



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## **COURSE SYLLABUS**

### **UAV/ROV and Immersive Virtual Reality for Research in Volcanically, Tectonically and Climatically Sensitive Areas (Curricular - Geology)**

2021-94R-SCGA17

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#### **Title**

UAV/ROV and Immersive Virtual Reality for research in volcanically, tectonically and climatically sensitive areas

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

Fabio L. Bonali ; Alessandra Savini ; Alessandro Tibaldi

#### **Language**

English

#### **Short description**

The course is focused on introducing the innovative immersive virtual reality (VR) to study, at very high detail, areas subjected to tectonic deformation, volcanic eruptions and climate changes, both considering terrestrial and marine environment. The students will learn how to: build up a virtual outcrop in onshore and offshore settings, create a VR scenario, conduct geological and geohazard studies using VR, produce and share the results through presentations and reports.

Detailed contents:

- 1) Introduction to VR applied to Earth Sciences, including methods and tools.
- 2) Introduction to Virtual Outcrops building from UAV data and available digital surface model.
- 3) Underwater 3D reconstruction from optical and acoustic remote sensing technologies and ROV.
- 4) Immersive virtual field trip for data analysis and measurements.
- 5) Reports and presentations by students.

Evaluation: NO

### **CFU / Hours**

2 CFU - 16 Hours (Lecture)

### **Teaching period**

II semester

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