

Course information in English

General course information:

Course title:	Reinforced Concrete Design III	Course code:	CE09_S03
Credits:	5	Work load (hours):	150
Course level:	Undergraduate <input checked="" type="checkbox"/>	Graduate	<input type="checkbox"/>
Course type:	Mandatory <input checked="" type="checkbox"/>	Selective	<input type="checkbox"/>
Course category:	Basic <input type="checkbox"/>	Orientation	<input checked="" type="checkbox"/>
Semester:	9 th	Hours per week:	4
Course objectives (capabilities pursued and learning results):			
Behavior and design of R/C structures under seismic loading for buildings as a whole, as well as for individual structural elements. Basic concepts of plasticity theory for the design of R/C structures (ductile types of failure for seismic loads). Expected modes of failure and appropriate steel reinforcement details for specific types of structural elements. The reinforced concrete structural elements of which the ductile design is dealt with in this course are the following: beams, columns, joints of frames, walls, coupling beams of coupled shear walls, foundations and short columns. Furthermore, design for slenderness effects and for punching shear are also included. The course is based on the design philosophy and the structural design provisions of the Eurocodes.			
Prerequisites:			
1. Reinforced Concrete Design I, II 2. Mechanics I			

Instructor's data:

Name:	Christos Papakonstantinou
Level:	Assistant Professor
Office:	Civil Eng. Building - 1 st Floor
Tel. - email:	24210 74160 - cpapak@uth.gr
Other tutors:	-

Specific course information:

Week No.	Course contents	Hours	
		Course attendance	Preparation
1	Design for shear under seismic loading	4	2
2	Design based on plasticity concepts	4	2
3	Capacity design	4	3
4	Capacity design	4	3
5	Design for lateral confinement	4	2
6	Design of beam-column joints	4	2
7	Detailing of joints-Anchorage of reinforcement	4	3
8	Numerical example on design of reinforced concrete frames (steel reinforcement detailing)	4	3
9	Design for second-order effects	4	3
10	Design and reinforcement detailing for slabs and column bases against punching	4	3
11	Design of foundations	4	3
11	Design of ductile walls	4	5
12	Design of coupling beams of coupled shear walls	4	2
13	Design of columns with low shear length ratio	4	3

Additional hours for:

Class project	Examinations	Preparation for examinations	Educational visit
40		20	

Suggested literature:

1. Eurocode 8 part 1 (EN1998-1)
2. Eurocode 2 part 1-1 (EN1992-1-1)
3. Greek Code for R/C Design (2000)
4. Greek Code for Aseismic Design
5. Reinforced Concrete Structures (Park & Paulay, ed. Wiley)
6. Designers' Guide to EN 1998-1 and EN 1998-5, M.N.Fardis, E.Carvalho, A.Elnashai, E.Faccioli, P.Pinto, A.Plumier, Thomas Telford.
7. Seismic Design, Assessment and retrofitting of Concrete Buildings, M.N.Fardis, Springer.

Teaching method (<i>select and describe if necessary - weight</i>):		
Teaching	<input checked="" type="checkbox"/>	60%
Seminars	<input type="checkbox"/>	-
Demonstrations	<input type="checkbox"/>	-
Laboratory	<input type="checkbox"/>	-
Exercises	<input checked="" type="checkbox"/>	40%
Visits at facilities	<input type="checkbox"/>	-
Other (<i>describe</i>):	<input type="checkbox"/>	-
Total		100%

Evaluation method (<i>select</i>)- weight :				
	<i>written</i>	<i>%</i>	<i>Oral</i>	<i>%</i>
Homework	<input type="checkbox"/>		<input type="checkbox"/>	
Class project	<input checked="" type="checkbox"/>	30	<input checked="" type="checkbox"/>	20
Interim examination	<input type="checkbox"/>		<input type="checkbox"/>	
Final examinations	<input checked="" type="checkbox"/>	50	<input type="checkbox"/>	
Other (<i>describe</i>):	<input type="checkbox"/>		<input type="checkbox"/>	