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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | **Faculty of Civil Engineering and Architecture** |
| **GENERAL INFORMATION** |
| Study program  | Architecture |
| Study Module (if applicable) |  |
| Course title | STRENGTH OF MATERIALS |
| Level of study | Integrated studies  |
| Type of course | Obligatory  |
| Semester  |  Autumn  |
| Year of study  | 1st |
| Number of ECTS allocated | 2 |
| Name of lecturer/lecturers | Marina Mijalković |
| Teaching mode |  Lectures, Group tutorials, Individual tutorials |
| **PURPOSE AND OVERVIEW**  |
| Determining the state of stress and strain in a strained body, primarily the beam systems. Preparation for the design of girders with understanding the bearing system for the purpose of their further shaping. The acquired knowledge is the base for successful monitoring of the teaching and application in the courses that are the foundation for static and deformational design of structures. |
| **SYLLABUS**  |
| Geometrical characteristics of the plane surfaces: moments of inertia, Steiner's theorem, the principal moments of inertia and the principal axes, ellipse of inertia.Stress analysis: the concept of total, normal and shear stress, the fundamental theorem of the stress analysis, the conjugated shear stress theorem.Cross-sectional forces: a bar in 3D space and a bar in the plane, calculation of the internal cross/sectional forces, differential relations between the p, Q and M (distributed load, shear force and bending moment).The general case of the plane stress: stress in the inclined plane, the principal stresses, Mohr's circle of stress.Deformation analysis: axial and shear strain.Axial loading: stress and strain, Hooke's law and Poisson's law, Mohr's circle of stress.Pure bending: stress and strain, extremal axial stress values, Mohr's circle.Bending with shear: calculation of shear stress, component stresses, the principal stresses, Mohr's circle.Torsion of a cylindrical shaft.Buckling of compressed bars: Euler's buckling cases, critical buckling stress. |
| **LANGUAGE OF INSTRUCTION** |
| Serbian (complete course)  |
| **ASSESSMENT METHODS AND CRITERIA** |
| **Pre exam duties** | **Points** | **Final exam** | **points** |
| **Activity during lectures** | **10** | **Written examination** | **30** |
| **Practical teaching** | **15** | **Oral examination** | **35** |
| **Teaching colloquia** | **10** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |