Sedimentology

Code: 101061
ECTS Credits: 6

2024/2025

Degree	Type	Year
2500254 Geology	OB	2

Contact

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Teachers

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

Altough there is no official prerequisite, is very important to have followed the Stratigraphy subject (or at least to have a goog knowledge on).THis subject is scheduled in the first semestrer from the socond course of the Geology degree.

Is also recommendable for students to have a good understanding of the contents of several subjects from the first course of the Geology degree such as: Fundamentals of Geology (Fonaments de Geologia) and Regional Geology field work (Treball de camp de Geologia Regional).

Objectives and Contextualisation

a) Acquisition of theoretical and practical concepts on the desriptive and analythical techniques common in sedimentology, which are closely linked to Stratigraphy.

b) Interpretation of facies and it's associations.

c) Determination of facies sequences

d) Identification of depositional environments on the basis of facies analysis

e) Adquisition of field skills on the use of concepts explained in the lessons.

The student has to apply in the field the contents of lectures. Fieldwork is a basic element of the subject to achieve: facies identification from several environments and paleogeographical reconstructions.

Competences

- Learn and apply the knowledge acquired, and use it to solve problems.
- Process, interpret and present field data using qualitative and quantitative techniques, and suitable computer programmes.
- Recognise sedimentary facies and the processes and environments that generate them.
- Use concepts from physics when solving problems in geology.

Learning Outcomes

1. Apply concepts of hydrodynamics, fluid dynamics and rheology to transport and sedimentation processes.
2. Learn and apply the knowledge acquired, and use it to solve problems.
3. Process stratigraphic and sedimentological data from the field in order to produce new synthesis data and documents.
4. Recognise sedimentary facies and the processes and environments that generate them.

Content

PROGRAM OF THEORETICAL LESSONS

-Introduction

-Fluvial facies

-Alluvial facies

-Deltaic facies

-Tidal facies

-Estuary and tidal flat facies

-Beach and barrier island facies

-Deep marine facies

-Eolian facies

-Lacustrine facies

-Carbonate facies

-Other facies

PROGRAMA DE CLASSES PRÀCTIQUES

- Performing and inerpretation of stratigraphic sections from several environments.

FIELDWORK EXERCISES

During 2 field days the student will make a set of exercices and once are finished, the teacher will comment them.

The student has to be able of:

a) Recognition of sedimentary structures and merials which permit facies identification.

b) Sketching of geological cross sections, stratigraphic logs or schemes.

c) Identification of distinctive features of several environments

d) Paleoenvironmental characterization on the basis of these facies.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Fieldwork	14	0.56	1, 4
Laboratory practices	12	0.48	2, 3
Theoretical lessons	26	1.04	1, 4
Type: Supervised			
Group or individual mentoring	1	0.04	1, 2, 3, 4
Performance of a fieldwork report	9	0.36	1, 2, 3, 4
Performance of a raport on a particular issue	5	0.2	1, 4
Type: Autonomous			
Study, report performance	76	3.04	1, 2, 3, 4

The subject of Sedimentology consists of three types of activities:

1.- Directed Activities

Theoretical lessons

- The contents will be taught mainly by the teacher in the form of master classest. The student acquires the scientific-technical knowledge of the subject attending the lectures and complementing them with the personal study of theexplained topics . These sessions can be complemented with questions and simple exercises that are interrelated with the explanations. Part of the material used in class by the teacher will be available on the Virtual Campus of the subject.
- It is recommended that students regularly check books and recommended web links in order to consolidate, clarify and extend the contents explained in class. Laboratory practices Both field and laboratory practices will help facilitate understanding and consolidate the contents of the theory program.

- Students will have downloaded and printed the script of the practice, which they will deliver individually. This practical work involves the prior knowledge of the theory and the application of it in a practical example. Students must complete the document that will be delivered to the lecturer at the end of the session.

Field practices

- These consist of two days.
- In the course of the exit, exercises will be considered constantly to solve the outcrop. Special emphasis will be placed on the student being caring for and taking care of the field notebook, that is, in the compilation of data ordering in the field.

2.- Supervised activities

Sometypes of supervised activities can be proposed such as:

a) Preparation of a fieldwork for groups on an outcrop that students will choose

b) Presentation in class of the works on a given subject. Both the work and the presentation will be done in group

c) Group and individual mentorings in order to support the training activities indicated above. A mentoring sessior

3.- Autonomous activities

This section includes the study, the elaboration of the works and the reading of bibliographic references.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Course contents in the final/partial tests	80	6	0.24	1, 2, 3, 4
Final recovery test	0	0	0	1, 2, 3, 4
Score on field work practices	5	0.5	0.02	2, 4
Socre on the laboratory practices	15	0.5	0.02	2, 3

Any special circumstances (such as pandemics) may slightly affect the way to evluate the subject.

1.- Theoretical part of the partial tests (80%)

During the semester there will be two (or at most three) compulsory parti

These tests will consist of a series of questions about the corresponding topics of the theory and practice prograr

Failed partial tests (grade less than 5) may be recovered in a final test or

Students will be able to take their handwritten practices to the exam. It is expressly forbidden to have them printe

2.- Practical part of the partial test (15%)

In the partial and final recovery test there will be questions about the cor

Attendance to laboratory practices is mandatory; and at most it will be pc

There will be partial tests on the practices carried out.

Students will be able to take their handwritten notes to the exam. It is expressly forbidden to have them printed fr

3.- Evaluation of field work (5%) The evaluation of the fieldwork will be based on individual tests on the work carri

ON THE SINGLE EVALUATION

The single evaluation will consist on a teorethical exam plus the practical work release. The score wiill be calculated in the same way as in the continuous evlation.

Attendance at field trips and practises will be mandatory. Eventual field-trip exercises that are carried out during the excursionis will be released before the trip finishes.

Students can take handwritten notes and practices

Bibliography

Basic references

Arche, A. (1989), Sedimentologia. Vol. 1 y 2. C.S.I.C. Nuevas Tendencias

Arche, A. (2010). Sedimentología. el proceso físico a la cuenca sedimentaria. Ed. CSIC. ISBN: 978-84-00-09145-3

Bogg, S. (2006).- Principles of Sedimentology and Stratigraphy, 4th ed., Pearson-Prentice Hall

Bridge, J.S. (2004). Rivers and floodplains. Blackwell.491 pp

Flügel, E. (2004). Microfacies of carbonate rocks. Springer. 916

Davis, R.A. & Dalrymple, R.W. (2011). Principles of tidal sedimentology. Springer. 621 pp.

Galloway, W.E. ; Hobday, D.K. (1983)Terrigenous clastic depositional systems. Springer-Verlag,New York,

James, N.P. & Dalrymple, R.W. (2010). Facies models, 4. Geotext. 6. Geological association of CanadaGalloway,W. E.;Hobday, D. K. : Terrigenous clastic depositional systems, applications to fossil fuel and groundwater resources. 2nd ed. Ed. Springer, 1996

Nichols, G. (2009) Sedimentology & Stratigraphy. Blackwell Science.

Reading, H.G. (Ed.), (1996). Sedimentary Environments: Processes, Facies and Stratigraphy . 3rd. Edition, Blackwell Scientific Publications

Ricci Lucchi, F. (1980) Sedimentologia. 2a ed. Bolonya: CLUEB. Vol. 3.

Tucker, M. (ed.) (1988), Techniques in Sedimentology. Blackwell ScientificPublications.

Vera, J. (1994) Estratigrafia (principios y métodos). Madrid: Rueda.

Links

http://cit.iec.cat

http://www.lib.utexas.edu/

http://www.stratigraphy.org/

http://strata.geol.sc.edu/exerices/ExercisePrintOuts.html

http://facstaff.gpc.edu/~pgore/geology/historical_lab/contents.php

http://www.bib.ub.edu/recursos-informacio/guies-tematiques/geologia/#c4820

Software

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Language list

Name	Group	Language	Semester	Turn
(PCAM) Field practices	1	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	1	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	2	Catalan	second semester	morning-mixed
(TE) Theory	1	Catalan	second semester	morning-mixed