UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Sedimentology

2526-2-E3401Q043

Aims

Students at the end of the course will have the theoretical-practical knowledge in the discipline of Sedimentology necessary to understand the structure and surface evolution of the Earth.

Students will have consolidated the technical-practical knowledge of Sedimentology, such as: Understanding the different transport processes and the sedimentation. Meaning of the sediments and sedimentary rocks and the related sedimentary environments. Meaning of the sedimentary structures. Sedimentological interpretation of a sedimentary succession (Facies analysis). The evolution of the Southalpine sedimentary succession. Everyrthingd thanks to educational collections of rocks, thin sections, geological maps and field trips

Students will be able to apply autonomously the knowledge acquired to:

- describe, recognise, classify and analyse the different sedimentary environments, both in the laboratory and in the field:
- assess autonomously the complexity of sedimentary systems, plan the geological surveys to be carried out, collect the necessary data, assess the quality and reliability of the data acquired;
- assess the role and responsibilities of Sedimentology in the management of hydrogeological risk (e.g. floods)
- communicate correctly information and issues related to Sedimentology in oral and written form to both specialist and non-specialist interlocutors (discuss environmental sedimentary issues of global interest within multidisciplinary groups)
- learn autonomously, by using books, databases and information available on the web, to deepen their knowledge and keep it up-to-date. This skill is acquired during group activities in the field and in the laboratory.

Contents

Facies and Walther's Law. Sediments and sedimentary rocks. Composition, classification, and diagenesis of sedimentary rocks. Sedimentary structures. Facies and depositional environments. Southalpine sedimentary succession.

Detailed program

Facies and Walther's Law. Sedimentation: processes and products. Sedimentary rock types (carbonates and terrigenous). Constituents, textures, cements and porosities of sandstone and carbonate rocks. Diagenesis. Sediment transport: bed load and suspended load. Traction. Bedding and bedforms. Sediment gravity flows. Interpretation of sedimentary structures. Facies analysis. Alluvial fan. Fluvial and deltaic environments. Coastal and shelf environments. Continental slope and rise environments. Turbiditic corrent and turbidite. Carbonate/evaporite coastal succession. Anoxic basins. Southalpine sedimentary succession.

Prerequisites

Students have to followed and taken the:

Principles of Geology

and followed the:
Corso di Sicurezza sul Terreno

Teaching form

- 16 two-hour lectures (in person). Delivered and interactive Didactic (4 fcu)
- 9 two-hour laboratory activities (in person) will focus on case histories with group work in the classroom. Interactive Teaching (1,5 cfu)
- 1 Field work (six-hour field activities, in person) on the Southalpine sedimentary succession. Interactive Teaching (0,5 cfu)

The course also includes the presence of a Disciplinary Tutor (24 hours) who will follow the students during the laboratory exercises hours in a constant and regular way, to arrive at the exam more prepared.

Textbook and teaching resource

Booklist

Sedimentologia vol.3 Ambienti sedimentari e facies di Ricci Lucchi Franco. Data di Pubblicazione: 1980; Pagine: 548

Slides and scientific articles

Semester

Semester 1.

Assessment method

The skills provided during the lessons will be evaluated in a written exam with an optional oral exam at the request of the student.
The evaluation will concern the application of specific principles for the analysis of a sedimentological processes and the ability to connect the topics covered in class (e.g. Southalpine sedimentary succession)

The questions of the written exam will concern the entire program carried out in the classroom and field trips and will be divided into 2 categories:

- 4 open questions to verify the knowledge of the basic principles of the discipline, the knowledge of the Southalpine sedimentary succession and the description of a sedimentary-stratigraphic log (70% of the writing).

- 6 closed-answer questions (multiple choice) for the extensive control of the preparation on the exam program, including the ability to classify geological phenomena, to define some specific properties, to recognize instruments for measuring physical characteristics on the capacity (30% of the writing).

At the request of the student, it will then be possible to take an oral exam if the minimum mark of 18/30 is achieved in the written exam.

If the written (or oral) exam fails, student will have to retake the exam in its entirety.

Office hours

To make an appointment: giovanni.vezzoli@unimib.it

Sustainable Development Goals

CLIMATE ACTION