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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Electronic Engineering |
| **GENERAL INFORMATION** |
| Study program  | Electrical Engineering and Computing |
| Study Module (if applicable) | Electronics - Circuits and Systems |
| Course title | Analog Circuits |
| Level of study | [x] Bachelor [ ]  Master’s [ ]  Doctoral |
| Type of course | [x]  Obligatory [ ]  Elective |
| Semester  |  [x]  Autumn [ ] Spring |
| Year of study  | 3 |
| Number of ECTS allocated | 5 |
| Name of lecturer/lecturers | Petković M. Predrag, Srđan Đorđević |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [x] Laboratory work [x]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Give students an understanding of: the principle of operation, characteristics, analysis and design techniques of the basic building blocks used in analog and mixed signal electronic systems. Students will gain competence in the recognition and understanding of the basic building blocks used in analog and mixed signal electronic systems. It is expected for students to learn how to simulate circuits on system level, select topology of the circuits according to the given specifications as well as to implement analog functions in the analog and mixed signal electronic systems . |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Noise in electronic circuits: sources, manifestations, measure, techniques to reduce the influence of noise. Sources of Signals: transducer properties. Signal conditioning techniques. Differential line driving. Programmable-gain amplifiers. Wide Band Amplifiers. Low noise amplifiers. Current feedback amplifiers. Comparators. Instrumentation Amplifiers. True RMS to DC convertors. Voltage-to-Frequency converters. Frequency-to-voltage converter. Mixers. Phase locked loop - PLL. Lock-in amplifiers. Sample/Hold amplifiers. Chopper Amplifiers. Isolation amplifiers. Capacitive loads drive. SC circuits. Analog-to-digital converter. Digital-to-analog converter. Field Programmable Analog Arrays FPAA. Practical teaching: Simulation and implementation of the basic analog building blocks. Practical sessions include five laboratory exercises: 1. Three op-amp instrumentation amplifier techniques s 2. Chopper Stabilized Amplifier 3. RMS-DC converter 4. Phase Locked Loop 5. Lock in Amplifier |
| **LANGUAGE OF INSTRUCTION** |
| [x] Serbian (complete course) [x]  English (complete course) [ ]  Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)[x] 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** | **20** |
| **Practical teaching** | **50** | **Oral examination** | **20** |
| **Teaching colloquia** |  | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |