



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Paleoceanografia e Paleoclimatologia

2223-2-F7401Q095

---

#### Aims

Understanding the natural variability in the climate system; knowledge of climatic variations and their causes at different time scales; study of proxies in different archives; knowledge of the main oceanographic processes in the present and in the past.

#### Contents

Bases of Paleoceanography and Paleoclimatology: climate system, chronology, proxies. Climatic variability and climate variations: timescales of changes. Paleoceanographic variations, as reconstructed through proxy data.

#### Detailed program

Lessons:

The climate system: components, inter-relations, annual and inter-annual variability.

Climatic variations: time scales and control mechanisms at the global scale; the anthropogenic impact.

Chronology: main dating methods in paleoclimatology and paleoceanography. Radiocarbon as a dating method and paleoclimatic-paleoceanographic proxy.

Paleoclimatic proxies: examples and applications in the marine, ice and terrestrial record.

Climatic evolution in the geologic past: early Earth climate states and climate evolution; greenhouse and icehouse

states; the Cenozoic mid-house; climate variations and Milankovitch cycles; millennial, centennial and decadal-scale variability in the recent past.

Paleoceanographic applications; climate and sea level; paleocirculation and paleoproductivity; global and Mediterranean (sapropel) anoxic events; ocean acidification in the present-day and in the paleo-record.

Tutorials:

Case studies: analysis, processing and interpretation of paleoclimatic and paleoceanographic data. Analysis and discussion on paleoclimatic and paleoceanographic reconstructions from the recent scientific literature.

## **Prerequisites**

- 

## **Teaching form**

Lessons

Tutorials

## **Textbook and teaching resource**

Bradley - Quaternary Paleoclimatology

Slides provided by the professor through the e-learning page

## **Semester**

First semester

## **Assessment method**

Group oral presentation at the end of the lab activities, to check the acquired knowledge, the ability to choose the most important data related to the case study and the ability to communicate with a specific scientific language, proper for the course.

Personal written report on the activities done during the lab, in order to assess the acquired knowledge, the capacity to analyse the considered dataset and the ability to interpret, synthesise and communicate in a written text the results of the case study. The report must be submitted at least 3 days before the oral examination.

The evaluation of the presentation and of the report will count for 1/5 of the final grade

Oral examination: 3 questions related to the themes addressed in class, of which: 2 questions to assess the knowledge on proxies and the mechanisms and time scales of changes; 1 question related to the changes occurred within one specific time frame, among those shown in class and in the slides, drawing a graph. During the exam, the teacher will evaluate the knowledge of the important information related to the course and the capacity to explain clearly and with an appropriate terminology the themes of the course.

The evaluation of the oral examination will count for 4/5 of the final grade

Grades in /30.

## **Office hours**

Upon appointment by e-mail

## **Sustainable Development Goals**

LIFE BELOW WATER

---