SYLLABUS FOR 2023/2024 ENROLMENT
FORM OF STUDY: FULL-TIME PROGRAMME

GENERAL INFORMATION

1. **Course** Basics of computer science and computer systems architecture

2. **Field of study** Computer Science

3. **Level of acquired education** first-cycle programme

4. **Number of ECTS credit 5**

5. **Number of hours persemester**

semester	lecture	classes	laboratory/foreign language course	project/practical classes	internship
I	15		30		

6. **Language of instruction: English**

7. **Lecturer mgr inż. Zofia Lubańska**

DETAILED INFORMATION

8. Preliminary requirements

1. Mathematics skills at high school level

2. Computer skills at high school level

3. Basic knowledge of IT

9. Course objectives

C1 to introduce students to basic notions of computer science

C2 to familiarise students with the mathematical foundations of computer science

C3 to introduce issues concerning the structure and operation of computers

C4 to explain the operation of the Turing Machine

C5 to introduce students to arithmetic expressions written in Reverse Polish Notation

C6 to define basic issues concerning algorithmics and programming

C7 to acquaint students with the possibilities of continuous education

10. Field-specific learning outcomes in terms of knowledge, skills and social competences

A student who completed the course:	reference to field-specific learning outcomes
KNOWLEDGE	
EU01 Knows and understands the concepts of computer science, computer systems architecture and security in information systems and the practical applications of this knowledge in professional activities	K_W06
SKILLS	
EU02 Is able to use obtained knowledge in a proper way, acquire information from reference books, databases and other sources, interpret, critically analyse and synthesise them, prepare documentation concerning the completion of an engineering task	K_U01
EU03 Is able to plan and organise individual and team work, co-operate with others in group work	K_U02
SOCIAL COMPETENCES	
EU04 Is ready to critically evaluate obtained knowledge and received content, recognise the importance of knowledge in solving cognitive and practical problems, and seek expert advice in case of difficulties in solving the problem independently	K_K01

EU05 Is ready to acknowledge non-technical aspects and effects of the activities of an IT engineer, to fulfil social obligations, to co-organise activities for social environment	K_K02

11. Coursec ontent

Course delivery method – lectures/classes/laboratories/practical classes

Lectures:

1) Definitions and interpretations
2) Information. Introduction to information theory
3) Development of Computer Science
4) Mathematical foundations of computer science: Number systems and ways of representing data Notations and codes
5) Mathematical foundations of computer science: operations on binary numbers
6) Binary logic and Boolean algebra
7) Computer systems architecture: Computer design
8) Computer systems architecture: ROM and RAM - division, construction and principle of operation
9) Computer systems architecture: Peripheral devices of computers
10) Overview of microprocessor and computer system architectures
11) Organisation of computer system operation, machine cycles, bus, command list
12) Turing machine
13) Reverse notation Polish ONP
14) Algorithmics
15) Programming tools and operating systems

Laboratories:

1) Introduction to information theory, basic definitions and terms, computer structure, characteristics and description, literature - discussion
2) Mathematical foundations of computer science: number systems (decimal, binary, octal, hexadecimal)
3) Mathematical foundations of computer science: Code Sign module ZM, Code of additions to unity U1, Code of additions to two U2
4) Binary operations: addition and subtraction
5) Binary operations: multiplication II variant method Booth's algorithm, division non-restitution method
6) Binary logic and Boolean algebra
7) Logic gates Logic circuit design
8) Turing machine design
9) Inverse Polish notation - transformation of arithmetic expressions, algorithm of calculating the value of an ONP expression, algorithm of conversion from infix notation to ONP
10) Algorithmics - designing flowcharts, graphs, trees
11) Programming tools - designing simple programs

12. Teaching tools and methods

1. lecture: usage of multimedia presentation, chalk, blackboard

2. laboratory: instructions for the laboratory, free programs: magic blocks, EWB, computer

13. Assessment method (component, final)

1. Assessment of regular preparation for laboratory classes and activity during classes - continuous assessment

2. Partial evaluation of laboratory classes

| 3. Tests during the semester with the material from laboratory |
| 4. Written examination including the lecture material |

14. Student workload

Form of activity	Number of hours
1. Classes with direct participation of the teacher and office hours	55
2.Student workload	70
sum	125
Number of ECTS credits	5

15. Reference books

Primary:

1) Sikorski W., Wykłady z podstaw informatyki, MIKOM, 2009

2) Lembas J., Kawa R., Wstęp do informatyki, Wydawnictwo Naukowe PWN, 2017

3) Wojtuśkiewicz K., Urządzenia peryferyjne i interfejsy, Wydawnictwo Naukowe PWN, 2007

Secondary:

1) Metzger P., Anatomia PC, wyd.6, HELION, 2001

2) Cameron B.,Crawley E., System Architecture, Global Edition, Pearson, 2015

16. Assessment form - details

Means of learning outcomes verification:

The degree to which the student has achieved the learning outcomes is assessed according to the following criteria:

5.0 - learning effect was achieved without reservations

4.5 - learning effect was achieved with single insufficiencies / errors

4.0 - learning effect was achieved with few insufficiencies /errors

3.5 - learning effect was achieved with many insufficiencies /errors

3.0 - learning effect was achieved with numerous and significant insufficiencies /errors (minimum required level of achievement of the effect)

2.0 - learning effect was not achieved

17. Other details concerning thecourse

1. Direct information about the issues of classes and a program content is provided by the teacher during classes and during office hours.

2. Classes will be held at AB in Biała Podlaska

3. Classes will be held in accordance with the current schedule

4. Office hours will be held in accordance with the applicable schedule