



Subject card

Subject name and code	OPERATIONAL RESEARCH, PG_00060947						
Field of study	Management, Management						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2023/2024		
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	Full-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	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	30.0	15.0	0.0	0.0	0.0	45
	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	45		7.0		48.0	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_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		
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 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		
	Colloquia		60.0%		50.0%		
	Exam		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.). (2020). 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: Badania operacyjne MSU3/ MSU4 stac. 2023/2024 - Moodle ID: 33352 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33352
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	