



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## **COURSE SYLLABUS**

### **Geotechnical Modelling for Slope Stability and Underground Geostuctures (Curricular - Geology)**

2021-94R-SCGA22

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#### **Title**

Geotechnical modelling for slope stability and underground geostuctures

#### **Teacher(s)**

Riccardo Castellanza

#### **Language**

English

#### **Short description**

Provide to students a general overview of advanced numerical modelling (3D FEM based) in geotechnical engineering and engineering geology.

A specific and detailed critical discussion on existing and new techniques for numerical analyses of instable slopes and underground geostuctures will be provided. The course is suggested for the 1st and 2nd year.

Detailed program

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-New trend related to the numerical modelling for geostructures and geo-materials.

4-3D Finite Element Method (3D FEM) introduction and specific aspects

5-Explicative cases studies on instable 3D slopes

6-Explicative cases studies on 3D geostructures

7-New trends in numerical modelling in geomechanics: MPM (Material Point Method) and PFEM (Particles Finite Element Methods)

Evaluation: YES

### **CFU / Hours**

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

### **Teaching period**

II semester

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