



### University of Nicosia, Cyprus

<b>Course Code</b> CEE-454	<b>Course Title</b> Earthquake Engineering	<b>ECTS Credits</b> 5
<b>Department</b> Engineering	<b>Semester</b> Spring, Fall	<b>Prerequisites</b> CEE-321
<b>Type of Course</b> Required	<b>Field</b> Civil & Environmental Engineering	<b>Language of Instruction</b> English
<b>Level of Course</b> 1 <sup>st</sup> Cycle	<b>Year of Study</b> 4 <sup>th</sup>	<b>Lecturer(s)</b> Dr Marios Kyriakides
<b>Mode of Delivery</b> Face-to-face	<b>Work Placement</b> N/A	<b>Co-requisites</b> None

#### Objectives of the Course:

The main objectives of the course are to:

- Provide the student with up-to-date information on planning, analysis and design of earthquake resistant building structures.
- Illustrate aspects of seismic design and detailing.
- Discuss aspects of ground motion significant to seismic resisting behavior.
- Stimulate students' interest for research and development in the earthquake engineering field.

#### Learning Outcomes:

After completion of the course students are expected to:

- Develop sound engineering judgment.
- Have a general consensus on the appropriate approaches to seismic design and proper detailing issues.
- Decide on configuration aspects that affect the seismic response performance of structural systems.
- Prepare and justify research questions for post-graduate studies and development.

#### Course Contents:

- Seismicity. Causes of Earthquake. Fault Sources. Seismic Waves. Damage mechanisms.
- Characteristics of earthquake ground motion. Factors influencing. Earthquake response spectra. Influence of magnitude and duration on response.
- Dynamic equilibrium. SDOF systems' elastic and inelastic response.
- Seismic design. Equivalent static lateral force procedure.
- Code provisions' philosophy. Basic issues of Eurocode 8.
- Configuration characteristics and their effects. Seismic significance of architectural considerations. Seismic issues in the design process.
- Drift design. P-Delta and lateral stability.

- Diaphragm behavior and rigidity. Factors influencing.
- Seismic resisting design of structures.
- Structural seismic control. Energy dissipation. Seismic Isolation.

**Learning Activities and Teaching Methods:**

- Discussion relevant to decisions on seismic configurations of structural systems.
- Lectures on the related theory and application through power point presentation.
- Provide simple problem solving procedures through selected examples.
- Form research questions on proposals for further development. .

**Assessment Methods:**

- Homework assignment
- In class presentations of research study questions
- Midterm and Final project evaluation

**Required Textbooks/Reading:**

Authors	Title	Publisher	Year	ISBN
Farzad Naeim	THE SEISMIC DESIGN HANDBOOK	Chapman and Hall/ Thomson Publishing	2006	0-412-07891-0

**Recommended Textbooks/Reading:**

Authors	Title	Publisher	Year	ISBN
Wai-Fah Chen & Charles Scawthorn	Earthquake Engineering Handbook	CRC PRESS, Hawaii University	2003	0-8493-0068-1
Steven L. Kramer	Geotechnical	Prentice Hall	1996	0-13-374943-6