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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | **Faculty of Civil Engineering and Architecture** |
| **GENERAL INFORMATION** |
| Study program  | **Civil engineering** |
| Study Module (if applicable) | Structural engineering |
| Course title | Finite elements method |
| Level of study | Master’s  |
| Type of course | Elective |
| Semester  | Autumn  |
| Year of study  | 1st |
| Number of ECTS allocated | 5 |
| Name of lecturer/lecturers | Slobodan Ranković |
| Teaching mode | Lectures; Group tutorials; Individual tutorials |
| **PURPOSE AND OVERVIEW**  |
| Introduction to construction modeling analysis using the finite element method - FEM. Mastery of the knowledge needed for the design of structures with FEM in static and dynamic analysis of systems. Training for the practical use of the acquired knowledge in solving the problems of statics and dynamics of structures in linear and non-linear analysis with FEM. |
| **SYLLABUS**  |
| Basis and principles of FEM. Modeling in FEM and FEM modeling in static analysis of systems. Bar elements in plane and space, as well as on an elastic surface. FEM modeling in static analysis of plates and shells. Line, triangular and quadrilateral finite elements - FE with in-plane loading/with loads in their own plane. FEM modeling indynamic analysis of systems: stiffness, mass and dumping. FEM solution to free and forced vibrations of structural systems. FEM modeling in non-linear analysis of systems. |
| **LANGUAGE OF INSTRUCTION** |
| Serbian (complete course)  |
| **ASSESSMENT METHODS AND CRITERIA** |
| **Pre exam duties** | **Points** | **Final exam** | **points** |
| **Activity during lectures** | **10** | **Written examination** | **40** |
| **Practical teaching** |  | **Oral examination** | **30** |
| **Teaching colloquia** | **20** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |