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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  |  Faculty of Electronic Engineering |
| **GENERAL INFORMATION** |
| Study program  | Electrical Engineering and Computing |
| Study Module (if applicable) | Electronics |
| Course title | Digital Electronics |
| Level of study | [x] Bachelor [ ]  Master’s [ ]  Doctoral |
| Type of course | [x]  Obligatory [ ]  Elective |
| Semester  |  [ ]  Autumn [x] Spring |
| Year of study  | 2 |
| Number of ECTS allocated | 6 |
| Name of lecturer/lecturers | Jevtić S. Milun |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [x] Laboratory work [ ]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| The main objective of the course is that students firstly explore the general characteristics of digital circuits as well as the basic problems that emerge during its implementation and application. Furthermore, to gain knowledge about the basic structure and functionality of digital circuits that microcontrollers and microcomputers are made of. Finally, to master the ways of functional and behavioral description of digital circuits. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Basic logic gates and their characteristics. Circuits with the high impedance control on the output. BUS HOLD circuit. Combinational circuits: encoder, priority coder, decoder, multiplexers, demultiplexers, binary comparators. Sequential circuits: SR and D latches, SR , D , JK , T flip-flops. Registers: stationary, shift, counter. Register application. Static memory - RAM. 2D and 3D memory architecture. Multi-port static memories. Associative memory. Designing a large memory storage. Dynamic memory (basic cell and block structure, operation sequence). Synchronous dynamic memory modules. Semiconductor memories: ROM, EEPROM and FLASH. FLASH memory architecture. Block structure of the USB FLASH drive. NVRAM and RAM with BACK UP battery. FRAM. Programmable circuits: PAL, PLA, PLD, FPGA. Arithmetic circuits. The full adder. Addition/subtraction systems. Carry Look-Ahaed (CLA) units. Accumulator unit. Arithmetic logic unit (ALU). Binary multipliers and dividers. Fundamentals of A/D and D/A conversions. |
| **LANGUAGE OF INSTRUCTION** |
| [x] 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** | **5** | **Written examination** | **20** |
| **Practical teaching** | **15** | **Oral examination** | **20** |
| **Teaching colloquia** | **40** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |