COURSE SPECIFICATION

Course code	full-time studies	**Z-ZB-E-104**
	part-time studies	**-**
Course title in English	**The Fundamentals of Computer Science**	
Course title in Polish	**Podstawy informatyki**	
Valid from academic year	**2025/2026**	

PLACEMENT IN THE TEACHING PROGRAM

Programme of study	**BUSINESS MANAGAMENT**
Level of education	**1st degree**
Studies profile	**academic**
Form and mode of study	**full-time programme**
Scope	**all**
Academic unit responsible for the course	**Department of Information Technology**
Course coordinator	**dr inż. Sławomir Koczubiej**
Approved by	**dr hab. inż. Dariusz Bojczuk, prof. uczelni**

GENERAL CHARACTERISTIC OF THE COURSE

Teaching block		**Subject of general education**
Course status		**Obligatory**
Language of instruction		**English**
Semester of delivery	full-time studies	**Semester I**
	part-time-studies	**-**
Prerequisites		**No**
Exam (YES/NO)		**NO**
ECTS		**3**

Method of conducting classes		**lecture**	**classes**	**laboratory**	**project**	**other**
Number of hours per semester	full-time	**15**		**30**		
	part-time					

LEARNING OUTCOMES

Category	Outcome code	Course learning outcomes	Reference to the directional learning effect
Knowledge	W01	A student has knowledge of computer structure and architecture. The student knows the structure and understands the operating system. Understands problems related to program execution. Knows computer-based communication techniques.	ZB1_W09
	W02	A student has knowledge of general computer science, including methods of collecting, coding and processing information, building algorithms and managing data specific to economics.	ZB1_W09
	W03	A student knows the purposes and possibilities of using a spreadsheet in data processing and analysis. Knows the various possibilities of presenting data and analysis results.	ZB1_W06 ZB1_W09
	W04	Knows the methods, techniques and software for scientific and statistical computing.	ZB1_W06
Skills	U01	Student is able to use in practice the techniques of obtaining and collecting data appropriate to economic sciences.	ZB1_U02
	U02	The student is able to use theoretical knowledge to formulate, analyse and solve problems in the field of mathematical analysis, financial mathematics, statistics using computer software to the extent appropriate for economic sciences.	ZB1_U01 ZB1_U05
	U03	A student can to prepare a presentation of the results of analyses performed using modern technologies.	ZB1_U05
	U04	He is able to read technical documentation, manuals and Internet sources to expand his/her IT knowledge.	ZB1_U14
Social competences	K01	A student is ready to work in a team when solving common tasks. Collaborates with other team members at different stages of problem solving.	ZB1_K03
	K02	He understands the need to constantly improve acquired knowledge and skills in the use of basic IT tools.	ZB1_K02

COURSE CONTENT

Method of conducting classes	Course content
lecture	1. Introduction and essence of computer science. Computing machines, elements of information coding, representation of information in a computer. Compression and encryption. 2. Hardware structure of computers. Computer resources. Modern computer architectures. Numerical limitations of conducting calculations. Ergonomics of working at a computer. 3. Operating system, tasks and classification of the operating system. Structure of the operating system. File systems and types. File operations. Features of selected modern operating systems. Free software, examples. 4. Internet, history, threats, resources, search tools (browsers and search engines). Internet communication. Internet services. 5. Basics of computer calculations. Spreadsheet, computer algebra systems, statistical software.

laboratory	1. Using a spreadsheet to work with data - sorting data, formatting data, conditional formatting, importing and exporting data. 2. Calculations and data processing, formulas, built-in functions: mathematical, statistical and financial. 3. Presentation of data and calculation results - tables, formatting tables, various types of charts, formatting charts. 4. CAS-type application software - environment, recording arithmetic expressions and basic functions. Generating function graphs. 5. CAS software. Operations on vectors and matrices. Solving equations, systems of equations, inequalities. Statistical analysis.

METHODS FOR VERIFYING LEARNING OUTCOMES

Outcome code	Learning outcomes verification methods					
	Oral examination	Written examination	Test	Project	Report	Other
W01			X			
W02			X			
W03			X			
W04			X			
U01			X			
U02			X			
U03			X			
U04			X			
K01						X
K02						X

FORM AND CONDITIONS OF ASSESSMENT

Form of classes	Assessment type	Assessment Criteria
lecture	Credit with grade	Obtaining at least 50% of test points during the lecture, student activity during lecture.
laboratory	Credit with grade	Obtaining at least 50% of test points during the class.

STUDENT WORKLOAD

ECTS Balance							
No.	**Activity type**	**Student workload**					**Unit**
		full-time					
1.	Scheduled contact hours	W	C	L	P	S	h
		15		**30**			
2.	Other (consultations, exams)	**2**		**2**			h
3.	**Total number of contact hours**	**49**					h
4.	**Number of ECTS credits for contact hours**	**2,0**					ECTS
5.	**Number of hours of independent student work**	**26**					h
6.	**Number of ECTS points that a student obtains through independent work**	**1,0**					ECTS
7.	**Workload related to practical classes**	**50**					h
8.	**Number of ECTS credit points which a student receives for practical classes**	**2,0**					ECTS
9.	**Total number of hours of a student's work**	**75**					
10.	**ECTS credits for the course** *1 1 ECTS credit =25 student learning hours*	**3**					ECTS

W - LECTURE C – CLASSES L – LABORATORY P- PROJECT S – SEMINAR

READING LIST

1. P.K. Sinha, Computer Fundamentals. BPB Publications, 2003.
2. T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein, Introduction to Algorithms, Fourth Edition. MIT Press 2022.
3. M. Alexander, D. Kusleika, Microsoft Excel 365 Bible. Wiley John + Sons, 2022.
4. G. Shields, Excel for beginners: Learn Excel 2016. Bravex Publications, 2020.
5. J.S. Cohen, Computer Algebra and Symbolic Computation. CRC Press, 2003.
6. J. von zur Gathen, J. Gerhard, Modern Computer Algebra, Cambridge University Press, 2013.