



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Tectonics and Structural Geology

2324-1-F7401Q101

Aims

The course includes 42 hours of lessons, 12 hours of laboratory activities and 12 hours of field activities. Aim of the course is to introduce students to the study of the different geodynamic environments through a structural approach based on the analysis of tectonic structures. The main emphasis will be on active margins and orogenic belts. General principles and theoretical models will be discussed, as well as several case studies chosen in the Alpine-Himalayan belts and in the Mediterranean region. Advanced exercises on stereographic projections, the construction of complex geological cross sections, mesoscopic structural field analyses will be the subject of practical activities in laboratories. Field activity is focused on the analysis of mesoscopic structures in a chosen areas of the Alps.

Contents

Analysis of the main brittle and ductile structures and of the associated deformation mechanisms. Complex structural associations in the different geodynamic context at a lithospheric scale, with reference to the Apine, Mediterranean and Himalayan regions. Introduction to mesoscopic structural analyses.

Detailed program

Rocks rheology: elastic deformation, brittle and plastic behaviour, intracrystalline plasticity and associated tectonic structures; lithosphere and asthenosphere. Plate motions; continental break-up, rifting and ocean spreading; oceanic ridges and transform faults, intracontinental transform faults; fold-and-thrust belts.

The use of stereographic projections in fold and fault analyses and the construction of complex geological sections related to different deformational environments will be carried out during practical activities. A final field excursion in

the Alps will be devoted to mesoscopic analyses and to the general structure of the belt.

Prerequisites

CORSO DI SICUREZZA SUL TERRENO (status "Approved")

Teaching form

- Lessons (42 hours)
- Laboratory experiences (12 hours)
- Field activity (12 hours)

Textbook and teaching resource

- Fossen H. **Structural Geology**. Cambridge University Press 2010 and e-learning materials (free on line).
- Kearey Ph., Clapeis K.A. and Vine F.J., 2008. **Global Tectonics (third edition)**. Wiley-Blackwell, 482 pp.
- Handouts and materials in a digital format (pdf).
- Scientific papers.

Semester

1st semester 15-10-2023 - 23-12-2023

Assessment method

- Written examination including the interpretation of stereoplots representing brittle and/or ductile structures, and earthquake focal mechanisms.
- Oral examination on the whole program including field activities and practicals
- Short report on field activity.
- Students are encouraged to give an oral presentation. The subject will be chosen with the lecturer.

Office hours

Monday 14-16 or by appointment (e-mail andrea.zanchi@unimib.it; tel 02-64482152)

Sustainable Development Goals

QUALITY EDUCATION | AFFORDABLE AND CLEAN ENERGY | LIFE ON LAND
