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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) | Mechatronics and Control | | | | | | | |
| Course Title | Basics of Mechatronics Systems Modelling | | | | | | | |
| Level of Study | ☒Bachelor | | | ☐ Master’s | | | | ☐ Doctoral |
| Type of Course | ☐ Obligatory | | | ☒ Elective | | | | |
| Semester | ☒ Autumn | | | ☐ Spring | | | | |
| Year of Study | IV | | | | | | | |
| Number of ECTS Allocated | 6 | | | | | | | |
| Name of Lecturer/Lecturers | Miloš S. Milošević | | | | | | | |
| Teaching Mode | ☒ Lectures | | | ☒ Group tutorials | | | | ☒ Individual tutorials |
| ☒ Laboratory work | | | ☒ Project work | | | | ☒ Seminar |
| ☐ Distance learning | | | ☐ Blended learning | | | | ☐ Other |
| **Purpose and Overview (max. 5 sentences)** | | | | | | | | |
| *Introduction to modeling and simulation. The use of modern software packages for physical modeling and simulation of the dynamics of multi bodies with integration with software for computer control. Verification of the model and its use on practical examples of modeling and simulation of complex mechatronic systems.* M*odeling of complex mechatronic systems in which the functions are based on coupled effects of different physical areas. Identifying influential parameters and adjust complex mechatronic systems thus ensuring their proper function.* | | | | | | | | |
| **Syllabus (brief outline and summary of topics, max. 10 sentences)** | | | | | | | | |
| Introduction to modeling. Objectives. Motivation. The application of modeling and simulation in the identification, design and optimization of mechatronic systems. Principles and methods of modeling and simulation. Model classification. Simplifications. Faults. Modern software packages for modeling multi bodies. Comparative analysis of the features, benefits  and disadvantages. The virtual modeling of mechatronic systems. Modelling of physical models. Basics of modeling in  modern software packages. Forming models of mechatronic systems using a computer. Parametric models. Two-dimensional and three-dimensional models. Modeling components and complex mechatronic systems. Integration of models of various nature. Examples of modeling components of mechatronic systems, complex mechatronic systems. | | | | | | | | |
| **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** | | | **0** | | |
| **Practical Teaching** | | **10** | **Oral Examination** | | | **20** | | |
| **Teaching Colloquia** | | **60** | **Overall Sum** | | | **100** | | |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | | | |