



IDENTIFYING DATA

Basin Analysis

Subject	Basin Analysis			
Code	V10G061V01406			
Study programme	Grado en Ciencias del Mar			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	2nd
Teaching language	#EnglishFriendly Spanish			
Department				
Coordinator	García Gil, María Soledad			
Lecturers	Diz Ferreiro, Paula García Gil, María Soledad Pérez Arlucea, Marta María			
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Web	http://http://webs.uvigo.es/c10/webc10/			
General description	This matter allows the introduction to the analysis of sedimentary basins and of the interpretation of the history of his filling using technical multidisciplinary.			
	English Friendly subject: International students may request from the teachers: a) resources and bibliographic references in English, b) tutoring sessions in English, c) exams and assessments in English.			

Training and Learning Results

Code	
A3	Students have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include reflection on relevant social, scientific or ethical issues
A4	Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences
A5	Students have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy
B1	Know and use vocabulary, concepts, principles and theories related to oceanography and apply everything learned in a professional and/or research environment.
B4	Manage, process and interpret the data and information obtained both in the field and in the laboratory.
B5	Develop, implement and write basic or applied projects in oceanography from a multidisciplinary perspective.
C13	Acquire the basic sedimentological, geochemical and geophysical techniques and methodologies used in identification, use and sustainability of the natural resources of coastal and marine environments.
C14	Know basic concepts and events of global change obtained from geological records.
D1	Develop the search, analysis and synthesis of information skills oriented to the identification and resolution of problems.
D5	Sustainability and environmental commitment. Equitable, responsible and efficient use of resources.

Expected results from this subject

Expected results from this subject	Training and Learning Results			
Transmit information of form written, verbal and graphic for audiences of diverse types	A4 A5	B1 B5	C14	D1
Characterize and mapping of marine bottoms, marine sub-bottoms and coastal areas-continental	A3	B4 B5	C13	D1 D5
Interpretation of paleoceanographic proxies	A3 A4	B1 B5	C14	D1

Contents

Topic

SUBJECT 1. INTRODUCTION TO THE ANALYSIS OF BASINS	1.1. Definitions. Sedimentary basins. Classification 1.2. Origin and evolution of the oceanic basins 1.3. Interest and applications of the analysis of basins
SUBJECT 2. EXTERNAL AND INTERNAL FACTORS CONTROLLING THE EVOLUTION OF THE SEDIMENTARY BASINS	2.1. Tectonics, Climate, Supply and Sea-level changes 2.2. Sequential stratigraphy: Types of sections, 3D architecture of facies and correlation criteria
SUBJECT 3. DATING METHODS	3.1. Introduction to dating methods.
SUBJECT 4. SEISMIC STRATIGRAPHY	4.1. Sedimentary discontinuity surfaces: Criteria of recognition 4.2. System tracks in the cycle of se-level oscillation 4.3. Sequences and models of sequences.
SUBJECT 5. PALEOCEANOGRAPHY AND PALAEOCLIMATOLOGY	5.1. Palaeoceanography and plaeoclimatology proxies 5.2. Natural mechanisms of climatic and oceanographic changes

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	18	36	54
Case studies	20	0	20
Seminars	14	14	28
Presentation	0	48	48

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

Methodologies

	Description
Lecturing	Presentations of the theoretical concepts that allow the students to acquire or improve the skills to perform the analysis of sedimentary basins. This involves the relationship of multidisciplinary theoretical concepts. The classes will be of 1h. It can be possible to get 1 extra point in the final mark by participation in classroom discussions.
Case studies	Each student will have several real seismic profiles corresponding to a sedimentary basin. They will have to perform the interpretation of each one and to perform a resumen of each practical. (Assistance and reports are mandatories, 30% of the mark)
Seminars	The contents of the master sessions will be practiced with different exercises (recognition of sedimentary basins types in different marine contexts, stratigraphic surfaces). (Assistance and reports are mandatories, 30% of the mark)
Presentation	It is mandatory that each student will have to elaborate an individual report explaining the evolution of the basin based on the interpretation of the seismic records worked on in the practicals. (30% of the mark)

Personalized assistance

Methodologies	Description
Lecturing	Students that wish it will be able to attend to personalized tutorials to resolve doubts, mainly in the indicated schedules. To optimize time, it is necessary that the student to contact with the lecturer previously. The tutorials will be able to be individual or in group in accordance with the schedules of the lecturer: Prof. Soledad García Gil (Tuesday and Thursday: 11 - 14 h) that would be modified according to educational needs.
Seminars	Students that wish it will be able to attend to personalized tutorials to resolve doubts, mainly in the indicated schedules. To optimize time, it is necessary that the student to contact with the lecturer previously. The tutorials will be able to be individual or in group in accordance with the schedules of the lecturer: Prof. Soledad García Gil (Tuesday and Thursday: 11 - 14 h) that would be modified according to educational needs.
Case studies	Students that wish it will be able to attend to personalized tutorials to resolve doubts, mainly in the indicated schedules. To optimize time, it is necessary that the student to contact with the lecturer previously. The tutorials will be able to be individual or in group in accordance with the schedules of the lecturer: Prof. Soledad García Gil (Tuesday and Thursday: 11 - 14 h) that would be modified according to educational needs.
Presentation	Students that wish it will be able to attend to personalized tutorials to resolve doubts, mainly in the indicated schedules. To optimize time, it is necessary that the student to contact with the lecturer previously. The tutorials will be able to be individual or in group in accordance with the schedules of the lecturer: Prof. Soledad García Gil (Tuesday and Thursday: 11 - 14 h) that would be modified according to educational needs.

Assessment						
Description	Qualification	Training and Learning Results				
Case studies Sequential seismic analysis of a sedimentary basin from the interpretation of seismic records and profiles.	30	A3	B4	C14	D1	
Seminars Reports of Seminars	40	A5	B1	C14	D1	
Presentation Each student will have to elaborate an individual report explaining the evolution of the basin based on the interpretation of the seismic records worked on in the practicals. (30% of the mark)	30	A3	B4	C14	D1	

Other comments on the Evaluation

Continuous assesment option

The student will be evaluated continuously and based on the delivery of the reports corresponding to the case studies, seminars and practicals in the percentages described. Given the experimental nature of the seminars and practicals, attendance is compulsory.

Attendance and participation in the discussions of the theoretical classes can mean 1 extra point in the final mark.

Global assesment option

The same percentages indicated above will be maintained. However, given the experimental nature of the seminars and practicals, non-attendance without justification invalidates this option, as well as the extraordinary evaluation.

The application for this evaluation option must be submitted in the time and manner determined by the Center, which will be published prior to the academic start.

Other considerations

Dates and times for reports will be published in <https://mar.uvigo.es/alumnado/asignaturas-y-horarios/>

Students are strongly requested to fulfil a honest and responsible behaviour. It is considered completely unacceptable any alteration or fraud (i.e., copy or plagiarism) contributing to modify the level of knowledge and abilities acquired in exams, evaluations, reports or any kind of teacher's proposed work. Fraudulent behaviour may cause failing the course for a whole academic year. An internal dossier of these activities will be built and, when reoffending, the university rectorate will be asked to open a disciplinary record.

Sources of information

Basic Bibliography

Rogers, J.W. y Santosh, M., **Continents and supercontinents**, 1, Oxford University Press, 2004

Allen, P.A. y Allen, J.R., **Basin Analysis: Principles and Application to Petroleum Play Assessment**, 3rd, Wiley-Blackwell, 2013

Bradley, RS, **Paleoclimatology (Third Edition) Reconstructing Climates of the Quaternary**, 1, Academic Press, San Diego, 2015

Shanmugam, G., **Deep-Water Processes and Facies Models: Implications for sandstone petroleum reservoirs**, 1, Elsevier, 2006

Treitel, S. y Helbig, K., **Handbook of Geophysical Exploration: Seismic Exploration**, 1, Elsevier, 2011

Huneker, H. y Mulder, T., **Deep-Sea Sediments**, 1, Elsevier, 2010

Catuneanu, O., **Principles of Sequence Stratigraphy**, 1, Elsevier, 2006

Ruddiman WF, **Earth's Climate: Past and Future. Third Edition.**, 3, W. H. Freeman and Company, New York, 2014

Complementary Bibliography

Leeder, M.R. y Pérez-Arlucea, M., **Physical processes in Earth and environmental sciences**, 1, Wiley, 2006

Recommendations

Subjects that it is recommended to have taken before

Coastal and marine sedimentary habitats/V10G061V01207

Sedimentology/V10G061V01205

Geological oceanography II/V10G061V01308