UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Applied Seismology

2021-1-F7401Q107

Aims

Intermediate knowledge of seismology and applied seismology; use of seismological data and seismic catalogues for structural geology and geodynamics studies; fundamentals of seismic hazard and evaluation of site effects targeted to environmental planning and infrastructure design.

Contents

a) fundamentals of seismology; b) introduction to the seismic source; c) principles of attenuation of elastic waves and ground motion; d) shaking parameters, response spectrum, ground motion prediction equations; e) site effects; f) fundamentals of seismic hazard; g) seismic microzonation; h) introduction to the Italian seismic code (sections of interest to geologists).

Detailed program

- Fundamentals of seismology: cause of earthquakes; seismic waves; earthquake location; magnitude estimation; instrumental seismic; monitoring networks; introduction to seismic instruments.

- Seismic source: point and extended source; seismic moment; introduction to the Fourier transform; Brune source spectrum.

- Attenuation of elastic waves: geometric and anelastic attenuation;

- Shaking parameters: peak and duration parameters, response spectrum, ground motion prediction equations.

- Seismic hazard: macroseismic catalogue, magnitude-frequency power, catalogue completeness, concept of

deterministic and probabilistic seismic hazard, Italian seismic hazard.

- Seismic microzonation: basic concepts, first, second and third level of microzonation, examples of seismic microzonation for recent earthquakes.

- Introduction to the Italian seismic code: design spectra, site effects, selection of accelerograms compatible with response spectra.

Prerequisites

None

Teaching form

21 hours (online) and 36 hours (practical exercises)

Textbook and teaching resource

slides, video, recommended textbook: Faccioli E, Paolucci R, Elementi di sismologia applicata all'ingegneria, Pitagora Editrice Bologna

Semester

November 2020 - January 2021

Assessment method

Oral examination

Office hours

By appointment 9:30 -11:30 (at INGV department via Corti 12, Milano)