Visiting Professor Program
Academic year 2022/2023

TEACHING COMMITMENT: 12 hours

**COURSE TITLE**

Seismology and Earthquake Mechanics

**TEACHING PERIOD**

2nd term

**SCIENTIFIC AREA**

Geophysics

**LANGUAGE USED TO TEACH**

English

**COURSE SUMMARY**


Inverse problem and seismic tomography – Problem inverse definition – Data and model spaces

Seismic Tomography – earthquakes Localization.


Earthquakes mechanics in laboratory. Experimental determination of mechanical parameters in uniaxial, triaxial, extension and shear strength. Elastic deformation, brittle and ductile. Mechanical
anisotropy and micromechanical models. Deformation mechanisms and physical properties. Experimental determination of physical parameters (density, porosity, elastic waves velocity). Friction and laborator.

LEARNING OBJECTIVES
The course aims to provide theoretical and experimental tools finalised to the knowledge of earthquakes generation processes and waves propagation. The student will be introduced to the processes driving earthquake ruptures, to the analysis and modelling of seismic data to determine the main source parameters and to the seismotectonically active areas for big earthquakes, and the methodologies for seismic hazard mitigation and earthquakes forecasting. In detail laboratory techniques will be developed finalised to the measurement of rocks physico-mechanical parameters and to the description of the rheological behaviour during the pre-failure and coseismic deformation processes

TUTORSHIP ACTIVITIES
N/A

LAB ACTIVITIES
N/A

OTHER ACTIVITIES BESIDES THE COURSE
1 Seminar to PhD students and research fellows

VISITING PROFESSOR PROFILE
Expert in small scale seismology and laboratory rock deformation experiments with measurements of geophysical and seismological properties. Specific knowledges on experimental earthquake mechanics applied to the (i) understanding of rock mass stability and fault friction, and (ii) the investigation of fluid-driven seismicity in the shallow crust with particular focus on seismicity in active volcanoes and geothermal areas.

CONTACT PERSON AT THE DEPARTMENT
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