GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	OPERATIONAL RESEARCH, PG_00060997		
Field of study	Management, Management		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
Education level	second-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	1	Language of instruction	Polish
Semester of study	1	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department Of Management Engineering And Quality -> Faculty Of Management And Economics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Jolanta Łopatowska	
	Teachers	dr inż. Jolanta Łopatowska	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	16.0	8.0	0.0	0.0	0.0	24

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	24	7.0	69.0	100

Subject objectives

Solves complex problems in the organization by formulating quantitative models that allow making rational decisions

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U04] prepares and presents convincing, professional presentations of the results of its activities, with their in-depth interpretation	interprets in an in-depth way the results of the activities carried out	[SU3] Assessment of ability to use knowledge gained from the subject
[K7_W06] identifies reliable sources of information relevant to the analyzed issues	Solves problems using optimization tools, integrating data from many areas of the organization's operation.	[SW1] Assessment of factual knowledge

Subject contents

Basic issues of operations research - essential features and structure of decision-making situations
General form of the linear optimization model, interpretation and analysis of the solution
Construction of linear optimization models for various optimization problems
Graphic method, simplex algorithm
Dual linear optimization model
Integer optimization model
Elements of non-linear programming
Multi-criteria models
Elements of graph theory
Planned network - CPA, CPM, PERT, CCPM methods
Ford-Fulkerson algorithm
Sequence problem
Elements of dynamic programming

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Exam	60.0%	50.0%
Colloquia	60.0%	50.0%

Recommended reading	Basic literature	Zawadzka L.(1996). Metody ilościowe w organizacji i zarządzaniu, cz. I. Gdańsk, Wyd. PG. Zawadzka L. (1997). Metody ilościowe w organizacji i zarządzaniu cz. II. Gdańsk, Wyd. PG. Kukuła K (red.). (2016). Badania operacyjne w przykładach i zadaniach. Warszawa, PWN.
	Supplementary literature	Anholcer M. (2023). Badania operacyjne. Poznań, Wyd. UE w Poznaniu. Ignasiak E. (red.). (2001). Badania operacyjne. Warszawa, PWE. Krawczyk S.(1996). Badania operacyjne dla menedżerów. Wrocław, Wyd. AE we Wrocławiu. Sikora W.(2008). Badania operacyjne. Warszawa, PWE.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Solving linear programming models using the simplex method Critical path analysis using the PERT method	
Work placement	Not applicable	

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