



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Modellazione Geologica 3d

2122-2-F7401Q029

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 industry-standard 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) fracture network modelling; (10) retrodeformation; (11) using 3D geomodels as input data for further modelling steps: mechanical models, flow simulators in hydrocarbon geology, hydrogeological models, etc.

Prerequisites

Tectonics and structural geology

Teaching form

Lessons, laboratory experiences with 3D modelling workstation and software. We will use Move (www.mve.com), Skua/Gocad (www.pdgm.com), and Petrel (www.slb.com). We acknowledge Petroleum Experts Ltd (www.petex.com) for donation of Move licenses worth GBP 1,341,961.89, Schlumberger Italiana Spa (www.slb.com) for donation of Petrel licenses worth USD 8,599,458.24, and finally Emerson Paradigm Holding LLC (www.pdgm.com) and the RING-GOCAD Consortium (www.ring-team.org) for Skua-Gocad. In the Covid-19 emergency period, lectures and practicals will be carried out in mixed form, with both classroom and online activities.

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.
