

Degree programme	Type	Course
Paleobiology and Fossil Record	OB	1

Contact lecturer

Name : Zain Belaústegui Barahona

Email : zain.belaustegui@uab.cat

Teaching staff

Sara Tomas Lafaja

Ramon Mercedes Martin

Josep Sanjuan Girbau

Teaching staff (external to UAB)

Carles Martín Closas

Group languages

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

Prerequisites

The same as for the studies.

Objectives

To demonstrate capabilities for the autonomous acquisition of information from paleontological publications in order to develop a synthesis of the most important points.

To apply a logical and coherent analysis protocol to plan and carry out a paleontological study and solve a specific problem.

To develop a teamwork to solve problems related to the paleoenvironment, assuming their responsibility in the individual contribution and integrating it into group contributions and minimizing inequalities based on sex and gender.

To manage the information acquired in a professional business environment to address and solve specific problems in the dating of marine sediments.

To act autonomously to plan and carry out professional tasks, demonstrating originality in the way of

approaching and solving specific problems in hydrocarbon exploration.

To act in the development of paleontological projects with ethical responsibility and with respect for human and fundamental rights, diversity and democratic values, as well as the principles of universal accessibility and design for all people, in accordance with the Sustainable Development Goals.

Learning outcomes

- CA04 (Develop a team work to solve problems related to paleoenvironment, assuming its responsibility for individual contribution and integrating it in group contributions and minimizing sex and gender inequalities.) Develop a team work to solve problems related to paleoenvironment, assuming its responsibility for individual contribution and integrating it in group contributions and minimizing sex and gender inequalities.
- CA05 (Manage the information acquired in a business professional environment in order to tackle and solve specific problems in dating marine sediments.) Manage the information acquired in a business professional environment in order to tackle and solve specific problems in dating marine sediments.
- CA06 (Act with autonomy in order to plan and carry out professional tasks, proving originality in the way to tackle and solve specific problems in the exploration of hydrocarbons.) Act with autonomy in order to plan and carry out professional tasks, proving originality in the way to tackle and solve specific problems in the exploration of hydrocarbons.
- KA03 (Recognise the methods for studying microfossils, invertebrate fossils, and marine ichnofossils in the field, in the laboratory and in desk research.) Recognise the methods for studying microfossils, invertebrate fossils, and marine ichnofossils in the field, in the laboratory and in desk research.
- KA04 (Identify the main stages of the evolution of marine biotas (and the global biotic crises that delimit them) from the study of certain fossil associations.) Identify the main stages of the evolution of marine biotas (and the global biotic crises that delimit them) from the study of certain fossil associations.
- SA04 (Apply marine fossils to solve problems related to the interpretation of the palaeoenvironment, the evolution of biotas and biostratigraphy.) Apply marine fossils to solve problems related to the interpretation of the palaeoenvironment, the evolution of biotas and biostratigraphy.
- SA05 (Integrate knowledge obtained in a multidisciplinary environment in palaeontology (geology, geochemistry, stratigraphy, biology) to solve evolutionary, palaeoenvironmental and biostratigraphic problems based on marine microfossils, invertebrates and ichnofossils.) Integrate knowledge obtained in a multidisciplinary environment in palaeontology (geology, geochemistry, stratigraphy, biology) to solve evolutionary, palaeoenvironmental and biostratigraphic problems based on marine microfossils, invertebrates and ichnofossils.
- SA06 (Convey the acquired knowledge about marine fossils in a text/video/oral presentation, both for a specialised and non-specialised audience.) Convey the acquired knowledge about marine fossils in a text/video/oral presentation, both for a specialised and non-specialised audience.

Contents

1. *Micropaleontology and biostratigraphy.*

1.1. Description of the main groups of marine microfossils in the geological record (calcareous algae, foraminifera, nanofossils, etc.): morphologies, microstructures, paleoecology and evolution.

1.2. Examples of biozonations and their usefulness for correlating marine sedimentary sequences.

1.3. Application of certain groups of microfossils as daters of sedimentary rocks from the Paleozoic to the present.

2. Marine paleoenvironmental models.

2.1. Introduction to marine carbonate 'factories': environmental controls and parameters.

2.2. Paleoecology and paleoenvironments dominated by mollusks, echinoderms and brachiopods.

2.3. Paleoecology and paleoenvironments dominated by non-skeletal carbonates.

2.4. Use of geochemical indicators in paleoenvironmental and paleoclimatic reconstructions.

2.5. Paleoecology and paleoenvironments dominated by corals.

2.6. Paleoecology and paleoenvironments dominated by sponges, brachiopods and bryozoans.

2.7. Examples of carbonate factories in fossil systems.

3. *Taphonomy, paleoecology and ichnology.*

3.1. Main processes and stages of taphonomic alteration; exceptionally preserved outcrops; fossil accumulations; time averaging; taphofacies.

3.2. Paleoecological analysis; population and community analysis; relationships between organisms; reciprocity pairs.

3.3. Bases and tools for the study of organism-substrate interaction; bioturbation, bioerosion and biodeposition; importance of the ichnological record in paleoecological and paleoenvironmental interpretation; ichnofabrics analysis; ichnofacies.

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Independent work	100	4	CA04, CA05, CA06, KA03, KA04, SA04, SA05

Supervised activities (Exercises - Case studies)	75	3	CA04, CA05, CA06, KA03, KA04, SA04, SA05
Exercises in class	10	0.4	CA04, CA05, SA04, SA05, SA06
Master Class	40	1.6	KA03, SA05

The "Marine Paleobiology" module (9 ECTS) is made up of three blocks (two taught at the UB and one at the UAB):

- Micropaleontology and biostratigraphy (2.5 ECTS - UB)
- Marine paleoenvironmental models (3.5 ECTS - UAB)
- Taphonomy, paleoecology and ichnology (3 ECTS - UB)

Each of the blocks is organized into hybrid master classes (which may be both face-to-face and online) generally lasting 2 hours each. During the bulk of these classes, the theoretical concepts related to the three main blocks will be taught, however, more practical and/or applied exercises will also be proposed (as well as the preparation of reports) to try to consolidate the previously explained concepts.

Use of artificial intelligence (AI): For this module, the use of AI is permitted exclusively in support tasks, such as bibliographic or information searches, text correction or translations. The student must clearly identify which parts have been generated with AI and specify the tools used. Non-transparency in the use of AI will be considered a lack of academic honesty and may lead to a partial or total penalty in the grade of the various assessable activities, or greater sanctions in serious cases.

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.

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Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
In-class exercises	20%	0	0	CA05, CA06, KA03, KA04, SA04, SA05
Theoretical exams	40%	0	0	CA05, KA03, KA04, SA04, SA05, SA06
Submission of reports/works	30%	0	0	CA04, CA05, SA05, SA06
Attendance and participation	10%	0	0	SA04, SA05

Continuous assessment:

30% to 40% Theoretical/synthesis tests (could be in written or oral format).

30% to 40% Exercises based on theoretical concepts (could be in written or oral format).

The due dates for the various exercises, activities and assignments will be clearly indicated in the calendar and will be submitted through the Virtual Campus.

Grammatical and spelling errors in any of the official languages of the master's degree, as well as those resulting from incorrect use of anatomical or taxonomic terminology, will be deducted up to a maximum of 1 point from the presentation of exercises and assignments.

If the student has not completed at least one third of the continuous assessment tests during the course (e.g. assignments, exams, class activities), it will be considered that there is not enough evidence to qualify the corresponding block for continuous assessment and will be assessed only based on the remedial exam.

Revision: Students will be able to review and discuss exercises, assignments and exams with teachers on the agreed dates.

Re-evaluation: A re-evaluation period will be established at the beginning of January for the theoretical/summary tests (exams) that represent the greatest weight in the evaluation.

Bibliography

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Software

Basic software: Office (Word, Excel, Power Point) or similar

Drawing software: (Adobe Illustrator, Corel Draw, Inkscape)

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TEm) Theory (master)	1	Spanish	first semester	afternoon