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| Discipline „microprocessors”, code: 21 |
| Annotation:  The architecture of the 32-bit microprocessors is studied: operational unit structure, internal organisation, main information exchange methods and instruction set. The programming model of the microprocessor is defined and its registers, addressing modes, exceptions and interrupts are examined. Assembly language and basic programming structures that can be implemented with it are studied during the laboratory exercises. The goal here is to master the machine code instructions and the computational process organisation, becoming acquainted with the operation of the microprocessor at the lowest level, up to a single bit. Skills for algorithmization of linear, branching, loop and combined programming structures and their optimal implementation in Assembler are developed, including with translation from the C language. Invocation of assembly language subroutines from input / output programmes in C is studied in practice, paying attention to parameter passing and passing back the return value.  The knowledge gained during the study of “Computer Organisation and Architectures”, “Base Programming”, and “Object-Oriented Programming – part 1” is relied upon. The knowledge about microprocessors is used in “Language Processors”. |
| Main syllabus items:   1. Structure of the microprocessor, main units. Programming model, registers. 2. Instruction set. Instruction types. Memory addressing modes. 3. System bus and signals of the microprocessor. 4. Vector floating point unit. 5. Exceptions and interrupts. 6. Memory management unit. 7. Microprocessor architecture development. |