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| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | **Faculty** | | | Faculty of Mechanical Engineering | |
| **GENERAL INFORMATION** | | | | | | |
| Study program | | | | **Mechatronics and Control** | | |
| Study Module (if applicable) | | | | - | | |
| Course title | | | | Advanced control systems | | |
| Level of study | | | | ☐Bachelor ☒ Master’s ☐ Doctoral | | |
| Type of course | | | | ☐ Obligatory☒ Elective | | |
| Semester | | | | ☐ Autumn ☒Spring | | |
| Year of study | | | | I | | |
| Number of ECTS allocated | | | | 6 | | |
| Name of lecturer/lecturers | | | | Vlastimir D. Nikolić | | |
| 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 the analysis and design of the complex contemporary control systems, especially nonlinear and optimal control systems.*  *The course is targeting the solving problems in the domain of the development of the complex control systems.* | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| *1) Nonlinear automatic control systems. 2) Methods for analysis of nonlinear automatic control systems. 3) Lyapunov methods. 4)* *Popov's frequency method. 5) Harmonic linearization. 6)* A *natural nonlinearity systems, deliberately introduced nonlinearity systems (relay systems; variable structure systems). 7) Optimal control systems. 8) Method of dynamic programming. 9)* *Continuous linear square optimal regulators. 10)* *Projecting of the observer.* | | | | | | |
| **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** | | | | | | |