UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Geology of Volcanic Areas

2627-1-F7402Q035

Aims

Provide knowledge that allows you to deal with the lithostratigraphic and geological-structural survey of volcanic successions, with reference also to the reconstruction of the evolution of a volcanic edifice from a geological and geomorphological point of view.

Contents

The general contents allow the student to prepare himself to be able to face a complete survey, from a geological point of view, of the volcanic environment. The studies therefore include aspects related to the lithological, stratigraphic, geomorphological and structural evolution of volcanic edifices.

Detailed program

The course consists of a series of indoor lessons, equal to 4 CFU, plus a field trip in a volcanic environment in Italy, equal to 2 CFU.
Detailed indoor lesson program:

1. Introduction: Volcanoes and geodynamics
   1.1 Volcanism associated with divergent margins
   1.2 Volcanism associated with converging margins
   1.3 Volcanism associated with transform margins
   1.4 Intraplate volcanism

2. Type and products of eruptions

2.1 Effusive, explosive, phreato-magmatic, phreatic eruptions
2.3. Products of effusive eruptions
2.4. Products of explosive eruptions

3. Gravitative products
   3.1 Volcaniclastic deposits
   3.2 Lahars
   3.3 Debris avalanche

4. The volcanic edifices
   4.1 Basaltic plateaus
   4.2 Monogenic volcanoes
   4.3 Polygenic volcanoes
   4.4 Calderas
   4.5 Pseudocraters, Hornitos, Scoria ramparts

5. The methods of cartography of volcanic deposits
   5.1 Field survey
   5.1.1 Survey of lithostratigraphic units
   5.1.2 The Unconformity Bounded Stratigraphic Units
   5.1.3 The lithosomes
   5.2 The contribution of photointerpretation

6. The sub-volcanic bodies
   6.1 Dykes
   6.2 Inclined sheets
   6.3 Sill
   6.4 neck, laccoliths and lopoliths

7. Examples of geology of Quaternary volcanism in Italy
   7.1 The Phlegraean Fields
   7.2 The Somma-Vesuvius
   7.3 Ischia
   7.4 The Aeolian Islands
   7.4.1 Aliduci-Filicudi-Lipari-Panarea
   7.4.2 Stromboli
   7.4.3 Volcano
   7.5 M. Etna
   7.6 Pantelleria
   7.7 Alban Hills
   7.8 The underwater volcanoes

8. Hints of hazard / volcanic risk
   8.1 Extinct, Quiescent, Active volcanoes
   8.2 The Volcanic Explosive Index
   8.3 Volcanic risk maps

Prerequisites

Basic knowledge of geological survey, geomorphology and structural geology. Once activated, have followed the Introduction to Volcanology course. The student must have completed the course of field security.

Teaching form

The course comprises a total of 6 ECTS credits, structured into lecture-based teaching and field activities.

Lectures: 21 hours (3 ECTS), delivered in in-person expository mode (DE).
Field activities: 36 hours (3 ECTS), carried out in in-person interactive mode (DI) and organised over consecutive days.

Textbook and teaching resource

PowerPoint slides of lessons and readings suggested at lesson.

Semester

Second semester

Assessment method

Weighted average of the marks obtained for the part of the lessons and for the part of the field trip.

Office hours

By appointement.

Sustainable Development Goals