ROSE School | Earthquake Engineering

Retrofit Strategies for RC Buildings

Lecturer: **R. Pinho**
Date: 2/11/2026 – 13/11/2026
Credits: 3 ECTS (CFU)

Course Description

This short course aims at introducing students to the topic of seismic retrofitting of RC structures. The course will be structured around a design project, whereby students will need to first model and seismically assess an existing RC building, and then then compare the seismic response improvement introduced by the application of different local and global retrofitting strategies.

Topics

- Acquisition of geometrical, material and detailing properties of existing RC structures.
- Seismic assessment of RC buildings: linear vs. nonlinear methods.
- Local interventions: epoxy resin injection, RC and steel jacketing, FRP wrapping, etc.
- Global interventions: addition of RC walls or steel braces, energy dissipation devices, seismic isolators, mass dampers.
- Nonlinear dynamic analysis of buildings equipped with base-isolators, mass dampers or energy dissipation devices.

Learning Outcomes

By the end of the course, students will be able to retrofit RC buildings using both traditional and innovative intervention techniques. In addition, the course will also allow students to gain an understanding of the trade-off associated to the employment of simpler seismic assessment approaches, such as linear dynamic/ response spectrum analysis, with respect to the more advanced nonlinear static or dynamic analysis methods.