Syllabus

Course	Course Code	Course Credits	Course Year
BIOFACIES	**F7502Q014**	**6**	**1**

Lecturer: **Prof. Malinverno Elisa – Prof. Basso Daniela**

Contents:

MODULE I: Benthic facies and applied marine paleoecology
Identifying biofacies as a tool for paleoenvironmental definition. Applications and examples. Introduction to applied marine paleoecology: rationale, sampling strategies, case histories. Multivariate statistics applied to paleoecological analysis. Observations, laboratory analyses and techniques.

MODULE II: *MICROFACIES PALEOAMBIENTE PELAGICO*
Recognition of biofacies for the definition of the pelagic paleoenvironment in different oceanographic settings. Bases of plankton biostratigraphy. Diagenesis in the pelagic environment. Applications and examples from present-day and past environments.

References:
Slides and selected scientific papers provided by the Lecturer

Aims:

MODULE I: Benthic facies and applied marine paleoecology
To provide technical skills to plan, analyse and interpret the results of the paleontological and paleoecological investigation. To provide the rationale and the methods for the use of palaeoecology in the reconstruction of recent environmental changes in transitional and marine coastal areas, on the basis of the interplay between natural change and history of the anthropogenic impact. Ability to identify and interpret some common macrobenthic facies, and taphofacies. Ability to manage the commonest multivariate methods of statistical analyses for the interpretation of benthic associations.

MODULE II: *MICROFACIES PALEOAMBIENTE PELAGICO*
Knowledge of the microfossil groups which are useful to define a biostratigraphic and paleoenvironmental framework. Taxonomic bases for the identification of the main planktonic species Application of microfossil assemblage for paleoenvironmental reconstructions.

Recommended a priori knowledge:
Palaeontology, Geobiology

Teaching form:
- Lessons: 4 credits
- Tutorials: 2 credit

Period:
second semester

More information:
Website: www.marinesciences.unimib.it

Examination type:
- Oral examination

Mark range:
18-30/30

Syllabus:

MODULE I: Benthic facies and applied marine paleoecology

Lessons:
Sampling strategies and techniques for the study of marine and transitional benthic associations, death and fossil assemblages. Taphonomic processes and their effects on macrobenthos. Applied marine paleoecology: rationale, case histories. Multivariate statistics for benthic paleoecology.

Laboratory:
Identification of key species within the main macrobenthic groups (mollusks, brachiopods, corals, calcareous algae, bryozoans). Quantification of the sedimentary contribution of the components of the benthic association. Macrobenthic facies analysis and identification of the paleoenvironment. Laboratory techniques and analyses for the study of marine and transitional benthic associations, death and fossil assemblages. Observations of the effects of the biostratinomic processes on shelled macrobenthos. Preparation, elaboration, and interpretation of multivariate paleobiological data.

MODULE II: *MICROFACIES PALEOAMBIENTE PELAGICO*

Lessons:
Microfossils and oceanic (paleo)environments. Taxonomic bases for the identification of the main plankton groups. Plankton paleoecology and biogeography. Biofacies in the pelagic environment: sedimentary environment and diagenesis. Bases for the definition of a biostratigraphic framework for pelagic sedimentary successions. Examples from the present-day environment and from the geological record.

Laboratory:
Identification, through binocular and polarized light microscope, of key species within the main microfossil groups (calcareous nannofossils, diatoms, silicoflagellates, foraminifera). The laboratory classes will be devoted to: a) the recognition of biofacies and the identification of paleoenvironments (coastal zone, continental shelf, continental slope, abyssal plain) in different settings (mid-ocean oligotrophic gyre, upwelling zones, areas with strong continental input, polar zones); b) the identification of biozones through the recognition of biostratigraphic markers for selected time frames.

- **Lessons: 1 credits = 7 hours**
- **Tutorials: 1 credits = 12 hours**
- **Field activities: 1 credits = 10 hours**