

Invertebrate Paleontology and Micropaleontology

2014/2015

Code: 43140
ECTS Credits: 6

Degree	Type	Year	Semester
4314104 Paleontologia	OT	0	2

Contact

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Use of languages

Principal working language: català (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

Esmeralda Caus Gracia

Prerequisites

General knowledge on Palaeontology.

Objectives and Contextualisation

To know the characteristics and functionality of the invertebrates skeleton, preservation in the fossil record, evolution and diversity, with special emphasis on the evolution of bivalve molluscs and echinoid echinoderms.

To know the characteristics, functional morphology and diversity of the foraminifers, with special emphasis on the main evolutionary cycles of the macroforaminifers.

Skills

- Analyse data using the appropriate tools in the field of palaeontology.
- Apply the theories, paradigms and concepts of biology and ecology to analyse the biological aspects of organisms and ecosystems of the past.
- Apply the theories, paradigms and concepts of geology to achieve an appropriate holistic vision of the Earth's history
- Design and conduct research in the field of palaeontology and disseminate the results.
- Develop a capacity for criticism and self-criticism in the field of palaeontology:
- Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
- Obtain and synthesise information from the scientific literature (library, databases, online journals or reliable websites) in the field of palaeontology.
- Recognise and use appropriately the fossil record to solve specific problems in the different areas of palaeontology.
- Show mastery of the various methodologies for studying the different fossil groups, gathering and integrating field and laboratory data.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.

- Use the different techniques for studying, conserving and disseminating the fossil record.

Learning outcomes

1. Analyse data using the appropriate tools in the field of palaeontology.
2. Apply knowledge of comparative anatomy, phylogeny, taxonomy and ecology to analyse the evolution of fossil invertebrates and foraminifera.
3. Apply the appropriate methodology for studying fossil invertebrates and foraminifera.
4. Develop a capacity for criticism and self-criticism in the field of palaeontology:
5. Initiate research in the field of invertebrate palaeontology and micropalaeontology and disseminate the results.
6. Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
7. Know the processes of skeleton formation in invertebrates and its characteristics.
8. Obtain and synthesise information from the scientific literature (library, databases, online journals or reliable websites) in the field of palaeontology.
9. Recognise and use the invertebrate and microfossil fossil record.
10. Relate the fossil record of invertebrates and foraminifera to its chronostratigraphic context.
11. Relate the fossil record of invertebrates and foraminifera to its palaeoenvironment context.
12. Show mastery of techniques for studying macrofossils and microfossils.
13. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.

Content

Block 1 Invertebrate palaeontology

The invertebrate skeleton: biomineralization, microstructure, structure, functionality. Preservation in the fossil record. (2 h lectures, 2 h practical lessons)

The Phanerozoic radiations of the bivalve molluscs. Diversity. (2 h lectures, 2 h practical lessons)

The Cretaceous rudist bivalves. Evolutionary innovations of the skeleton. Diversity. Representative taxa. (4 h lectures, 2 h practical lessons)

The Mesozoic and Cenozoic radiations of echinoid echinoderms. Diversity. Representative taxa. (4 h lectures, 2 h practical lessons)

Block 2 Micropalaeontology

Functional morphology and life strategy in the foraminifers. (2 h lectures, 2 h practical lessons)

Texture, architecture and structure. (2 h lectures)

Macroforaminifers identification. Comparative anatomy. (2 h practical lessons)

The Jurassic imperforates: morphologies and structures. (2 h lectures/practical lessons)

The early Cretaceous "orbitolinids". (2 h lectures/practical lessons)

The mid and late Cretaceous macroforaminifers. (2 h lectures/practical lessons)

The Palaeogene macroforaminifers. (2 h lectures/practical lessons)

The Neogene macroforaminifers. (2 h lectures/practical lessons)

Methodology

Lectures and practical lessons will be structured in 2 h sessions. In some cases they will be lectures/practical lessons.

Exercises and works will be done in correspondence with the lectures and practical lessons. Some of the works shall be presented.

Activities

Title	Hours	ECTS	Learning outcomes
Type: Directed			
lectures	21	0.84	1, 2, 3, 7, 12, 4, 9, 10, 11
practical lessons	15	0.6	1, 2, 3, 7, 12, 6, 9, 10, 11, 13
Type: Supervised			
exercises resolution, elaboration and presentation of works	30	1.2	1, 5, 6, 8, 13
Type: Autonomous			
study of the lectures and practical lessons and proposed articles reading	84	3.36	1, 2, 7, 4, 6, 8, 10, 11

Evaluation

qualification will be done on the exercises and works delivery and the theory/practice examinations.

Evaluation activities

Title	Weighting	Hours	ECTS	Learning outcomes
exercises and works delivery	60%	0	0	1, 2, 3, 7, 12, 4, 5, 6, 8, 9, 10, 11, 13
theory/practice examinations	40%	0	0	1, 2, 3, 7, 12, 4, 5, 6, 8, 9, 10, 11, 13

Bibliography

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