Syllabus on „Microprocessors"
for specialty „Software and Internet Technologies"

1. The internal structure of the Intel 8086 microprocessor. Pin description.
2. Programming model of the microprocessor. Effective address. Flags.
3. Memory space organization. Segment and offset addressing scheme.
4. External microprocessor interface. System bus. Bus operations.
5. Memory interface. Organization of input-output. Types of system cycles.
6. Interrupt system. Interrupt table. Interrupt Acknowledge Sequence.
7. Microprocessor instruction set. Instruction format. Opcode and operand fields.
8. Addressing modes according to the way of the operand address forming.
9. Architecture of Intel 8087 Floating-Point Unit. Data Formats. FPU instructions. Flags.
10. Types of memory. Memory structure, pin configuration and operations. Bus timing.
11. I16550 serial communications interface adapter.
12. I8255A programmable parallel interface.
13. Basic I/O Interface. Interface an Analog-to-Digital Converter and a Digital-to-Analog Converter to the microprocessor.
14. I8254 programmable internal timer. Architecture. Modes of operation. Application.
15. Direct Memory Access. System architecture with i8237 DMA controller. Modes of operation.

Literature:

1. Uffenbeck, J. The 8086/8088 Family: Design, Programming, and Interfacing. PHI Learning, 2009.
2. Barry Brey. The Intel Microprocessors. Prentice Hall International, 1997.
3. Randall Hyde. The Art of Assembly Language. No Starch Press; 2-nd edition, 2010.
4. Microsoft MASM 6.1 Reference Guide. Assembly Language Programming - MASM & Intel Docs.

Lecturer: Assoc. Prof. Dr Eng. Z. Zhejnov

Exam format:

Written exam - 120 minutes, followed by an oral examination if necessary to clarify the assessment.
The exam variant contains 2 syllabus questions – 1 long, 1 short and 1 Assembly language task.

Assesment:

The points of current control (up to 40 points) are added to the points obtained from the exam (up to 30+10+20=60 points).