

Geological Record of Global Change

Code: 101043
ECTS Credits: 6

2025/2026

Degree	Type	Year
Geology	OT	3
Geology	OT	4

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Teachers

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Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

None

Objectives and Contextualisation

Overview of Earth history and life on Earth through global changes that can be gained from the geological and paleontological record.

Competences

- Geology
- Display knowledge of the applications and limitations of geophysical methods for learning about the Earth.
- Display understanding of the fundamental principles of geology and the ability to identify the basic types of minerals, rocks and structures.

- Display understanding of the size of the space and time dimensions of Earth processes, on different scales.
- Evaluate moral and ethical problems in research and acknowledge the need to follow professional codes of conduct.
- Obtain information from texts written in other languages.
- Recognise theories, paradigms, concepts and principles in the field of geology and use them in different areas of application, whether scientific or technical.
- Synthesise and analyse information critically.
- Work independently.

Learning Outcomes

1. Define and discern simple geochemical concepts for studying problems of global change.
2. Discern the basic relationships between geology and the problems of environmental change.
3. Evaluate and critically apply the paradigms of plate tectonics and the different currents of thought regarding global change.
4. Evaluate the markers of environmental change on the global scale throughout geological time and their implications for the future evolution of the planet.
5. Integrate the different global-scale terrestrial processes in terms of planetary evolution.
6. Interpret the social implications, in terms of sustainability and responsibility, of research into global-scale environmental problems.
7. Obtain information from texts written in other languages.
8. Synthesise and analyse information critically.
9. Work independently.

Content

GEOCHEMICAL AND PETROPHIC RECORD OF GLOBAL CHANGES

Topic 1: Useful parameters in the estimation of environmental variables ("proxies"): Fundamentals, applications and limitations.

CHANGES ON A GLOBAL SCALE AND TRIGGERS

Topic 2: Astronomical factors: Orbital variations.

Topic 3: Astronomical factors: solar variations, impacts.

Topic 4: Terrestrial factors: suborbital variations, examples.

Topic 5: Terrestrial factors: Volcanism, continental drift and Evolution of the oceans.

GEOLOGICAL HISTORY AND FOSSIL RECORD OF GLOBAL CHANGES

Topic 6: Precambrian. Chemical conditions. Lithological record, continental distribution. Fossil record. The fauna of Ediacara.

Topic 7: Lower Paleozoic. Paleogeographic and paleoclimatic evolution. Evolution of the fossil record. Late Ordovician crisis.

Topic 8: Upper Paleozoic. Paleogeographic and paleoclimatic evolution. Evolution of fossil record. Upper Devonian crisis.

Topic 9: Global changes and extinctions at the P / T limit. Triassic. Continental distribution. Changes in the fossil record. Upper Triassic crisis.

Topic 10: Jurassic. Distribution of seas and continents. Fossil records. Oceanic anoxic events in the Jurassic.

Topic 11: Cretaceous. Paleogeographic and climatic evolution and the fossil record. Cretaceous. Anoxic oceanic events in the Cretaceous.

Item 12: Extinctions at the K / Pg Limit.

Topic 13: The Paleogene-Neogen. The Messinian salinity crisis.

Item 14: From the Pliocene to the Holocene.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Practices	16	0.64	8, 1, 2, 5, 6, 7, 9, 4, 3
seminars	9	0.36	8, 1, 2, 5, 6, 7, 9, 4, 3
theroretical lessons	26	1.04	8, 1, 2, 5, 6, 4, 3
tutoring	17	0.68	8, 1, 2, 5, 6, 7, 9, 4, 3
Type: Supervised			
works derived from practices and seminars	15	0.6	8, 1, 2, 5, 6, 7, 9, 4, 3
Type: Autonomous			
homework	62	2.48	8, 1, 2, 5, 6, 7, 9, 4, 3

THEORY CLASSES AND SEMINARS

The student acquires the competences of the subject attending the theor
Since the subject does not have specific textbooks, it is advisable to regu

LABORATORY PRACTISES

IN the laboratory practises the student will reinforce the i; understanding of the theoretical lessons. As in theoretical lessons and seminars the audiovisual metyarial will be available at Virtual Campus. The student will be released the zprocedures to develop the practical work . Some practises will require to carry out several exercises that will have to be delivered as requested by the teacher or to undergo oral dissertation.

In this subject a reasonbe use of Artificial Intelligence (AI) will be allowed.

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
continuous	10%	0	0	8, 1, 2, 5, 6, 7, 9, 4, 3
releasing of works from done in seminars and practices	20%	1	0.04	8, 1, 2, 5, 6, 7, 9, 4, 3

The evaluation of the subject is conditioned and may undergo modifications depending on health incidents, but in principle will consist of:

- 2 partial tests, with dates already fixed in the schedules of the subject, and a test of final recovery of each failed part, also with date fixed in the schedules. 70%.
- The repeaters have the option to do a final examination of the contents of the subject or take part in the two partial tests and the recovery, explained in the previous section.
- To pass the subject a minimum grade of 4 is required on the part of each teacher.
- Evaluation of the participation and presentation of works in the corresponding session of the seminars. 20%
- Continuous evaluation of supervised activities. 10%

Bibliography

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WEB PAGES

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ICS. International Commission on Stratigraphy. www.stratigraphy.org

PALEOMAP PROJECT. Christoffer R. Scotese. www.scotese.com

RON BLAKE MAPS. Global Paleogeography. <https://deeptimemaps.com/>

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EARTH IMPACT DATABASE. <http://www.passc.net/EarthImpactDatabase/>

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
(SEM) Seminars	1	Catalan	first semester	morning-mixed
(TE) Theory	1	Catalan	first semester	afternoon