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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 | Д.2.3-И.3.20- Digital control system in mechatronics  |
| Level of study | ☐ Bachelor ☐ Master’s ☒ Doctoral |
| Type of course | ☐ Obligatory☒ Elective |
| Semester  | ☐ Autumn ☒Spring |
| Year of study  | I |
| Number of ECTS allocated | 10 |
| Name of lecturer/lecturers | Vlastimir Nikolić, Danijela Ristić-Durrant |
| 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 various techniques of the analysis and projecting the contemporary digital control systems for different classes of mechatronic objects. The course is targeting the training students for the calculation and design conventional digital controllers and compensators of mechatronic systems, multivariable and digital mechatronic systems with random disturbances.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| *1) Structure of digital control systems and the process of sampling. 2) Z - transform and discrete transfer functions. 3) Realization and characteristics of discrete transfer function. 4) The concept of the digital system state. 5) Stability of digital systems. 6) Designing of conventional digital controllers of mechatronic systems. 7) Designing of digital compensators of mechatronic systems. 8) Designing of multivariable digital systems. 9) Designing of digital mechatronic systems with random disturbances.10) Examples of digital 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** |