



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Principi di Scienze della Terra

2223-1-E3201Q110

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#### Aims

The goal of this course is to provide the environmental sciences' students with an overview about the basic concepts of geology. This course introduces to geology and Earth system sciences providing knowledge on Earth's composition, structure and configuration, Earth's surface processes and landforms. The course identifies the main geological features present in the lithosphere and hydrosphere.

The course aims to characterize to define the major structural zones of the earth's crust, and then move on continental hydrosphere, declining water cycle in all its main components.

The laboratory of cartography intends to provide students with the ability to interpret topographic maps and calculate some fundamental map elements.

The laboratory of minerals and rocks provides students with competences in the identification of different mineral and rock samples, classification of igneous, sedimentary and metamorphic rocks and related rock-forming processes.

#### Contents

The course presents Geology in the broadest sense of the term, as a Science that studies the planet Earth with reference to its composition, its structure and configuration, its surface and the processes that operate on it. The course identifies the main geological aspects present in the lithosphere and hydrosphere.

#### LESSONS

Earth's shape, mass and size. - Earth's Interior - Elements of tectonic and main types of dislocations - Earthquakes and volcanoes - Stratigraphic and chronological units -Major structural units of the Earth's surface -Elements of Italian geology - Using the compass and introduction to the geological maps - exercise on the reconstruction of

geological sections - Continental hydrosphere - - The water cycle and water balance - Physical and hydraulic characteristics of rivers and lakes - Basic elements of aquifers, groundwater and drinking water

## **LABORATORY OF CARTOGRAPHY**

## **LABORATORY OF MINERALS AND ROCKS**

### **Detailed program**

Earth's shape and size – Mass and density - Earth's Interior. - Earthquakes and volcanoes. - Inner core, outer core, mantle and crust (continental and oceanic). Stratigraphic units. Relative and absolute ages. Fundamentals of plate tectonic and basic types of plate boundaries and motion. Folds, faults. Major structural units of the Earth's surface: oceanic basins, divergent and convergent boundaries, oceanic ridges, continental fracture systems, folding zones. - Elements of Italian geology -Use of the compass and basic elements for reading geological maps - exercise on the reconstruction of geological sections - Continental hydrosphere. Hydrological cycle and water balance. Rivers, fluxes in river beds and basins. Lakes: origin, physical, hydrological, hydrodynamic characteristics.

## **LABORATORY OF CARTOGRAPHY**

Fundamentals of cartography (datum systems, map projections, Italian cartography) and map elements (Coordinates of given points on a map in different systems, topographic profile construction, gradient calculation, identification of drainage basins).

## **LABORATORY OF MINERALS AND ROCKS**

Minerals: structure, formation, classification and properties. Rocks: the rock cycle, rock-forming environment and types of rocks (igneous, sedimentary and metamorphic rocks). Methods for the identification and classification of rock samples.

### **Prerequisites**

None.

### **Teaching form**

Teaching is divided into the following teaching modules:

- Lessons, 7 credits
- Cartography experiences, 2 credits
- Petrographic experiences, 2.5 credits

### **Textbook and teaching resource**

**Text** - CAPIRE LA TERRA Terza edizione italiana condotta sulla settima edizione americana, Grotzinger J., Jordan T.H., Zanichelli, 2016.

**Teacher resources**, available at the link <https://elearning.unimib.it/course/view.php?id=36394>:

- slides presented in the classroom
- in-depth video material
- work and worksheets for the laboratories
- self-paced training quiz

## **Semester**

First semester

## **Assessment method**

The exam allows to evaluate the preparation reached in terms of theoretical and practical knowledge of the topics covered during the lessons and the laboratories.

The skills provided during the lectures are evaluated in a written exam, with open questions (which weigh 70% of the written) and closed (which account for the remaining 30%) concerning the main topics covered in class. The laboratories, on the other hand, envisage a final practical test of cartography and rock recognition.

The vote is expressed in thirtieths, as weighted average of the writing and of the two laboratory tests.

At the student's request it is possible to take an additional oral exam if the minimum grade of 18/30 is reached in the written exam.

## **Office hours**

By appointment via email

## **Sustainable Development Goals**

QUALITY EDUCATION

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