GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Discrete Mathematics, PG_00058928
Field of study	Informatics

Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
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						

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_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 toolsn	Knows how to use in practice knowledge from graph theory, set theory and other	[SU4] Assessment of ability to use methods and tools
	[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_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 combinatorisc and graph theory crucial in big data analysis.	[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

Subject contents	Algebra of sets
	Logic: tautologies, predicates
	Mathematical induction
	Binary relations: equivalence relation, equiivalence classes
	Binary relations: partial order, Hasse diagrams
	Binary relations: transitive closure, equivalence closure
	Counting: functions, configurations, partitions,
	Graph Theory: notation, basic terms
	Graph Theory: Eulerian graphs, Chinese Postman Problem
	Graph Theory: Hamiltonian graphs, Traveling Salesman Problem
	Graph Theory: properties of trees
	Graph Theory: planarity
	Graph coloring

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	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable