<u>**SYLLABUS**</u>

SUBJECT: COMPUTER SYSTEM ARCHITECTURE

TEACHER: ŁUKASZ MACIURA, PhD, Eng.

COURSE DESCRIPTION:
The purpose of the course is to familiarise the students with the basic knowledge of the construction and work of the computer system and with the low - level programming skills.

LECTURE:
Computer arithmetic: fixed point and floating-point representation and arithmetic, numbers conversion.

Digitals circuits: Boolean algebra, logic gates, logical synthesis by minimization of Boolean functions, combinational circuits, sequential circuits (synchronous and asynchronous).

Construction of the computer: Von Neumann Architecture, organization and architecture of memory systems, input/output systems, the construction of the simple processor.

CLASSES:
Turbo Assembler and Debugger environment: compiling assembly code using Turbo Assembler and Turbo Linker, running programs in the step mode and observation of processor registers and memory state using Turbo Debugger.

Programming in Assembler: memory addressing, interrupts, operations on numbers bits and tables, conditional instructions, loops, input/output, coprocessor programming, operations of computer peripherals, graphics mode.

The construction of the computer: practical knowledge of "inside" computer, testing the computer components.

LEARNING OUTCOMES:
Students will acquire a basic knowledge about computer system architecture, arithmetic, digital circuits and the low - level programming skills.

GRADING POLICY:
LECTURE: Written test.
CLASSES: Written test.

TIMETABLE:
Number of hours:
LECTURE: 2h x 15 weeks = 30 hours (1 semester)
CLASSES: 2h x 15 weeks = 30 hours (1 semester)

TEXTBOOK AND REQUIRED MKATERIALS:

1. Null J., Lobur J., *The essentials of computer organization and architecture*, Jones & Bartlett Learning, 2006.
2. Stallings W., *Computer Organization and Architecture,* Prentice Hall, 2010.
3. Chalk B.S., *Computer Organization and Architecture,* Palgrave Macmillan, 2003.
4. Majewski W, Logical circuits (*Układy logiczne)*, WNT, Warszawa, 2003 (in Polish).
5. Hyde R., *The Art of Assembly Language Programming,* No Starch Press, 2003.

PREREQUISITES:
High school course in mathematics.