University of Gdańsk

Subject card

Subject name and code	Elementary Mathematics, PG_00204153		
Field of study	Informatics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
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	exam
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
[INFPL3_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
[INFPL3_K02] is ready to recognize the importance of knowledge in solving cognitive problems and practical and seeking opinions experts in case of difficulties with independent problem solving	Is able to correct an incorrect or incomplete solution to a basic mathematical problem.	[SK4] test/exam - oral or written
[INFPL3_W01] knows and understands advanced mathematical concepts including the basics of algebra, discrete mathematics (elements of logic and set theory, combinatorics and graph theory), probabilistic methods and applies this knowledge to modeling IT problems, designing algorithms, analyzing data and solving computational problems	• 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

<table>
<tr><td>Subject contents</td><td>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.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>exam</td><td>51.0%</td><td>40.0%</td></tr>
<tr><td>tests</td><td>51.0%</td><td>60.0%</td></tr>
</table>
</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>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</td></tr>
<tr><td>Supplementary literature</td><td>1. K.H. Rosen, Discrite mathematics and its application, McGraw-Hill
2. W. Krysicki, L.Włodarski, Analiza matematyczna w zadaniach, Wydawnictwo Naukowe PWN, Warszawa</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>no applicable</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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