Course Unit Descriptor

Study Programme: Civil Engineering		
Course Unit Title: Durability and Assessment of Concrete Structures		
Course Unit Code: GG504		
Name of Lecturer(s): Prof. dr Vlastimir Radonjanin, Prof. dr Mirjana Malešev		
Type and Level of Studies: Master Level		
Course Status (compulsory/elective): compulsory		
Semester (winter/summer): Winter		
Language of instruction: English		
Mode of course unit delivery (face-to-face/distance learning): Face-to-face		
Number of ECTS Allocated: 6		
Prerequisites: None		
Course Aims: Obtaining knowledge on basic aspects of the durability of concrete structures, and methodologies and methods for assessing the real condition of concrete and prestressed structures.		
Learning Outcomes: Acquired knowledge is to be used in professional courses and engineering practice. Student is competent to utilize diverse nondestructive and destructive methods for investigating, registering and classifying defects and damages, determining causes of their occurrence and for assessing real condition of concrete and prestressed structures.		
Syllabus: Durability of concrete structures: causes, failure mechanisms and forms of damages of concrete and reinforcement (physical and chemical corrosion), properties to obtain satisfactory durability, strategy for designing building structures from the aspect of demanded durability. Destructive and non-destructive investigation methods (equipment, procedures, application possibilities). Defects of reinforced concrete and prestressed concrete structures. Classification and damage appearances of reinforced concrete and prestressed concrete structures due to structure overload, non-uniform settlement and accidental actions (fire, earthquake, explosion, etc.). Methodologies for monitoring and assessing structure conditions. Technical regulative referring to control monitoring and providing durability of concrete structures. Examples of monitoring and assessment of characteristic structures.		
Required Reading: Relevant literature in English TBD		
Weekly Contact Hours: 4	**Lectures:** 2	**Practical work:** 0
Teaching Methods: Within lectures, students are delivered presentations with photographs, tables, diagrams, formulas and emphasised texts – definitions to provide explanations for the content determined by the syllabus. There are also short thematic films. At laboratory practice students can observe and individually perform diverse non-destructive material investigations. At auditory practice students are presented with diverse structures where assessment has been performed in order to be better acquainted with methodologies, data processing and conclusion manners. Students have an obligation to work in a group of 5 and find a structure, make an Elaborate – a project in assessment, and defend it. All students have an obligatory professional excursion (a factory for repair materials and interesting structures under repair). The examination has an oral part. During the semester, the oral examination can be taken as two partial examinations		
Knowledge Assessment (maximum of 100 points):		

Pre-exam obligations	points	**Final exam**	points
Active class participation		written exam	
Practical work		oral exam	
Preliminary exam(s)		…….	
Seminar(s)			
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			