UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Geotechnical Modelling for Slope Stability and Underground Geostructures

2324-1-124R032

Title

Geotechnical modelling for slope stability and underground geostructures

Teacher(s)

Riccardo Castellanza ; Giovanni Crosta

Language

English

Short description

This course provides a general overview of advanced numerical modelling (finite elements based) in geotechnical engineering, engineering geology and also other problems. A specific and detailed critical discussion on existing and new techniques for numerical analyses of unstable slopes and underground geostructures will be provided. The course is subdivided into 5 parts:
(1) Introduction to numerical modelling of geotechnical problems;
(2) Definition of the global PDE (Partial Differential Equations) system to cope with complex geotechnical problems

including slopes and geostructures;
(3) 3D Finite Element Method (3D FEM) specific aspects, coupled problems: chemo-thermo-hydro-mechanical modelling;
(4) Explicative case studies;
(5) New trends in numerical modelling in geomechanics: MPM (Material Point Method) and PFEM (Particles Finite Element Methods); multiphase problems; CFD (Computational Fluid Dynamics)

Evaluation: YES

CFU / Hours

2 CFU - 20 Hours (8h lecture - 12h laboratory training)

Teaching period

II semester

Sustainable Development Goals