

Study Programme: Civil Engineering
Course Unit Title: Concrete Structures 2
Course Unit Code: 049
Name of Lecturer(s): Associate Professor Danica Goleš
Type and Level of Studies: Undergraduate Academic Studies
Course Status (compulsory/elective): Compulsory
Semester (winter/summer): Summer
Language of instruction: English
Mode of course unit delivery (face-to-face/distance learning): Face-to-face and/or distance learning
Number of ECTS Allocated: 5
Prerequisites: Concrete Structures 1
<p>Course Aims:</p> <p>Acquiring knowledge about analysis, shaping, reinforcement and construction of RC crane girders, foundations, RC slabs and shell structures, bunkers, silos, reservoirs and water towers. Introduction to basic principles of design of multi-storey buildings. Introduction to basic principles and elements of industrial construction of reinforced concrete structures.</p>
<p>Learning Outcomes:</p> <p>Qualification for independent calculation and adoption of materials, shapes, dimensions and reinforcement of RC crane girders, foundations, RC slabs and shell structures, bunkers, silos, reservoirs and water towers, and their graphical representation for the project of structure. Basic knowledge of the basic principles of design of multi-storey buildings and industrial construction of reinforced concrete structures</p>
<p>Syllabus:</p> <p><i>Theory</i></p> <p>Actions on structures. RC slabs - Shaping; Structural analysis; Dimensioning; Reinforcements. Rectangular one-way solid RC slabs. Rectangular two-way solid RC slabs. Continuous rectangular two-way solid RC slabs. Trapezoidal, triangular and circular solid RC slabs. RC ribbed floor structures. RC waffle floor structures. RC flat slabs and slabs with enlarged column head. RC stairs. Prefabricated RC floor structures. RC crane girders. RC foundations. RC walls. Design and calculation of multi-storey RC framed buildings. RC shells and folded plate structures. Design and calculation of RC bunkers, silos, reservoirs and water towers. Industrial construction of RC elements: slabs, beams, columns, frames and footings. Structural characteristics, fabrication, transportation and installation of elements.</p> <p><i>Practice</i></p> <p>Week by week practice is following theoretical lectures, presenting the numerical examples. Student's work on the individual assignments under the teacher's guidance.</p>
<p>Required Reading:</p> <ol style="list-style-type: none"> 1. EN 1992-1-1:2004 Eurocode 2: Design of concrete structures - Part 1-1: General rules and rules for buildings 2. EN 1991 Eurocode 1: Actions on structures 3. Subramanian, N.: Design of Reinforced Concrete Structures, Oxford University Press, 2013. 4. Toniolo, G., di Prisco, M.: Reinforced Concrete Design to Eurocode 2, Springer, 2017. 5. Bhatt, P., MacGinley, T. J., Choo, B. S.: Reinforced Concrete Design to Eurocodes, CRC Press, Boca Raton, FL, 2014. 6. Calavera, J.: Manual for Detailing Reinforced Concrete Structures to EC2, Spon Press, New York, 2012.

Weekly Contact Hours: 4	Lectures: 2	Practical work: 2	
Teaching Methods: Lectures, exercises, consultations and individual assignments under the teacher's guidance			
Knowledge Assessment (maximum of 100 points): 100			
Pre-exam obligations	points	Final exam	points
Active class participation	5	written exam	30
Practical work	5	oral exam	30
Preliminary exam(s)		
Colloquia and seminar paper	30		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			