

Study program: Urban Engineering			
Type and level of studies: Bachelor Academic Studies			
Course unit: Concrete and concrete structures			
Teacher in charge: Nenad Grujović			
Language of instruction: <i>English</i>			
ECTS: 6			
Prerequisites: None			
Semester: <i>Summer Semester</i>			
Course unit objective Attending this course, the enrolled students will meet basic and periodical loading of concrete structures, calculation of line and surface elements in concrete structures based on theory of load capacity and properties of the concrete ingredients.			
Learning outcomes of Course unit After the course completion, the students will be able to calculate line and surface elements in concrete structures based on theory of load capacity and properties of the concrete ingredients.			
Course unit contents <i>Theoretical classes:</i> Material properties, joint work of concrete and steel. Roll of reinforcement in concrete structures, Stress phases during the bending of AB beam. Loading and influence on structures, Safety factor for combined loading cases. Central loading of line beams. 1. test Eccentric load on line beams without buckling. Large and small eccentricity, Bended line beams – rectangular and T cross section, Single and double reinforcement of cross section. Anchoring of reinforcement. 2. Test Dimensioning of AB slabs reinforced with the main reinforcement in one direction (cantilever slab, simple slab and slabs with overhangs), Slab across multiple supports (continuous slab), Dimensioning of AB slabs reinforced with the main reinforcement in two orthogonal directions (single slabs), Interfloor prefabricated ceiling (FERT, TM3, TM5), stairs, Eigenstresses in tension. Calculation of reinforcement for reception of shear stresses, Introduction to prestressing of structures. Steel for the prestressing. Types of preload. Possible influences on decreasing of prestressing force. 3. Test. <i>Practical classes:</i> Exercise (Exercise follow the lectures)			
Literature 1. M.D. Kotsovos, M.N. Pavlovic, Structural concrete, Thomas Telford, 1995 2. Group of authors: BAB '87., JUDIMK, Beograd, 1989.			
Number of active teaching hours			Other classes:
Lectures: 30	Practice: 45	Other forms of classes: Independent work:	
Teaching methods			
Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures	5	oral examination	30
practical classes/tests	5	written examination	30
Seminars/homework	30	
Grading system			
Grade	No. of points	Description	
10	91-100	Excellent	
9	81-90	Exceptionally good	
8	71-80	Very good	
7	61-70	Good	
6	51-60	Passing	
5	<51	Failing	