UNIVERSITY of NICOSIA

Course Syllabus

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

Course Objectives:

The main objectives of the course are to:

- introduce aspects of ground motion significant to seismic resisting behaviour;
- illustrate aspects of seismic design and detailing;
- provide the student with up-to-date information on planning, analysis and design of earthquake resistant building structures;
- stimulate students' interest for research and development in the earthquake engineering field.

Learning Outcomes:

After completion of the course students are expected to be able 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.

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Course Content:

- Seismology. 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, MDOF 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.
- Diaphragm behaviour and rigidity. Factors influencing.
- Nonlinear static (pushover) analysis. P-delta and lateral stability.
- Seismic resistance design of structures.
- Introduction to structural seismic control. Energy dissipation. Seismic isolation.

Learning Activities and Teaching Methods:

Lectures, in-class examples and exercises, and homework assignments.

Assessment Methods:

Homework assignments, mid-term exam, and final exam.

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
The Seismic Design Handbook, 2nd Edition	Farzad Naeim	Springer	2001	978-0792373018

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Earthquake Engineering Handbook	Wai-Fah Chen & Charles Scawthorn	CRC PRESS, Taylor & Francis Group	2002	978-0849300684

Geotechnical Earthquake Engineering	Steven L. Kramer	Prentice Hall	1996	978-0133749434
Dynamics of Structures, 4th Edition	Anil K. Chopra	Prentice Hall	2011	978-0132858038
Seismic Design, Assessment and Retrofitting of Concrete Buildings: based on EN-Eurocode 8	Michael N. Fardis	Springer	2009	978-1402098413