

## Structural Vulnerability and Resilience (CEGE0051)

### Description

The course has several strands: it introduces the concepts of risk and resilience of the built environment to earthquake and other natural hazards. It introduces the concept of loss mitigation at different scales and for different domains. It provides tools for the assessment of seismic behaviour of non seismic designed structures, within the framework of Probabilistic Performance Based Assessment. It provides procedures and tools for the computation of their fragility and vulnerability. It compares assessment approaches and safety requirements from different codes in earthquake prone countries worldwide. It presents traditional and novel strengthening techniques and technologies for seismic retrofitting. It develops criteria for the choice of appropriate strengthening interventions and methods for the detailed design of such interventions for a range of substandard structures, using the concepts of capacity based design and performance based design. Particular attention is paid to Reinforced Concrete Structures and Unreinforced Masonry Structures.

Learning outcomes:

- Ability to identify structural deficiencies in existing structures exposed to seismic action.
- Understanding of socioeconomic consequences of structural damage and the process of recovery
- Proficiency in computing response of existing concrete and masonry structures to seismic performance target for given seismic intensity and return period.
- Proficiency in deriving fragility and vulnerability functions for single structures or structural types
- Proficiency in the design of most common strengthening techniques for RC structures and load bearing masonry structures

### Key information

<b>Year</b>	2019/20
<b>Credit value</b>	15 (150 study hours)
<b>Delivery</b>	PGT L7, Campus-based
<b>Reading List</b>	<a href="#">View on UCL website</a>
<b>Tutor</b>	<a href="#">Prof Dina D'Ayala</a>
<b>Term</b>	Term 2
<b>Timetable</b>	<a href="#">View on UCL website</a>

### Assessment



- Written examination (main exam period): 70%
- Coursework: 30%

### Find out more

For more information about the department, programmes, relevant open days and to browse other modules, visit [ucl.ac.uk](http://ucl.ac.uk)



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