

COURSE		BRIDGES AND TUNNELS		
LECTURER		Asst. Prof. Naida Ademović Ph.D.		
STUDY	STATUS	SEMESTER	NUMBER OF LESSONS L+E	ECTS
B – C.E.	compulsory	6	2+1	4
OBJECTIVES				
<ul style="list-style-type: none"> □ To familiarize students with basic knowledge on planning, designing and construction of bridges and tunnels. 				
LEARNING OUTCOMES				
<ul style="list-style-type: none"> □ Distinguish and describe the basic stages of bridge and tunnel historical development. □ Distinguish and analyze the basic parts of bridges and tunnels. □ Describe the basic concepts of bridges of different systems and types. □ Describe the basic concepts of the tunnel construction of various systems and types □ Describe, analyze and argue the design procedures and construction of bridges and tunnels. □ Classify basic elements of bridges and tunnels as well as the planning, construction, design and maintenance. 				
COURSE CONTENT				
<ul style="list-style-type: none"> □ History of bridge construction (Bridges made of masonry, timber, metal, reinforced and prestressed concrete). □ Definition of the bridge; meaning of a bridge; general terms; names of parts. Materials for bridges. Types of bridges. Requirements for bridge construction: preliminary work; choice of place and position; foundation conditions; aperture size; the total length of the bridge; choice of vertical alignment; longitudinal and transverse downs; free profiles. □ Design and construction of bridges (the importance of the project, with the specificities of structural details for bridges, proportions, typical form of concrete bridges, a combination of concrete and steel, computer programs and design). □ Design concept and construction of bridges (girder bridges, arch and frame structures, cable-stayed bridges and suspension bridges □ Actions on bridges. Bridge equipment (bearings, expansion devices, drainage systems). □ Different procedures of bridge construction. □ Control, inspection and testing of bridges. □ Bridge management (durability and maintenance). □ Geomechanical planning tunnel structures (geological model mountain mass, the preparatory phase of construction, the construction phase). □ Methods of tunnel construction of the (the history of the construction of the tunnel, cyclic (conventional) methods, open construction, continuous (mechanical) methods, special methods of construction) □ Safety and tunnel construction. Static of tunnel structures. Security measures for tunnels and equipment. 				
RECOMMENDED LITERATURE				
<ul style="list-style-type: none"> □ "Konstruisanje mostova"- Jure Radic, Ana Mandic, Goran Puz, Hrvatska sveucilisna naknada, Zagreb 2005 □ "Tunnels - slides given by the lecturer 				
Examination procedure:				
<p>During the course the exam consists of two parts which are done in a written form. Each part is scored in the following way:</p> <p>Exam1 regarding bridges - 40 points, exam2 regarding tunnels - 40 points, program - 20 points, in total 100 points.</p> <p>a) If a student achieves 55% from each part (exam 1, exam 2 and defense of the program) a final mark is made in accordance with the scale prescribed by the Law on Higher Education. In the case that the student does not defend the program he receives a 0. There is no possibility for additional delivery of the program as it is a continuous project during exercises.</p> <p>b) If a student does not pass one part (exam 1 or exam 2) then he/she on the final exam takes the part that he/she did not pass in writing. The grade is formed in the same way as in a).</p> <p>c) A student that does not pass the part of the exam that he/she is taking under b) on the second term has to take an integral exam (bridges and tunnels) and the grade is formed as:</p> <p>50% points acquired during classes + 50% points acquired during the second term Exam cancellation: Students that passed both parts of the exam during the course (exam 1 and exam 2) and are not satisfied with the achieved results in one par, can cancelled it and take this part again during the final exam.</p>				