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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | The Faculty of Electrical Engineering |
| **GENERAL INFORMATION** |
| Study program  | Electrical Engineering and Computing |
| Study Module (if applicable) | Electronics |
| Course title | Digital Circuits and Systems Design |
| Level of study | ☐Bachelor ☐ Master’s ☒ Doctoral |
| Type of course | ☐ Obligatory ☒ Elective |
| Semester  |  ☒ Autumn ☐ Spring |
| Year of study  | 2 |
| Number of ECTS allocated | 10 |
| Name of lecturer/lecturers | Damnjanović S. Milunka |
| Teaching mode | ☒Lectures ☐Group tutorials ☐ Individual tutorials ☒Laboratory work ☐ Project work ☐ Seminar ☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Gaining the competence in reliable digital integrated circuits and systems design on cell level and on predesigned structures. It is assumed that students learn to use thetools for automatic synthesis, verification and physical-design of integrated circuits, based on VHDL description. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Digitalsystems and VLSI. CMOS technology. IC Design techniques. Transistor and layout. Wires, design rules, transistor sizing, layout-design tools. Combinational circuits and networks.Function, power, delay, parasitic effects, wires sizing, supplying great charges. Sequential circiuts. Clocking, clock generation, sequential systems design.. Subsystems design: Pipelining, data-path, shifters,adders, ALU,multipliers, ROM, RAM, FPGA,PLA. Architecture design. RTL synthesis, highlevel synthesis, low-power synthesis. CAD systems and algorithms. Simulation, layout synthesis, layout analysis, timing analysis and optimisation, logic synthesis, test-generation, hardware/software codesign. Design for testability. Reliability, faut-tolerance, BIST architectures. |
| **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** | **50** | **Oral examination** | **50** |
| **Teaching colloquia** |  | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |