Current Geological Areas

Code: 101071
ECTS Credits: 4

2025/2026

Degree	Type	Year
Geology	OT	3
Geology	OT	4

Contact

Name: Ramon Mercedes Martin

Email: ramon.mercedes@uab.cat

Teaching groups languages

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

Prerequisites

It is recommended to have basic knowledge in Stratigraphy, Sedimentology and a good level of comprehension of writings in English.

Objectives and Contextualisation

The course Present Geological Environments provides the fundamental formation in a field of sedimentary geolo

This branch of Stratigraphy and Sedimentology, which can also be understood as a branch of Applied Sedimento
The course wants wants the student to go beyond the knowledge that ha

The course addresses the relationship between Geology and the Environment and seeks to ensure that the stude

Competencies

- Analyze and use information critically
- Learn and apply acquired knowledge in practice and solve practical problems

- Demonstrate interest in quality and quality practices
- Become familiar with different types of geogenic and anthropogenic sediments,study their formation environments and their distribution in current sedimentary systems
- Integrate physical, chemical, and biological evidence with theory to solve practical cases of present-day environments under natural and anthropogenic pressures
- Recognize current sedimentary processes and their impact on the inhabited surface of the Earth
- Communicate information effectively, both verbally, in writing, and graphically, using available communication and information technologies
- Work independently and in teams

Learning Outcomes

- Critical thinking
- Learn and apply acquired knowledge in practice and solve practical problems
- Demonstrate interest in quality and quality practices
- Recognize the main geogenic and anthropogenic sediments and the main current sedimentary environments
- Relate each type of sedimentary environment to the characteristic risks derived from excess or lack of sediments
- Integrate observations of sediments, and their physical, chemical, and biological properties, into their behavior in current sedimentary environments
- Propose mitigation strategies related to excess or lack of sediments
- Communicate information effectively, both verbally, in writing, and graphically, using available communication and information technologies
- Work independently and in teams

Competences

Geology
- Display understanding of the size of the space and time dimensions of Earth processes, on different scales.

Learning Outcomes

1. Apply Geochemistry concepts to solve problems of land and water pollution.
2. Assess changes to geological environments and their level of degradation resulting from direct anthropogenic action or climate change.

Content

1-Introduction: Concept and scope of environmental sedimentology. Factors of uniqueness of current media with

2-Coastal environment: Sedimentary processes, control factors and interaction with anthropic activity.

3-Lacustrine environment: Types of lakes and lacustrine sediments. Lake pollution. Processes and impacts of na

4-Mountain environment Types of mountain environments. Environmental sedimentological characteristics. Inter

5-Desert environment Sedimentary processes and their impacts. Aridification and anthropogenic impacts.

6-Fluvial environment Sedimentary processes and impact of anthropogenic activity.

7-Urban environment Geology-city interaction: the case of a large city.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Practices	16	0.64	1, 2
Theoretical lessons	18	0.72	1, 2
Type: Supervised			
Report on a study case	9	0.36	1, 2
Type: Autonomous			
Theory study, Report performance	45	1.8	1, 2

Three types of activities will be carried out: (a) mentoring, (b) supervised and (c) autonomous

Directed activities

Theoretical lessons. Master classes of the subjects by the teachers
Practices: Sediment analysis of some current environment. Case studies

Supervised activities:

A proposed real case which the student develops on the basis of bibliogr

Autonomous activities

In addition to the study of conceptual issues, the student must complete t

Talk at the ICGC (voluntary activity). A talk will be scheduled at the Cartographic and Geological Institute of Cata

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
Evaluation of theoretical contents	40	4	0.16	1, 2
Practices evaluation	20	0	0	1, 2
Report on a sedimentary environment	40	8	0.32	1, 2

Evaluation

Evaluation of the theoretical contents according to the score obtained in
Evaluation of the practices. Attendance is taken into account, together wi
Evaluation of a study case. Accounts for the 40% of the final score. The

Final recovery test
Fail partial theoretical tests (score less than 5) may be recovered in a fin

There will be no tests (partial, recovery or synthesis) other than in the scl

Bibliography

Arche, A. (2010). Sedimentología: del proceso físico a la cuenca sedimentaria. Publicaciones del Consejo Superior de Investigaciones Científicas; *Colección Textos universitarios*, Ref. CSIC 11761, 1287p

Bird, E. C. (2011). *Coastal geomorphology: an introduction*. John Wiley & Sons.

Bridge, J., & Demicco, R. (2008). Earth surface processes, landforms and sediment deposits. Earth Surface Processes. *Cambridge University Press*. Doi: https://doi.org/10.1017/CBO9780511805516

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Lewis, S. L., & Maslin, M. A. (2015). Defining the anthropocene. *Nature*, 519(7542), 171-180.

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Masselink, G., Hughes, M., & Knight, J. (2014). *Introduction to coastal processes and geomorphology*. Routledge. https://doi.org/10.4324/9780203785461 .

Patsch, K., Griggs, G. (2006). LITTORAL CELLS, SAND BUDGETS, AND BEACHES: UNDERSTANDING CALIFORNIA S SHORELINE. Institute of Marine Sciences, University of California, Santa Cruz, USA.

Perry, C.T. and Taylor. K.G. (2007). Environmental Sedimentology, (C. Perry and K.G. Taylor, eds.) *Blackwell Scientific Publications*.

Roberts, H., Brooks, T. (2018). Sediment budget analysis: practitioner guide. Environment Agency, Horizon House, Deanery Road, Bristol.

Smerdon, J. (2018). Climate change: the science of global warming and our energy future. Columbia University Press.

Solomon, S., Quin, D., Manning, M., Marquis, M., Averyt, k., Tichnor, M. Lery-Miller, H. Eds. (2008). *Climate Change*. Cambridge University Press. The Physical Science Basis. Working Group I to the 4th assesment report of the Intergornmental Pannel on Climate Change.

Walker, R. (1984). Facies models. Geosciences Canada, Reprint Series 1 (2nd. Ed. Revised). *Geol. Assoc. Canada,* 317 pp.

Waters, C. N., Zalasiewicz, J. A., Williams, M., Ellis, M. A., & Snelling, A. M. (2014). A stratigraphical basis for the Anthropocene? *Geological Society, London, Special Publications*, 395(1), 1-21.

Waters, C. N., Zalasiewicz, J., Summerhayes, C., Barnosky, A. D., Poirier, C., Gałuszka, A., & Wolfe, A. P. (2016). The Anthropocene is functionally and stratigraphically distinct from the Holocene. *Science*, 351(6269).

Wagner, M., & Lambert, S. (2018). Freshwater microplastics: emerging environmental contaminants? (p. 303). Springer Nature.

Zalasiewicz, J., Waters, C. N., Williams, M., & Summerhayes, C. P. (Eds.). (2019). *The Anthropocene as a geological time unit: A guide to the scientific evidence and current debate.* Cambridge University Press.

Webs:

IPCC Sixt Assessment Report on Climate Change: https://www.ipcc.ch/report/ar6/wg1/

The Working Group on Anthropocene: http://quaternary.stratigraphy.org/working-groups/anthropocene/

The Anthropocene Info: https://www.anthropocene.info/index.php

The Encyclopedia of the Anthropocene:
https://www-sciencedirect-com.are.uab.cat/referencework/9780128135761/encyclopedia-of-the-anthropocene

National Oceanographic and Atmospheric Administration (NOAA): https://www.noaa.gov/

Global MonitoringLaboratory NOAA: https://gml.noaa.gov/ccgg/carbontracker/

Ocean and Coastal Hazards NOAA: https://oceanservice.noaa.gov/hazards/

The Inter-Sectoral Impact Model Intercomparison Project https://www.isimip.org/

Unlocking the secrets of mangroves: mapping and tracking mangrove forests to safeguard these ecological treasures :https://www.fao.org/interactive/remote-sensing-mangroves/en/

The GAR atlas: Unveiling global disaster risk (United Nations Office for Disaster Risk Reduction):
https://www.undrr.org/publication/gar-atlas-unveiling-global-disaster-risk

Nature-Based Solutions for Coastal Hazards: The Basics (NOAA):
https://coast.noaa.gov/digitalcoast/training/nbs-basics.html

United Nations Office for Disaster Risk Reduction (UNDRR) http://www.undrr.org/

Costal Regions: people living along the coastline, integration of NUTS 2010 and latest population grid.
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:Coastal_regions_-_population_statistics

Al Campus Virtual s'aniran afegint les referències dels articles que els alumnes han de cercar i sobre els quals han de fer un treball

A list with references will be uploaded in Campus Virtual. Students will search for these references to build up a report on them.

Software

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Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this link. To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(PLAB) Practical laboratories	1	Catalan	first semester	afternoon
(TE) Theory	1	Catalan	first semester	afternoon