



# UNIVERSITÀ DI PISA

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## FIELD AND LABORATORY QUANTITATIVE VOLCANOLOGY

**MARCO PISTOLESI**

Anno accademico

2022/23

CdS

GEOSCIENCES AND  
GEOTECHNOLOGIES

Codice

192DD

CFU

6

Moduli	Settore/i	Tipo	Ore	Docente/i
VULCANOLOGIA QUANTITATIVA DI TERRENO E DI LABORATORIO	GEO/08	LEZIONI	76	MARCO PISTOLESI

### Learning outcomes

#### *Knowledge*

The aim of the course is to enable the students of the master's degree related to the volcanology / geothermal training course to undertake a thesis work, being able to carry out, independently, data acquisition activities on the ground and to organize such data according to suitable formats for the compilation of an advanced standard thesis document.

#### *Assessment criteria of knowledge*

During the field and laboratory activities, work groups will also be set up to recognize the main descriptive elements of volcanic deposits.

#### *Skills*

At the end of the course students must be able, by means of soil and laboratory analysis, to identify and classify different types of explosive and effusive deposits and volcanic materials deriving from their rehash. They must also be able to recognize, describe, classify and interpret stratigraphic sequences in a volcanic environment and correctly use the forms of representation of data produced on the ground and in the laboratory.

#### *Assessment criteria of skills*

Skills will be verified during the oral examination and the discussion of the report / s prepared by the student.

#### *Teaching methods*

Lectures, with the aid of transparencies / slides / films in the classroom. The preponderant part of the course is carried out in off-site lessons in the field and to a significant extent in the laboratory where analyzes will be carried out on samples collected in the field by the students during the off-site lessons.

#### *Work placement*

Types of explosive volcanic materials and classification of primary and secondary explosive volcanic deposits (tefra and secondary deposits) based on their structural and textural characteristics. Main parameters for their quantitative description: measurement tools and techniques. Field data storage procedures. Field analysis of fall deposits: stratigraphic correlation techniques and mapping procedure of fall deposits. Field analysis of welded and non-welded pyroclastic density (PDC) deposits: stratigraphic correlation techniques and mapping procedure of deposits. Field analysis of secondary volcanic deposits (lahar deposits) instruments and measurement techniques. Field procedures for determining eruptive parameters (erupted magma volume and eruptive intensity). Sampling techniques of pyroclastic deposits and pyroclastic materials. Measurement in the laboratory of the physical properties of loose and welded pyroclastic materials (granulometric analysis, component analysis, micro-textural analysis). Measurement of the total density / vesicularity of clasts; microscopic textural analysis of micro-vesicularity.

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