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| Course title |

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| **Digital Logics**  |
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| Semester | Winter semester |
| Faculty / Department | Faculty of Computer Science  |
| Professor |

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| Professor Goran Slavković, PhD  |

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| ECTS credits | 6 |
| Language of instruction | English |
| Level of study | Bachelor |
| Content | Overview and history of computer architecture, basic building by elements (flip-flops, counters, registers, PLA), Logical expressions, minimization, product sum form, Notation for license transfers, physical parameters (delay through the gate, input capacity, output capacity) The reasons for the study of digital logic, Areas: logic, memory, registers, digital systems, combinatorial logic, sequential circuits, basic logic gates (AND, OR, NOT, NAND, NOR, XOR), Realization of functions using logic circuits, design of medium complicated combinatorial logic modules, multiplexers, demultiplexers, encoders, comparators, arithmetic functions (adders, subtractor, predicting transmission), multipliers, dividers, Hiararchy design of combinatorial circuits using logic modules, devices which react to the level or change, master and slave devices, basic flip-flop (SR, D, JK, T), asynchronous flip flop inputs (put, delete), time limits, propagation delay, registers for data, software tools (Schematiccapture), Digital modeling systems (VHDL, Verilog) Other modeling techniques (timing diagrams, languages, license transfers, state diagrams, finite machines), functional simulation of combinatorial and sequential circuits. |
| Learning outcomes | At the end of the course it is expected that the successful student masters the basic computer elements, logic circuits, software simulation and work with physical chips. Furthermore, it is expected that students learn to combine, connect and solve the problems of logic design. |
| Length | One semester. |
| General information | Basic units are: Digital logic and digital systems, history and review, the combinatorial logic, modular design of combinatorial circuits, memory elements, modeling and simulation. |
| Restrictions to mobile students and availability before the signature of the learning agreement | There is no any restrictions. |