Course Unit Descriptor

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| **Study Programme: Architecture** |
| **Course Unit Title: Structures in Architecture** |
| **Course Unit Code: A522** |
| **Name of Lecturer(s): Nikolić Dimitrije, Radujković Aleksandra** |
| **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:**.<br><br>Introducing students into the analysis and design of bearing structures in architecture, with mastering the principles of<br><br>statics, loads and the equilibrium configurations of architectural structures. |
| **Learning Outcomes:**<br>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.<br>Students' capability for analysing and calculating simple structural systems. |
| **Syllabus**.<br>The development of architectural structures and the principles of structuring in architecture.<br>Elements of statics.<br>The visualization of the flow of forces and the transmission of loadings – graphic methods of the equilibrium analysis: plan of forces, polygon of forces.<br>Funicular structures: tensioned (simple suspended bridges and roofs), compressed (arches and vaults) and combined structures. Beams.<br>The basics of technical theory of rod bending.<br>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:**<br>Relevant literature in English, tbd |

| **Weekly Contact Hours:2** | **Lectures: 3** | **Practical work:** |
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| **Teaching Methods:**<br> The visualization of forces by graphic statics methods, with the aim of the intuitively understanding the behaviour of architectural structures.<br>Emphasizing the geometry i.e. shape as the primary property of a structure.<br>Introducing the basic engineering concepts and putting numerical values into context with the clear role in a design process.<br>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 |
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| Attendance | | | |
| Computer exercises | | | |
| Tests (4x) | | | |