Faculty of Computer Science and Management / DEPARTMENT……

SUBJECT CARD

Name in Polish: Organizacja systemów komputerowych
Name in English: Introduction to Computer Systems
Main field of study (if applicable): …….
Specialization (if applicable): ……..
Level and form of studies: 1st level, full-time
Kind of subject: obligatory
Subject code: INZ0251Wc
Group of courses YES

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30	15	0	0	0
Number of hours of total student workload (CNPS)	150				
Form of crediting	crediting with grade	crediting with grade			
For group of courses mark (X) final course	X				
Number of ECTS points	5				
including number of ECTS points for practical (P) classes	5				
including number of ECTS points for direct teacher-student contact (BK) classes	3,0				

*delete as applicable

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Basic knowledge about mathematical background of computation (Boolean algebra).
2. Basic knowledge about computers and popular applications.

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SUBJECT OBJECTIVES

C1 Getting theoretical and practical knowledge needed for understanding of architecture and organization of computer systems both on the hardware and software level.
C2 Getting theoretical and practical knowledge about binary representation (digital encoding) of different types of information.
C3 Getting basic knowledge and experience in designing in low-level programming.
C4 Getting basic knowledge and experience in designing of the digital circuits.

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

PEK_W01 Knowledge about different concepts of computation.
PEK_W02 Deeper knowledge about hardware architecture and organization of sequential (Von Neumann) computers and their functional blocks.
PEK_W03 Introduction to combinatorial and sequential digital circuits.
PEK_W04 Introduction to digital (binary) encoding of different types of information and their processing.
PEK_W05 Software implementation. Classification and features of system and application software solutions.

relating to skills:

PEK_U01 Practical experience with most popular data types (binary representations of numbers, texts etc.) used in data-processing.

PEK_U02 Basics of assembly-level programming. Practical experience with binary codes of programs and data blocks in Von Neumann architecture computer.

PEK_U03 Designing and testing the digital circuits.

PROGRAMME CONTENT

Form of classes - lecture		**Number of hours**
Lec 1	Basic definitions and history of the Computer Systems	2
Lec 2	Sequential vs. parallel computing – von Neumann architecture vs. neural networks.	2
Lec 3	Hardware structures – Central Processing Unit (CPU).	6
Lec 4	Hardware structures – system bus, internal (operational) memory.	6
Lec 5	Hardware structures – external memory (mass storage), input-output system.	4
Lec 6	System software – history, review and basic problems.	2
Lec 7	Application software – basic concepts, programming languages and developing tools, designing of the software.	2
Lec 8	Application software – office packets, databases and data warehouses.	2
Lec 9	Application software – multimedia and communication.	2
Lec 10	Final test.	2
	Total hours	30

Form of classes - class		**Number of hours**
Cl 1	Introduction to binary codes – basic concepts and problems.	1
Cl 2	Machine representation of typical arithmetic data formats (natural and integer numbers).	2
Cl 3	Machine representation of more sophisticated arithmetic data formats (real numbers).	2
Cl 4	Machine representation of other data formats (text characters, strings).	2
Cl 5	Introduction to hardware designing – basic logical circuits.	4
Cl 6	Introduction to hardware designing – sequential circuits.	4
	Total hours	15

TEACHING TOOLS USED

N1. Intel 8080 / Zilog Z-80 CPU software emulator.
N2. Combinatorial and sequential circuits software simulator.

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

Evaluation (F – forming (during	Educational effect number	Way of evaluating educational effect achievement

semester), P – concluding (at semester end)		
F	K1INF_W08	Classes with theoretical problems solved by students, software simulations and short assembly programs prepared and tested by students.
P	K1INF_W08	Crediting with grade. Final test with theoretical questions, arithmetical problems and design of simple digital circuit.
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PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

[1] William Stallings, Computer Organization and Architecture. Designing for Performance.

SECONDARY LITERATURE:

[1] Ulrich Tietze, Christoph Schenk, Eberhard Gamm, Electronic Circuits: Handbook for Design and Application
[2] Joseph D. Greenfield, Microprocessor Handbook (Wiley Electrical & Electronics Technology Handbook Series)

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

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MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT

INZ0251Wc

AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY

K1INF_W08

AND SPECIALIZATION ……..

Subject educational effect	Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)**	Subject objectives***	Programme content***	Teaching tool number***
PEK_W01	K1INF_W08	C1	Lec 1, Lec 2	N1
PEK_W02	K1INF_W08	C1, C3	Lec 3, Lec 4, Lec 5	N1
PEK_W03	K1INF_W08	C4	Cl5, Cl6	N2
PEK_W04	K1INF_W08	C2	Cl1, Cl2, Cl3, Cl4	N2
PEK_W05	K1INF_W08	C3	Lec 6, Lec 7, Lec 8, Lec 9	N1
PEK_U01	K1INF_W08	C1, C2	Cl1, Cl2, Cl3, Cl4	N1
PEK_U02	K1INF_W08	C3	Cl1, Cl2, Cl3, Cl4	N1
PEK_U03	K1INF_W08	C4	Cl1, Cl2, Cl3, Cl4	N1

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above