UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Paleontology

2627-2-E3402Q010

Aims

Knowledge and understanding
By the end of the course, students will have acquired a basic knowledge of the main groups of fossil organisms, their morphology and classification, and their palaeoecological and biostratigraphic significance. They will gain fundamental notions on fossilisation processes and on the role of palaeontology in studying the evolution of life and the geological history of our planet. Students will also learn to connect palaeontological evidence with data from other geological disciplines, thus developing an integrated view of Earth sciences.
Applying knowledge and understanding
Students will be able to recognise and describe the main fossil groups, both at the macroscopic and microscopic scale, using appropriate scientific terminology. They will learn to apply palaeontological data to the relative dating of sedimentary successions and to the reconstruction of past environments. Moreover, they will be able to determine the most appropriate method for the collection, preparation, and analysis of fossil specimens.

Contents

Lectures (5,5 ECTS) - Fossils. Fossilization and taphonomy: biostratinomy and diagenesis. Principles of Paleoecology. Introduction to Biogeography and Paleobiogeography.
Principles of Stratigraphy and Biostratigraphy. Systematic paleontology: the main systematic groups of marine invertebrates. Biological evolution: contribution of paleontology. In person, Delivered didactics.

Practical classes (2 ECTS): identification of diagnostic characters of different groups of fossil invertebrates and practical exercise on biostratigraphy. In person, interactive teaching

Field activity (0,5 ECTS). One day trip (6 hours activity) at important fossiliferous sites. The student is required to produce a personal report of this activity.

Detailed program

General Objectives

Lectures (5,5 ECTS:). Types of fossils: body fossils, molds and casts, trace fossils. Information obtained from fossils. Species concept: variation of the species; species nomenclature and typification.
Biostratinomy and diagenesis. Processes of fossilization: types of fossils resulting from the processes.
Principles of paleoecology. Ecological factors. Biogeography and Paleobiogeography: concepts, processes and objectives. Areal distributions. Endemism. Conceptual approaches to biogeography. Stratigraphy and biostratigraphy: concepts and aims. Units in biostratigraphy. Operation in biostratigraphy and examples of biozones. Biostratigraphical correlations.
Overview of the main systematic groups of marine invertebrates, including: 1) diagnostic characters, b) stratigraphic evolutionary history and significance, c) paleoecology. The following taxa will be presented: "Protista", Porifera, Coelenterata, Bryozoa, Brachiopoda, Mollusca, Echinodermata, Arthropoda and Hemichordata. Biological evolution: the contribution of paleontology.

Practical classes (2 ECTS). It consists of practicals, based on the examination of fossils in the didactic collection, aimed at recognizing the diagnostic characters of the different taxa. Significance and use of the tables of stratigraphic distribution of fossils.

Field activities (0,5 ECTS). Sedimentological and paleontological observations along a fossiliferous succession. Stratigraphy, paleogeography and paleoclimate. Paleoecological interpretation.

Prerequisites

Security on the Field; Principles of geology

Teaching form

The language of the teaching is Italian

- 22 two-hour lectures, in person, Delivered Didactics.

- 12 two-hour practical classes, in person, Interactive Teaching. It is mandatory to attend at least 2/3 of the total hours of practical classes to be admitted to the practical test

- 1 six-hour field activity, in person, Interactive teaching

Textbook and teaching resource

Manuale di Paleontologia - fondamenti e applicazioni. Edizione a cura della Società Paleontologica Italiana

Slides provided during the lessons.

Semester

II year, I semester

Assessment method

- three intermediate tests during the course, at the end of the main topics covered during the classes. Each test consists of 15 multiple choice questions, in order to evaluate the learning of the main concepts of paleontology. Total Midterm grade: average of midterm test marks, in /30. Passing all the intermediate tests allows you to avoid the oral exam. However, the student has the right to take the oral exam and can request it.

- practical test: a) recognition of fossils, which consists in the description of 2 fossils, following the descriptive scheme used during the lessons. The teachers will evaluate the ability to apply the knowledge learned during the laboratory in relation to the recognition of the taxonomic group, based on the identification and description of the diagnostic characters, using the appropriate terminology. Each of the two fossil descriptions receives an evaluation in n/30 between 0 and 12; b) biostratigraphy exercise (identification of biozone); the teachers will evaluate the ability to apply the principles of biostratigraphy. The biostratigraphy exercise has a grade in n/30 between 0 and 6 The total evaluation of the practical test is given by the sum of the evaluations obtained, for a maximum of 30/30.

- report on the field activity, following the guidelines uploaded on elearning. The teachers will evaluate the completeness of the information and diagrams related to the outcrops analyzed during the excursion and the accuracy of the description of the fossils found on the field. The evaluation of the report is in n/30.

- oral exam, upon request by the student (mandatory in the absence of the intermediate tests). The exam consists of two questions aimed at assessing the knowledge of Paleontology topics. The teachers will evaluate the knowledge of the topics, the expressive clarity, the ability to connect the topics, the use of an appropriate language. The evaluation of the oral exam is in n/30.

The exam is passed if each test obtains a grade ?18/30. The final evaluation will consist of the average of the various tests.

Office hours

To make an appointment, please write to the professor:

daniela.basso@unimib.it

Sustainable Development Goals

QUALITY EDUCATION | LIFE BELOW WATER | LIFE ON LAND