Manuel Y Olabarria, Celia, **Capítulos XXIX, XXX y XXI de Métodos Y Técnicas En Investigación Marina**, Tecnos,

M. E. Tucker, **Techniques in Sedimentology**, Wiley-Blackwell,

<http://walrus.wr.usgs.gov/pubinfo/margeol2.html>,

Commission of marine cartography, <http://www.shoa.cl/ica/index.html>,

GEODAS Geophysical Data Management System of the NOAA National Geophysical Data Center (NGDC),

<http://www.ngdc.noaa.gov/mgg/geodas/geodas.html>,

Recommendations

Subjects that continue the syllabus

Geological oceanography II/V10G060V01603

Subjects that are recommended to be taken simultaneously

Chemical oceanography I/V10G060V01304

Physical oceanography I/V10G060V01503

Subjects that it is recommended to have taken before

Geology: Geology 1/V10G060V01105

Geology: Geology 2/V10G060V01205

Statistics/V10G060V01303

Coastal and marine sedimentary habitats/V10G060V01402

Sedimentology/V10G060V01305

Other comments

DELIVERY OF ASSIGNMENTS

Unless it is stated otherwise, all the hand outs have to be delivered in electronic format and uploaded to the TEMA platform. No email, or paper submission will be accepted or acknowledged.

IMPORTANT

All deadlines expire at 24:00 of the marked day.

REGARDING THE AUTHORSHIP OF THE GROUP ASSIGNMENTS

Submission of the assignment is the responsibility of the coordinator, who must state the participants. All coauthors must upload their copy at FAITIC to claim co-authorship.

Authorship cannot be modified after the deadline of the assignment.

Authors that appear in more than one assignment will cause the assignment to fail for all authors.

Plagiarism, partly or in whole, will cause course to fail and will be reported to the Dean for disciplinary action.

THE TEMA PLATFORM IS THE OFFICIAL COMMUNICATION CHANNEL OF THE COURSE

Any agreement has to be stated in the TEMA platform to be official.
