

Subject card

Subject name and code	Elementary mathematics, PG_00155292						
Field of study	Informatics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		6.0		
Learning profile	practical		Assessment form				
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Joanna Czarnowska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	0.0	0.0	0.0	60
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	60		0.0		90.0	150
Subject objectives	The objective of the course is to familiarize students with selected topics in logic, set theory, and mathematical analysis, in order to develop the skills necessary for precisely formulating, analyzing, and solving problems.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[INFL3_K02] can precisely formulate questions to deepen his/ her own understanding of a given topic or to find missing elements of reasoning		Is able to correct an incorrect or incomplete solution to a basic mathematical problem.		[SK4] test/exam - oral or written		
	[INFL3_W01] has knowledge in mathematics covering the basics of algebra, discrete mathematics (elements of logic and set theory, combinatorics and graph theory), probabilistic methods		• Knows basic concepts as well as selected methods and theorems of mathematical logic and set theory, including fundamental methods of inference. • Knows basic concepts of differential calculus for functions of one and several variables, and has knowledge of basic optimization issues. • Knows basic concepts of integral calculus for one variable.		[SW4] test/exam - oral or written		
	[INFL3_U01] can apply mathematical knowledge to formulate, analyse and solve tasks related to computer science, design and analyze algorithms in terms of their correctness and computational complexity		Recognizes and applies basic concepts of logic, set theory, functions, and differential and integral calculus in tasks related to the analysis of simple computational and algorithmic problems.		[SU4] test/exam - oral or written		

Subject contents	1. Language of logic: propositional calculus and predicate calculus. 2. Set algebra, relations and their properties, equivalence relations and orderings, equivalence classes. 3. Functions, properties of functions, inverse function. 4. Derivative of one and multiple variables. Applications in optimization problems. 5. Integral of one variable with examples of applications.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exam	51.0%	40.0%
	auditorium exercises	51.0%	60.0%
Recommended reading	Basic literature	1. J. Topp, Wstęp do matematyki, Wydawnictwo Uniwersytetu Gdańskiego 2. J. Kraszewski, Wstęp do matematyki, WNT 3. M. Oberguggenberger, A. Ostermann, Analysis for Computer Scientists Foundations, Method and Algorithms, Springer 4. J. Vince, Foundation Mathematics for Computer Science. A Visual Approach, Springer	
	Supplementary literature	1. K.H. Rosen, Discrete mathematics and its application, McGraw-Hill 2. W. Kryszicki, L. Włodarski, Analiza matematyczna w zadaniach, Wydawnictwo Naukowe PWN, Warszawa	
	eResources addresses		
Example issues/ example questions/ tasks being completed	no applicable		
Work placement	Not applicable		

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