
COURSE: Paleontology

ACADEMIC YEAR: 2019-2020

TYPE OF EDUCATIONAL ACTIVITY: Characterizing

TEACHER: Angela Laviano

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Language: Italian

ECTS: **8** (lessons 6 e
tutorials/practice2)n. of hours: **48** lessons and
24 tutorials/practiceCampus: Potenza/Matera
Dept./School: **Department of
Science**
CdS: Geological Science (L34)Semester: II
02.03.2020
31.05 – 20.06. 2020

EDUCATIONAL GOALS

The main knowledge learned by the student in the course of Paleontology concerns the physico-chemical processes that led to the origin of fossils, the use of fossils in paleoenvironmental reconstructions, in the dating of sedimentary successions, in biological and paleobiogeographic evolution. In the context of general paleontology will provide knowledge concerning the taphonomy, evolution, paleoecology, biostratigraphy and paleobiogeography. These concepts are used during the teaching of the systematic that takes place in the second part. These concepts are used during the teaching of the systematic .

The part of systematic palaeontology aims to provide students with the basic tools for the knowledge of fossils found in the sedimentary successions of the Mediterranean area in order to evaluate the paleobiodiversity through the Phanerozoic eras.

The paleontology and micropaleontology laboratories will provide students the basic tools for the practical recognition of the main fossils and microfossils with a predominantly biostratigraphic and paleoambinetal purpose.

EXPECTED LEARNING OUTCOME

- Knowledge and understanding

At the end of the course the student must know:

1. the purposes and uses of paleontology;
2. basic notions of taphonomy, paleoecology, icnology;
3. the classification criteria of the fossil groups studied and their systematic classification;

- Ability to apply knowledge and understanding

At the end of the course the student will be able to:

1. use an appropriate terminology in describing individual specimens and fossil associations with reference to morphological characteristics and paleoecological preferences.
2. recognize at least at the level of genus the fossils presented during the course, with particular regard to the marker fossils;

- Autonomy of judgment

At the end of the course the student will be able to formulate a judgment:

1. on the processes that have affected the formation of fossils that will analyze;
2. on the diagnosis of individual fossil specimens analyzed and their relative age;

- Communication skills

At the end of the course the student will:

1. use the technical language of paleontology;
2. communicate geological and paleobiological information contained in a fossil, contributing, for example, in estimate the relative and/or absolute age of sedimentary successions.

- Learning ability

At the end of this course the student will have the ability to:

1. undertake a paleontological and paleoenvironmental study on macrofossil and macroforaminifer associations;
 2. recognize the processes that produced the fossil record starting from single samples.
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PRE-REQUIREMENTS

Knowledge and mastery of appropriate scientific terminology.

Basic knowledge of biology, chemistry and geology of high schools.

SYLLABUS

A short account of the history of paleontology.

Taphonomy; Biostratigraphic and diagenetic processes; Fossil deposits.

The science of classification. Principles of biologic/paleontological nomenclature. Taxonomy and parataxonomy. Taxonomic schools.

Evolution. Micro- and macroevolution. Biologic and paleontological evidence of evolution. Development of evolutionary theory from Lamarck and Darwin to the modern synthetic theory. Mutations as a primary basis in evolution. Species origins. Models of phyletic gradualism and punctuated equilibria. Macroevolution. Origin of new structural plans. Evolutionary trends. Rates of evolution. Biologic crises and adaptive radiations.

Origin of life and the main steps in evolution of the biosphere. Evolution of living forms in the Precambrian and Cambrian.

Ecology and paleoecology. Autecology and synecology. Marine ecosystems. Zonation of the benthic and pelagic marine environments. Factors limiting dispersal of marine organisms.

Stratigraphy: biostratigraphy, chronostratigraphic and geochronological units. Global standard chronostratigraphic scale. Integrated stratigraphic correlations.

Systematic paleontology: Foraminifers, radiolarians, diatoms, silicoflagellates, coccolithophorids, sponges including archaeocyathines, cnidarians, bryozoans, brachiopods, molluscs, arthropods (principally trilobites, ostracods), echinoderms. Morphologic characters, palaeoenvironmental significance, evolutionary trends and stratigraphic distribution of these groups. Exercises on identification and description (taxonomy) of fossils.

Vertebrates : the genus Homo

TEACHING METHODS

Theoretical lessons and practical laboratory exercises.

EVALUATION METHODS

The exam consists of a practical fossil recognition test and an oral exam; both will have an evaluation of thirty and the final grade will be equal to the average of the marks obtained in the two tests.

As regards the practical test, the description and recognition of two specimens of macrofossils and two microfossil samples will be required. In addition, palaeoenvironmental and stratigraphic aspects related to the specimens observed will be required. The oral exam will cover general paleontology and may include a brief exercise in stratigraphy or palaeoenvironmental reconstruction.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

ALLASINAZ, INVERTEBRATI FOSSILI, UTET, 2003

RAFFI & SERPAGLI, PALEONTOLOGIA GENERALE. 2° EDIZIONE, UTET, 2001

PROTHERO, BRINGING FOSSILS TO LIFE. WCB/MCGRAW-HILL, 1998

BENTON & HARPER, INTRODUCTION TO PALEOBIOLOGY AND THE FOSSIL RECORD, WILEY-BLACKWELL, 2009

INTERNET SITES OF INTEREST: [HTTP://DIPBSF.UNINSUBRIA.IT/PALEO/LEZIONI_ONLINE.HTM](http://DIPBSF.UNINSUBRIA.IT/PALEO/LEZIONI_ONLINE.HTM); SOCIETÀ PALEONTOLOGICA ITALIANA - [HTTP://PALEOITALIA.ORG/](http://PALEOITALIA.ORG/); [HTTP://PIKAIA.EU/](http://PIKAIA.EU/)

INTERACTION WITH STUDENTS

Stimulate students to participate actively and collaboratively in lessons; encourage both the contribution individual than that of the group; always be available to listen to and meet the needs of students; always try, together with the student in distress, a chance of recovery and a way out in front of a difficult situation.

EXAMINATION SESSIONS (FORECAST)¹

Month	Year	Expected appeal
February	2020	13
March	2020	19
May	2020	14
June	2020	18
July	2020	16
September	2020	16
October	2020	08
December	2020	10

Riportare le date inserite nella scheda in lingua italiana

SEMINARS BY EXTERNAL EXPERTS YES x NO

FURTHER INFORMATION

¹ Subject to possible changes: check the web site of the Teacher or the Department/School for updates.