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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | **Faculty of Electronic Engineering** |
| **GENERAL INFORMATION** |
| Study program  | Control Systems |
| Study Module (if applicable) | Automatic Control |
| Course title | Intelligent Machines |
| Level of study | [ ] Bachelor [x]  Master’s [ ]  Doctoral |
| Type of course | [ ]  Obligatory [x]  Elective |
| Semester  |  [ ]  Autumn [ ] Spring |
| Year of study  | 1 |
| Number of ECTS allocated | 4 |
| Name of lecturer/lecturers | Đorđević S. Goran |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [ ] Laboratory work [x]  Project work [x]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| The principles of operation and design of systems that have the intelligence to communicate with the environment, especially with a man. Understanding the motivations for the design of machines based on the principles of artificial intelligence from the viewpoint of perception, cognition and performance. Organization of intelligent machines, especially mobile robots. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Definitions of intelligent systems and subsystems. Definition of mechanical intelligence. Intelligence in decision-making. Differences between natural systems and machines. Movement and manipulation as the basis for the development of intelligence. Design principle of functional imitation of existing natural solutions. Biomimetics. Functional robustness of mechanical solutions for sake of control simplicity. Intelligent drive as a functional copy of the natural techniques of motion. Actuators with integrated sensors and controllers as the simplest way of control. Methods and techniques of modeling by interactions. Parametric and non-parametric models. Design of controller with the integrated model. Examples of intelligent machines, with an emphasis on walking, grasping, momentum and collision. |
| **LANGUAGE OF INSTRUCTION** |
| [x] Serbian (complete course) [x]  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** | **50** | **Oral examination** | **40** |
| **Teaching colloquia** | **0** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |