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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 | Neuro and Fuzzy Modelling and Control |
| Level of Study | ☒Bachelor | ☐ Master’s | ☐ Doctoral |
| Type of Course | ☐ Obligatory | ☒ Elective |
| Semester | ☐ Autumn | ☒ Spring |
| Year of Study | IV |
| Number of ECTS Allocated | 5 |
| 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)** |
| *Introduce students to the basics of computational intelligence and especially of fuzzy logic, neural networks and genetic algorithms, as well as their application in solving complex modelling and control problems that cannot be efficiently treated by conventional techniques. Provide students with basic skills in application of computational intelligence in modelling and control design for intelligent mechatronic systems, with special emphasis on efficient usage of computer tools applicable for such tasks.* |
| **Syllabus (brief outline and summary of topics, max. 10 sentences)** |
| **Theoretical lectures \*** Combining numerical and qualitative information in engineering systems – intelligent approach based on usage of computational intelligence. \* Artificial neural networks. Fuzzy systems. \* Other significant techniques of computational intelligence. Genetic algorithms. \* Non linear modelling techniques in mechatronics. \* Intelligent control systems in mechatronics.**Practice \*** Realization of neuro-fuzzy and hybrid models and control systems by application of specialized Matlab and LabView modules. \* Practical realization of models and control systems by using experimental data obtained during lab work on other subjects or from laboratory system models. \* Simulation and physical implementation of intelligent control of laboratory 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** | **25** |
| **Practical Teaching** | **10** | **Oral Examination** | **25** |
| **Teaching Colloquia** | **30** | **Overall Sum** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |