Course Unit Descriptor

Study Programme: Civil Engineering

Course Unit Title: Theory of Concrete Structures 2

Course Unit Code: GG28

Name of Lecturer(s): Vukobratović Vladimir, Starčev-Ćurčin Anka

Type and Level of Studies: bachelor

Course Status (compulsory/elective): elective

Semester (winter/ summer): summer

Language of instruction: english

Mode of course unit delivery (face-to-face/distance learning): face-to-face

Number of ECTS Allocated: 5

Prerequisites: none

Course Aims:.

Acquiring advanced academic and professional knowledge in the field of the design and detailing of reinforced concrete and prestressed structures according to serviceability limit states and enabling students to design and detail reinforced concrete and prestressed cross-sections and members

Learning Outcomes:

Students possess advanced academic and professional knowledge in the field of the design and detailing of reinforced concrete and prestressed structures according to serviceability limit states. They are able to solve problems of different levels of complexity on their own, as well as in communication and interaction with others. They are entrepreneurial and can lead projects of different complexity by respecting the ethical standards of their profession. They have a positive attitude towards lifelong learning and personal and professional development.

Syllabus.

Shrinkage and creep of concrete. Serviceability limit states in concrete structures. Stress limitation in concrete and steel. Crack width control. Deflection control. Vibrations. Introduction to prestressed concrete. Types of prestressing. Material properties. Tendons. Ducts. Anchorages. Prestressing equipment. Protection of tendons. Tendon layout selection. Prestressing effects in ultimate and serviceability limit states. Immediate and time dependent losses of prestressing force. Validation of stress limit state and determination of necessary prestressing force. Transfer of prestressing force. Structural detailing of prestressed members.

Required Reading:

Relevant literature in English, tbd

Weekly Contact Hours:2	**Lectures: 2**	**Practical work: 2**

Teaching Methods:

Lectures, practical classes, consultations. The theoretical part of the study material is presented at lectures through presentations of individual thematic units, followed by the appropriate examples from engineering practice for the sake of easier perceiving and understanding. At practical classes, the study material is processed through the solving of practical problems with the active participation of students. In addition to lectures and exercises, consultations are held regularly in order to provide students with answers to additional questions related to the study material.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Attendance			
Computer exercises			
Tests (4x)			