**Electronics 2 (ECTS credits: 6)**

Language: the course is offered in English, Serbian and Hungarian.

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**Course description:**

The course covers the basic aspects of traditional and modern digital electronics. It covers the following topics, both as lectures and exercises:

1. Physical properties of digital circuits, delays and hazards with examples
2. Traditional methods of analysis and synthesis of combinational circuits
3. Traditional analysis and design of sequential circuits
4. Traditional analysis and design of mixed circuits
5. Design with hardware programmable circuits
6. Architecture of the FPGA circuit
7. Fundamentals of hardware languages
8. Programming language conventions, data types
9. Design levels: logic gate level, data flow level, behavior level
10. Graphic symbols, drawing time diagrams
11. Construction and application of combination, sequential and mixed circuits
12. Forming VERILOG modules
13. Examples of design at the logic gate level, at the data flow level and at the behavior level
14. Instructions for utilization of the FPGA circuit programming software.
15. Constructing digital systems based on FPGA circuits

**Aims:**

Students will receive introduction to the physical properties of digital electronics circuits, introduction to the analysis and synthesis of combinational, sequential and mixed digital circuits, based on functional blocks.

Also they will be given introduction to a hardware description language (HDL) and programmable logic circuits and FPGA circuit programming software.

Students will develop ability to:

* interpret catalog data of digital integrated circuits and understand the criteria for circuit selection,
* independently design combinational, sequential and mixed digital systems based on integrated functional blocks,
* describe complex digital systems using hardware description language (HDL),
* use FPGA circuit programming software.