



## Subject card

Subject name and code	Discrete Mathematics, PG_00047823						
Field of study	Informatics						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2021/2022		
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Algorithms and Systems Modelling -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Paweł Obszarski				
	Teachers		dr Paweł Obszarski				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie: Matematyka Dyskretna (Discrete Mathematics) 2021 - Moodle ID: 13200 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13200">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13200</a>						
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	30		4.0		66.0	100
Subject objectives	Getting familiar with the mathematical notation and techniques useful in discrete optimization.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W41] Knows and understands, to an advanced extent, the operation and evaluation criteria of data processing, storage and transfer methods, including computational algorithms, artificial intelligence and data mining	Knows elements of combinatorics and graph theory crucial in big data analysis.	[SW1] Assessment of factual knowledge
	[K6_W01] Knows and understands, to an advanced extent, mathematics necessary to formulate and solve simple issues related to the field of study	Learns about numerous algorithmic aspects of set theory, combinatorics and graph theory	[SW1] Assessment of factual knowledge
	[K6_K02] is ready to critically assess possessed knowledge and acknowledge the importance of knowledge in solving cognitive and practical problems	Learns about numerous mathematical models and their practical applications.	[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice
	[K6_U01] can apply mathematical knowledge to formulate and solve complex and non-typical problems related to the field of study and perform tasks, in an innovative way, in not entirely predictable conditions, by: n- appropriate selection of sources and information obtained from them, assessment, critical analysis and synthesis of this information, n- selection and application of appropriate methods and tools	Knows how to use in practice knowledge from graph theory, set theory and other	[SU4] Assessment of ability to use methods and tools
Subject contents	<p>Algebra of sets</p> <p>Logic: tautologies, predicates</p> <p>Mathematical induction</p> <p>Binary relations: equivalence relation, equivalence classes</p> <p>Binary relations: partial order, Hasse diagrams</p> <p>Binary relations: transitive closure, equivalence closure</p> <p>Counting: functions, configurations, partitions,</p> <p>Graph Theory: notation, basic terms</p> <p>Graph Theory: Eulerian graphs, Chinese Postman Problem</p> <p>Graph Theory: Hamiltonian graphs, Traveling Salesman Problem</p> <p>Graph Theory: properties of trees</p> <p>Graph Theory: planarity</p> <p>Graph coloring</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written exam	51.0%	100.0%

Recommended reading	Basic literature	[1] K. A. Ross, C. R. B. Wright, Matematyka dyskretna, PWN, Warszawa 1996. [2] R. L. Graham, D. E. Knuth, O. Patashnik, Matematyka konkretna, PWN, Warszawa 1996. [3] W. Lipski, W. Marek, Analiza kombinatoryczna, PWN, Warszawa 1986. [4] H. Rasiowa, Wstęp do matematyki współczesnej, PWN, Warszawa 1984. [5] Robin J. Wilson, Wprowadzenie do teorii grafów, PWN, Warszawa 2000.
	Supplementary literature	No requirements
	eResources addresses	Matematyka Dyskretna (Discrete Mathematics) 2021 - Moodle ID: 13200 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13200">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13200</a>
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	