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| **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | Faculty of Mechanical Engineering |
| **GENERAL INFORMATION** |
| Study Program | **Engineering Management** |
| Study Module (if applicable) | - |
| Course Title | Modelling of Engineering Systems |
| Level of Study | ☒Bachelor | ☐ Master’s | ☐ Doctoral |
| Type of Course | ☒ Obligatory | ☐ Elective |
| Semester | ☒ Autumn | ☐ Spring |
| Year of Study | III |
| Number of ECTS Allocated | 7 |
| Name of Lecturer/Lecturers | Žarko Ćojbašić, Miloš Milošević, Boban Anđelković, Predrag Živković, Danijela Ristić Durrant |
| Teaching Mode | ☒ Lectures | ☐ Group tutorials | ☐ Individual tutorials |
| ☒ Laboratory work | ☒ Project work | ☒ Seminar |
| ☐ Distance learning | ☐ Blended learning | ☐ Other |
| **Purpose and Overview (max. 5 sentences)** |
| *Introduce students to the basics of modelling, simulation and identification of various engineering systems and processes, from the aspect of design, organization and control with realistic engineering systems. To provide students with basic skills and knowledge needed for development of mathematical models for typical classes of engineering systems, as a foundation for identification, design, optimization, organization and control with real engineering systems.*  |
| **Syllabus (brief outline and summary of topics, max. 10 sentences)** |
| **Theoretical lectures \*** Need for modelling and simulation. Goals and motivation. \* Principles of modelling. Classification of models. Simplifications, errors. \* Methods for modelling of objects and processes. Forming mathematical models. \* Object oriented system modelling and graphical modelling techniques. \* Simulation of objects and processes. Simulation models. \* Application of simulation in identification, design, optimization, organization and control of engineering systems. \* Integration of models for multidisciplinary systems. \* Contemporary software packages for modelling and simulation.**Practice \*** Modelling of typical classes of objects and processes. Examples of modelling and simulation in identification, design, optimization, organization and control of engineering systems. Examples of integration of models of different types. Model verification and its usability.  |
| **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** | **25** |
| **Practical Teaching** | **10** | **Oral Examination** | **25** |
| **Teaching Colloquia** | **30** | **Overall Sum** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |