

Subject card

Subject name and code	Mathematics for Informatics, PG_00210494						
Field of study	Informatics						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
Education level	Master's studies		Subject group				
Mode of study	part-time studies		Mode of delivery		blended-learning		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Maciej Dziemiańczuk				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	0.0	0.0	0.0	20
	E-learning hours included: 30.0						
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	20		0.0		30.0	50
Subject objectives	The aim of the course is to introduce students to fundamental combinatorial objects, generating functions, and basic counting techniques. Familiarizing students with English terminology.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[INFMU2_W01] has in-depth knowledge of the branches of mathematics necessary for the study of computer science; has a good understanding of the role and importance of the construction of mathematical reasoning		Knows basic mathematical structures, including combinatorial structures, used to describe algorithms. Knows basic concepts in combinatorics and combinatorial techniques used to analyze the computational complexity of algorithms.		[SW4] test/exam - oral or written		
	[INFMU2_U01] is able to formulate, analyze and solve complex problems related to computer science by selecting and applying appropriate mathematical methods and tools		Can derive formulas for the number of simple combinatorial objects, such as sequences, permutations, combinations, variations, integer partitions, and set partitions. Can estimate the complexity of an algorithm that uses combinatorial structures.		[SU4] test/exam - oral or written		
Subject contents	1. Counting combinatorial objects: sequences, subsets, permutations, derangements, set partitions, integer partitions, necklaces, arrangements of balls in boxes; 2. Principle of sum, product, pigeonhole, double counting; 3. Counting non-isomorphic objects, Burnside's lemma and Polya's theorem; 4. Generating functions;						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	tests	51.0%	100.0%
Recommended reading	Basic literature	1. G. E. Martin, Counting: The Art of Enumerative Combinatorics, Springer 2001; 2. P. J. Cameron, Combinatorics, Cambridge University Press, 1994;	
	Supplementary literature		
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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