

Course unit title:	Analysis and Design of structural Systems		
Course unit code:	CE 420		
Type of course unit:	Compulsory		
Level of course unit:	Bachelor (1st Cycle)		
Year of study:	3		
Semester when the unit is delivered:	8 (Spring)		
Number of ECTS credits allocated :	6		
Name of lecturer(s):	Dr. Panicos Papadopoulos		
Learning outcomes of the course unit:	<ol style="list-style-type: none"> <li>1. Ability to integrate topics from various civil engineering disciplines in the design of buildings.</li> <li>2. Understand the behaviour of structural systems in terms of stability and determinacy, load distribution and redistribution</li> <li>3. Have the required expertise to be able to carry out a computer-assisted analysis and be able to determine if values reported by a commercial program are good or invalid.</li> <li>4. Design Structural Systems</li> <li>5. Develop critical thinking skills necessary to handle open-ended design problems, including analyzing and assessing multiple building configurations.</li> </ol>		
Mode of delivery:	Face-to-face		
Prerequisites:	CE300, CE310, CE410	Co-requisites:	
Recommended optional program components:			
Course contents:	<p><b>Introduction</b></p> <ul style="list-style-type: none"> <li>• Structural systems</li> </ul> <p><b>Floor Systems</b></p> <ul style="list-style-type: none"> <li>• Equivalent Frame Method</li> <li>• Design as per EN1992. EN1998 Considerations</li> <li>• Discretization and Finite Element analysis of Floor Systems.</li> </ul> <p><b>Lateral Force Systems</b></p> <ul style="list-style-type: none"> <li>• Design of Moment resisting frames as per EN1992 and EN1998 Considerations.</li> <li>• Design of Shear Walls.</li> </ul> <p><b>Design Foundation Systems</b></p> <ul style="list-style-type: none"> <li>• Various Foundation Systems</li> <li>• Loads on Foundation Systems.</li> <li>• Individual Footings to EN1998-5</li> <li>• Raft foundation design</li> <li>• Design of Retaining Walls</li> </ul>		
Recommended and/or required reading:			
Textbooks:	Codes EC1, EC2, EC3, EC4, EC5, EC7 and EC8		
References:	<ul style="list-style-type: none"> <li>• Journal Articles and Case Studies</li> <li>• W. H. Mosley, Reinforced Concrete Design to Eurocode 2, Publisher: MacMillan Pub Ltd.; ISBN: 033360878X; (Dec 1996)</li> </ul>		

Planned learning activities and teaching methods:	The course will be presented through lectures in class. The aim of lectures is to lay down the concepts, explain to students their importance in practical applications, to analyse key theoretical principles and allow for questions related to issues that may come up during the presentation. Part of the material is presented using visual aids (normally in Power Point presentations) which allow the instructor to present related figures and photographs that will assist understanding of principles and methods. The learning process is enhanced through practical design projects. Although the course material (notes presentations etc are available, students are strongly encouraged to read the subject textbook as well as to perform their own research on particular aspects or practical applications and problems. Interaction with students is achieved through the class website, and during office hours or by appointment in order to provide any necessary tutoring.
Assessment methods and criteria:	<ul style="list-style-type: none"> <li>• Projects 50%</li> <li>• Final Exam 50%</li> </ul>
Language of instruction:	English
Work placement(s):	No