## Course Outline

### General

<table>
<thead>
<tr>
<th>SCHOOL</th>
<th>ENGINEERING SCHOOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACADEMIC UNIT</td>
<td>CIVIL ENGINEERING DEPARTMENT</td>
</tr>
<tr>
<td>LEVEL OF STUDIES</td>
<td>UNDER GRADUATE</td>
</tr>
<tr>
<td>COURSE CODE</td>
<td>2307551</td>
</tr>
<tr>
<td>SEMESTER</td>
<td>7th</td>
</tr>
<tr>
<td>COURSE TITLE</td>
<td>Design of Earthquake Resistant Structures</td>
</tr>
</tbody>
</table>

#### Independent Teaching Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Weekly Teaching Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures and classwork</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).

#### Course Type

<table>
<thead>
<tr>
<th>Type</th>
<th>Specialization Course</th>
</tr>
</thead>
</table>

#### Prerequisite Courses:

<table>
<thead>
<tr>
<th>Courses</th>
<th>NO</th>
</tr>
</thead>
</table>

#### Language of Instruction and Examinations:

<table>
<thead>
<tr>
<th>Language</th>
<th>Greek</th>
</tr>
</thead>
</table>

#### Is the Course Offered to Erasmus Students

<table>
<thead>
<tr>
<th>Offered to Erasmus Students</th>
<th>NO</th>
</tr>
</thead>
</table>

#### Course Website (URL)

|---------------|---------------------------------------------------|
Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A
- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

The aim of the course is to give the students fundamental concepts of technical seismology, basic concepts of current seismic codes and skills for the evaluation of the seismic response of structures.

Upon completion of the course, students will have:
1. Basic knowledge of engineering seismology for the cause of earthquakes, recording of earthquakes, seismometry, seismic waves, accelerographs.
2. In-depth knowledge and critical understanding of the theory and principles of the dynamic response of the structures and the seismic design.
3. Knowledge and understanding of the response spectrum.
4. Knowledge and skills in the processing of accelerographs and the creation of response spectra using appropriate software.
5. Knowledge and skills in the calculation and evaluation of the dynamic response of single and multi-degree of freedom systems in seismic excitations.

Specifically, students will be able to:
1. Have adequate comprehension skills of the concepts of technical seismology.
2. Evaluate the seismic response of single and multi-degree of freedom systems with elastic or inelastic behaviour.
3. Evaluate the seismic response of systems with torsional response.
4. Deeply understand the seismic behaviour of a structure through the evaluation of important parameters of the inelastic response, as the ductility, behaviour factor and overstrength.
5. To study and evaluate the capacity of a structure and suggest solutions for its improvement
6. Develop personal responsibility and offer scientific opinion.
7. Manage time in an appropriate manner.

General Competences
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Team work
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
Others...

Specifically, students will be able to perform:
Search, analysis and synthesis of data and information, using the necessary technologies.
Decision Making.
Autonomous work.

(3) Course Content

2. Elastic seismic response of single-degree-of-freedom systems.
3. Equation of motion, Free vibrations with or without damping, Earthquake response.
11. Demonstration of the dynamic response of model structures.

(4) TEACHING and LEARNING METHODS - EVALUATION

<table>
<thead>
<tr>
<th>DELIVERY</th>
<th>Face-to-face, Distance learning, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</td>
<td>Teaching using ICT, Communication and Electronic Submission</td>
</tr>
<tr>
<td>TEACHING METHODS</td>
<td>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td>
</tr>
<tr>
<td>Activity</td>
<td>Semester workload</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Lectures</td>
<td>39</td>
</tr>
<tr>
<td>Classwork</td>
<td>26</td>
</tr>
<tr>
<td>Preparation for Project</td>
<td>30</td>
</tr>
<tr>
<td>Personal Study</td>
<td>80</td>
</tr>
<tr>
<td>Course total</td>
<td>175</td>
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</tbody>
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STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure
Language of evaluation: Greek

Final written examination: 80%
Preparation for the project: 20%

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

(5) ATTACHED BIBLIOGRAPHY