

Paleobiology Practicum I

Code: 44793
ECTS Credits: 12

Degree	Type	Year	Semester
4318288 Paleobiology and Fossil Record	OB	0	2

Contact

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Teaching groups languages

You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

Teachers

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External teachers

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Prerequisites

The same of the master

Objectives and Contextualisation

Referred to knowledges.

To recognize the main groups of plant fossils, invertebrates, ichnofossils and microfossils in rock samples, in the field or by observation under the microscope.

To characterize paleoenvironmental changes from the taphonomic and paleoecological study of microfossils, plant fossils, ichnofossils and invertebrates in stratigraphic successions.

To define the chronostratigraphy of sedimentary successions from the study of microfossils, plants and invertebrates.

Referred to skills

To relate different perspectives of a fossil in section to integrate them into a three-dimensional scheme, both from thin sections or from macroscopic sections.

To represent in two- and three-dimensional diagrams the reconstruction of a paleoenvironment that integrates information from the depositional environment (lithofacies) with the taphonomic and paleoecological information of various groups of fossils in real case studies.

Learning Outcomes

1. CA09 (Competence) Plan and develop a palaeontology study, and be able to solve any problems that arise.
2. CA10 (Competence) Clearly and unequivocally convey a case study in palaeobiology, integrating previous knowledge, defining the problem to be solved, detailing the methodology used and presenting the results obtained.
3. CA11 (Competence) Integrate partial results of a palaeobiological study into a team effort, critically analysing one's own contribution and that of the other members of the group.
4. KA08 (Knowledge) Recognise the main groups of fossilised plants, invertebrates, ichnofossils and microfossils de visu in the field and through a microscope or binocular magnifying glass in the laboratory.
5. KA09 (Knowledge) Characterise palaeoenvironmental changes from the taphonomic and palaeoecological study of microfossils, plant fossils, ichnofossils and invertebrates in stratigraphic successions.
6. KA10 (Knowledge) Describe the chronostratigraphic characterisation of sedimentary successions from the study of microfossils, plants and invertebrates.
7. SA10 (Skill) Relate different perspectives of a fossil cross section for integration in a three-dimensional view, both in thin film microscopic cross sections and in macroscopic cross sections.
8. SA11 (Skill) Represent in two and three-dimensional diagrams the reconstruction of a palaeoenvironment that integrates information from the depositional environment (lithofacies) with palaeoecological information from various groups of fossils from real case studies.

Content

1. 1. Practicum in Marine Paleobiology

1.1. Practicum in taphonomy, paleoecology and ichnology:

a) Laboratory. Observation and analysis of taphofacies, ichnofossils and marine ichnofacies

b) Fieldwork. Study of taphonomy, paleoecology and ichnology of marine invertebrates and vertebrates in a Miocene succession of the Camp de Tarragona Basin.

c) Fieldwork. Paleoecology taphonomy and ichnology of marine invertebrates and microfossils in a sequence of Eocene platforms of the Ebro basin (in combination with Micropaleontology and Biostratigraphy practices).

1.2. Practicum in Micropaleontology

- a) Laboratory. Observation and identification of microfossils of cyanobacteria, red algae, green algae, nannoplankton, foraminifera and marine invertebrates.
- b) Fieldwork. Study of a succession of rhodophyte-rich carbonate platform in the Miocene of the Penedès Basin and of a middle Eocene succession rich in macroforaminifera.
- c) Fieldwork. Taphonomy paleoecology and ichnology of marine invertebrates and microfossils in a succession of the Eocene of the Ebro basin (in combination with the practicum in Taphonomy, paleoecology and ichnology).

1.3. Practicum in Marine Paleoenvironmental Modelling

- a) Laboratory. Observation of facies and microfacies of carbonate platforms.
- b) Fieldwork. Study of carbonate platforms in the Mesozoic of the Catalan Coastal Chain and the South Pyrenean Central Unit.

1. 2. Practicum in Continental Paleobiology

2.1. Practicum in Plant Evolution:

- a) Laboratory. Observation and identification of macro and microfossils of Paleozoic, Mesozoic and Cenozoic plants. Evolutionary implications.
- b) Field work. Study of Miocene plants from the Cerdanya Basin (Pyrenees): applications in paleoenvironmental reconstruction (in combination with the practicum in Continental Invertebrates).

2.2. Practicum in Continental Invertebrate Paleontology

- a) Laboratory. Observation and identification of fossils of arthropods and continental mollusks.
- b) Fieldwork. Study of Miocene insects from the La Cerdanya basin: applications in paleoenvironmental reconstruction (in combination with the practicum in Plant Evolution).

2.3. Practicum in Paleobiology and Evolution of mammals

- a) Laboratory.
- b) Fieldwork.

Methodology

Laboratory practicum. It consists of sessions of usually two hours in the microscopy classroom, during which students observe fossils, draw sketches and photograph the structures explained in theory and do exercises based on these fossils. These practicum aims enhancing observation, description, graphic illustration, and synthesis skills. This block involves hours of face-to-face work, hours of supervised work and hours of autonomous work.

Fieldwork practicum. This block consists of five field trips, three of which will be of one day duration, and one will last for two days. They will allow contextualizing in the nature the fossils studied in theory and observed in the laboratory. Field work includes studying examples of many Paleozoic, Mesozoic, and Cenozoic fossil groups. The training activities consist of searching and recognizing fossils in a stratigraphic context and extracting taphonomic, paleoenvironmental and biostratigraphic information. The result is reflected in reports or written exercises that are elaborated as supervised work. In fieldwork, group-work skills are also exercised. The block involves face-to-face hours and supervised work.

Note: Within the schedule set by the 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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Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lab practicum	90	3.6	CA09, CA10, CA11, KA08, KA09, SA10, CA09
Type: Supervised			
Fieldwork practicum	76	3.04	CA10, KA08, KA09, KA10, SA11, CA10

Assessment

Continuous evaluation:

40% Final exam

20% Exercises based on laboratory practicum

30% Field work reports

10% Classroom attendance and participation

Single evaluation:

80% Final exam that will include questions from laboratory practicums and exercises

20% Fieldtrip report

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Attendance and participation	10%	90	3.6	CA09, CA11, KA09, SA10
Exercises based on laboratory practicum	20%	30	1.2	CA09, CA10, CA11, KA10
Field work reports	30%	10	0.4	CA09, CA10, KA08, KA10, SA11
Final exam	40%	4	0.16	CA09, CA11, KA08, KA09, KA10, SA10, SA11

Bibliography

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Willis, K.J.; McElwain, J.C. *The Evolution of Plants*, Oxford, 2002.

Software

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

Graphic design software: Adobe Illustrator, Corel Draw, Inkscape,...