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| **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | Faculty of Mechanical Engineering |
| **GENERAL INFORMATION** |
| Study Program | **Mechanical Engineering** |
| Study Module (if applicable) | - |
| Course Title | Strength of materials |
| Level of Study | ☒Bachelor | ☐ Master’s | ☐ Doctoral |
| Type of Course | ☒ Obligatory | ☐ Elective |
| Semester | ☐ Autumn | ☒ Spring |
| Year of Study | I |
| Number of ECTS Allocated | 7 |
| Name of Lecturer/Lecturers | Predrag S. Kozić, Dragan B. Jovanović |
| Teaching Mode | ☒ Lectures | ☐ Group tutorials | ☒ Individual tutorials |
|  ☐ Laboratory work | ☐ Project work | ☐ Seminar |
| ☐ Distance learning | ☐ Blended learning | ☐ Other |
| **Purpose and Overview (max. 5 sentences)** |
| To provide students with the knowledge, they need to successfully attend classes and solve the problems of machine elements and other specialized subjects.In the course Strength of materials, behavior of deformable bodies under the influence of combined loads is analyzed. Define the stresses and strains of elementary types of stress and combinations thereof. Various methods for determining the deformation of the static dererminate beams and indeterminate beams, frames and structural elements are exposed.  |
| **Syllabus (brief outline and summary of topics, max. 10 sentences)** |
| Introduction. External and internal forces. Types of stress states. Stresses and strains. Hooke's law.Axial strain. Static indeterminate problems of axial stress state. Villiot’s plan of displacement. Theorem of Menabrea. The dimensioning. The moments of inertia of flat surfaces. Two-dimensional stress state. Strain of thin pressure vessels. Shear. Three-dimensional stress state. Torsion. Pure bending. Bending of beams by forces. Obliquely bending. Elastic lines. Clebsch method. Graphoanalytical method. Clapeyron's theorem of the deformation work. Theorem on reciprocity of elastic displacements. Strain Energy Method (Castigliano's Theorem). Maxwell-Mohr method. Statically indeterminate problems in bending. Hypothesis about fracture of materials. The combined stress states. The excentric pressure and stretching. Bending and twisting combined. Buckling.  |
| **Language of Instruction** |
| ☒Serbian (complete course) | ☒ English (complete course) | ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course) |
| ☒Serbian with English mentoring | ☐ Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Assessment Methods and Criteria** |
| **Pre exam Duties** | **Points** | **Final Exam** | **Points** |
| **Activity During Lectures** | **10** | **Written Examination** | **40** |
| **Practical Teaching** | **10** | **Oral Examination** | **Max. 50**  |
| **Teaching Colloquia** | **40** | **Overall Sum** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |