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| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | **Faculty** | | |  | |
| **GENERAL INFORMATION** | | | | | | |
| Study program | | | | Mechanical Engineering | | |
| Study Module (if applicable) | | | |  | | |
| Course title | | | | D.2.3-I.3.18 Digital and analog information processing in mechatronic systems | | |
| 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 | | | | Aca D. Micic | | |
| 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 digital and analog information processing to digital control of mechatronic systems. Training for the dimensioning and design of hardware for digital signal processing and digital filters to digital control of mechatronic systems. | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| * Introduction to operational amplifiers . * Basic circuits with operational amplifiers . * Active filters . * Oscillators and timers. * Voltage regulators . * Amplifiers for special purposes . * Analog switches . * Measurement and control circuits . * Fundamentals of digital signal processing. * Continuous signals . * Discrete signals . * AD and DA converters. * Continuous transformations of discrete signals. * Hardware for digital signal processing . * Design of digital filters . * IIR filter . * FIR filter . * Examples of digital filters . * Examples of digital control of 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** |  | | **Written examination** | | |  |
| **Practical teaching** |  | | **Oral examination** | | | **100** |
| **Teaching colloquia** |  | | **OVERALL SUM** | | | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | |