



Subject card

Subject name and code	OPERATIONAL RESEARCH, PG_00061050						
Field of study	Management, Management						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2024/2025		
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 (on-line)	Mode of delivery			blended-learning		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Katedra Inżynierii Zarządzania i Jakości -> Faculty of Management and Economics						
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: 18.0						
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_W04] analyzes complex management problems in an in-depth way on the basis of reliable data and properly selected methods, obtaining logical solutions		solves problems using optimization tools, integrating data from many areas of the organization's operation		[SW1] Assessment of factual knowledge		
[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			
Subject contents	Basic issues of operations research - essential features and structure of decision-making situations General form of the linear optimization model, interpretation and sensitivity analysis of the solution Construction of linear optimization models - assortment selection model, cutting model, technological process optimization model, transport model, model of mutually replaceable resources allocation Graphic method, simplex algorithm Dual linear optimization model Integer optimization model Elements of non-linear programming Multicriteria 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%		
	test		60.0%		50.0%		

Recommended reading	Basic literature	Zawadzka L.: Metody ilościowe w organizacji i zarządzaniu, cz. I, Wyd. PG, Gdańsk 1996 Zawadzka L.: Metody ilościowe w organizacji i zarządzaniu cz. II, Wyd. PG, Gdańsk 1997 Kukuła K (red.): Badania operacyjne w przykładach i zadaniach, PWN, Warszawa, 2020
	Supplementary literature	Ignasiak E. (red.): Badania operacyjne, PWE, Warszawa, 2001 Trzaskalik T: Wprowadzenie do badań operacyjnych z komputerem, PWE, Warszawa 2003 Sikora, W (red.). (2008). Badania operacyjne. Warszawa: PWE. Bernardelli M., Decewicz, A.Tomczyk, E. (2022). Ekonometria i badania operacyjne. Warszawa: Wydawnictwo Naukowe PWN. Gajda, J.B.,Jadczak, R. (2015). Badania operacyjne. Przykłady zastosowań. Łódź: Wydawnictwo Uniwersytetu Łódzkiego. Gruszczyński M., Kuszewski T. , Podgórska M. (red.) (2017). Ekonometria i badania operacyjne. Warszawa: Wydawnictwo Naukowe PWN
	eResources addresses	Adresy na platformie eNauczenie: Badania operacyjne MSU nst. online 2024/25 - Moodle ID: 38620 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=38620
Example issues/ example questions/ tasks being completed	Analysis of the linear programming model solution. Critical path analysis using the PERT method	
Work placement	Not applicable	

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