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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 | Intelligent Control Systems |
| Level of Study | ☐Bachelor | ☐ Master’s | ☒ Doctoral |
| Type of Course | ☐ Obligatory | ☒ Elective |
| Semester | ☒ Autumn | ☐ Spring |
| Year of Study | II |
| Number of ECTS Allocated | 10 |
| Name of Lecturer/Lecturers | Žarko Ćojbašić |
| Teaching Mode | ☒ Lectures | ☐ Group tutorials | ☐ Individual tutorials |
| ☒ Laboratory work | ☒ Project work | ☒ Seminar |
| ☐ Distance learning | ☐ Blended learning | ☐ Other |
| **Purpose and Overview (max. 5 sentences)** |
| *Course aim is to introduce students to various techniques of analysis and design of contemporary intelligent control systems for diverse classes of mechatronic objects. Provide students with ability to define and design neuro, adaptive fuzzy and hybrid neuro-fuzzy and neuro-fuzzy-genetic control systems.*  |
| **Syllabus (brief outline and summary of topics, max. 10 sentences)** |
| ***Theory classes \**** Intelligent systems and their characteristics. Soft computing and computational intelligence. Integration of various soft computing techniques in hybrid systems. \* Artificial neural networks. Fuzzy systems. Genetic algorithms. \* Intelligence in mechatronics – control task. Intelligent control systems in mechatronics. \* Fuzzy control systems. Neuro controllers. Adaptive fuzzy controllers. Hybrid neuro-fuzzy controllers. Classification of hybrid neuro-fuzzy controllers. \* Neuro-fuzzy-genetic control systems.***Guided independent research \**** Preparation of students for self-directed research of references, journals and Internet contents in the field of intelligent control systems in mechatronics. Laboratory research. |
| **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** | **0** | **Written Examination****(2 term papers)** | **50** |
| **Practical Teaching** | **0** | **Oral Examination** | **50** |
| **Teaching Colloquia** | **0** | **Overall Sum** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |