

<i>Name of Course</i>	<b>Seismic Design</b>
<i>Course code</i>	<b>MSM414ANEP</b>
<i>Weekly hours: lect/pract/lab</i>	<b>2 / 0 / 0</b>
<i>Number of Credits</i>	<b>3</b>
<i>Program</i>	<b>Structural Engineering MSc/ obligatory</b>
<i>Evaluation</i>	<b>midsemester grade</b>
<i>Semester</i>	<b>spring semester</b>
<i>Prerequisites</i>	<b>MSM412ANEP Structural dynamics</b>
<i>Department</i>	<b>Department of Civil Engineering</b>
<i>Responsible and lecturers</i>	<b>Ivica GULJAS</b>

## OBJECTIVES

The course provides comprehensive and practical knowledge and skills for all engineers, designers and analysts of earthquake resistant structures. It deals with understanding of how structures respond to ground shaking as well as with improved forms of analysis and assessment (especially according to the Eurocode 8), the retrofit of existing buildings, building contents and seismic isolation.

## CONTENTS

**General Course Description and Main Content:** The course describes the earthquakes, their effect on built structures, and presents the seismic design strategies according to the Eurocode 8. Its principal ingredients in an earthquake-resistant design can be categorised as follows:

- A sound structural concept
- An understanding of the way in which the structure will behave
- The application of engineering common sense to the fact that the building may be violently shaken
- Good detailing
- Detailed elastic analysis of structure
- Dynamic analysis of simple models.

### Schedule:

1. The lessons from earthquake damage
2. Ground motion
3. The calculation of structural response
4. Conceptual design and seismic codes of practice
5. Seismic analysis of reinforced concrete and masonry structures according to the Eurocode 8
6. Assessment and strengthening of existing buildings
7. Exam

## EVALUATION AND GRADING

**Attendance:** Attending is required all classes. In case of unexcused absence from more than 30% of the total number of lesson will be grounds for failing the class. To be in class at the beginning time and stay until the scheduled end of the lesson is required, tardiness of more than 20 minutes will be counted as an absence. In the case of an illness or family emergency, the student must present a valid excuse, such as a doctor's note.

**Signature / Grading:** Attendance is required in the classes, and will impact the grade (max. 10%). The students are required to be punctual in the class. The continuous following of the subjects and taking notes is mandatory. The subject of the missed class has to be worked out by the student based on the notes of the classmates and reference reading materials. 40% project, 10% attendance and 50% written exam

### Grading Scale:

- 0 – 50 % failed (1)
- 51 – 62 % passed (2)
- 63 – 73% satisfactory (3)
- 74 – 84 % good (4)
- 85 – 100 % excellent (5)

## READINGS AND REFERENCE MATERIALS

- [1st] Victor Gioncu, Federico Mazzolani: Earthquake engineering for structural design, Spon Press, 2011
- [2nd] Andrew Charleson: Seismic design for architects, Elsevier, Oxford, 2008
- [3rd] Chopra, Anil K: Dynamics of Structures: Theory and Applications to Earthq. Eng., Prentice-Hall, 1995
- [4th] Mazzolani, F.M., Piluso, V.: Theory and Design of Seismic Resistant Steel Frames, E&FN Spon, 1996

SCHEDULE

	TEACHING PERIOD, TEACHING WEEKS															EXAM PERIOD						
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	1.	2.	3.	4.	5.		
2019/2020. II. SEMESTER																						
Number of Lecture and Practice					1-2		3-4	4-5				5		6		7		Signature, midsemester grade can not be fulfilled				
Exams															x							
Signature and midsemester grade													Sign.									
Planned exam time																						

3<sup>rd</sup> February 2020.

Ivica GULJAS

responsible lecturer