Course Unit Descriptor

Study Programme: Architecture
Course Unit Title: Structures in Architecture
Course Unit Code: A522
Name of Lecturer(s): Nikolić Dimitrije, Igor Džolev
Type and Level of Studies: bachelor
Course Status (compulsory/elective): elective
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: 5
Prerequisites: none
Course Aims:. Introducing students into the analysis and design of bearing structures in architecture, with mastering the principles of statics, loads and the equilibrium configurations of architectural structures.
Learning Outcomes: The ability of the visualization of the architectural structures' behaviour, inner forces flow and the transmission of loading, as well as the understanding the principles of their shaping and design. Students' capability for analysing and calculating simple structural systems.
Syllabus. The development of architectural structures and the principles of structuring in architecture. Elements of statics. The visualization of the flow of forces and the transmission of loadings – graphic methods of the equilibrium analysis: plan of forces, polygon of forces. Funicular structures: tensioned (simple suspended bridges and roofs), compressed (arches and vaults) and combined structures. Beams. The basics of technical theory of rod bending. The principles of analysis and calculation of planar linear girders and trusses within linear-elastic material behaviour: simply supported beam; overhanging beam; cantilever; three-pinned arch; Gerber girder; trusses. Introduction to statically indeterminate girders: one-clamped and double-clamped beam; two-pinned arch; clamped arch; continuous girders.
Required Reading: Relevant literature in English, tbd

Weekly Contact Hours:2	**Lectures: 3**	**Practical work:**

Teaching Methods: The visualization of forces by graphic statics methods, with the aim of the intuitively understanding the behaviour of architectural structures. Emphasizing the geometry i.e. shape as the primary property of a structure. Introducing the basic engineering concepts and putting numerical values into context with the clear role in a design process. The visualization of the loadings and structures' action as the base for the analytical expressions used in the analysis and calculations regarding bearing structures.
Knowledge Assessment (maximum of 100 points):

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