



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Modellazione Geologica 3d

2324-2-F7401Q029

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#### Aims

To reconstruct 3D geological models with advanced software.

#### Contents

3D geomodelling techniques, discussed in a synthesis on theory, and implemented in exercises and case studies with commercial industry-standard and open-source software.

#### Detailed program

The course includes a review of theory tightly integrated with practical exercises. Principal topics are: (1) fundamentals of geomodelling, topology, discrete models, grids, geostatistics and interpolation; (2) 3D data sources: surface geology, borehole, and geophysical data (e.g. 2D and 3D seismics); (3) software: problems and functionalities; (4) modelling a simple layer-cake stratigraphy; (5) fault networks; (6) cylindrical folds; (7) complex geo-bodies; (8) representation, modelling and simulation of properties of geological objects; (9) modelling from a 3D seismics dataset.

#### Prerequisites

Tectonics and structural geology (F7401Q101).

## Teaching form

Lessons, laboratory experiences with 3D modelling workstation and software. We will use Move ([www.mve.com](http://www.mve.com)), Skua/Gocad ([www.pdgm.com](http://www.pdgm.com)), and Petrel ([www.slb.com](http://www.slb.com)) and PZero (<https://github.com/andrea-bistacchi/PZero>). We acknowledge Petroleum Experts Ltd ([www.petex.com](http://www.petex.com)) for donation of Move licenses worth GBP 1,872,218.26, Schlumberger Italiana Spa ([www.slb.com](http://www.slb.com)) for donation of Petrel licenses worth USD 8,599,458.24, and finally Emerson Paradigm Holding LLC ([www.pdgm.com](http://www.pdgm.com)) and the RING-GOCAD Consortium ([www.ring-team.org](http://www.ring-team.org)) for Skua-Gocad.

## Textbook and teaching resource

Slides, scientific papers, references to selected chapters from textbook, presented in a logical order on e-LEARNING.

## Semester

First semester.

## Assessment method

Reconstruction of a 3D geological model (personal project).

Oral examination regarding all the topics and particularly the project.

## Office hours

All days in office hours.

## Sustainable Development Goals

QUALITY EDUCATION | AFFORDABLE AND CLEAN ENERGY | INDUSTRY, INNOVATION AND INFRASTRUCTURE

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