

Subject card

Subject name and code	Business Decision Making, PG_00204585						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
Education level	Master's 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	2		ECTS credits		4.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr Sabina Nowak				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	8.0	8.0	16.0	0.0	0.0	32
	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	32		2.0		66.0	100
Subject objectives	The aim of the course is to present the significance of operations research in decision-making processes within business. As part of the course, students will become familiar with the basic methods of linear, non-linear, network and dynamic programming, as well as their practical applications in solving decision-making problems. In addition, the course will cover the principles of game theory and multi-criteria decision support methods, with particular emphasis on their use in analysing and solving complex decision-making problems in business.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[IiEMU2_U01] Can creatively and profoundly analyze complex social and economic processes using structured knowledge, econometrics, informatics, or statistics tools	The student is able to verify financial and non-financial business-related information, analyse and evaluate it, and present various decision options depending on the criteria adopted.	[SU2] presentation/project/paper/report [SU4] test/exam - oral or written
	[IiEMU2_U04] Can choose, develop, and analyze traditional or innovative models of complex economic and social phenomena to make informed decisions	The student is able to make strategic and operational decisions and propose optimal solutions using advanced methods and techniques employed in operations research.	[SU2] presentation/project/paper/report
	[IiEMU2_U02] Can use conventional or innovative statistics, econometrics or informatics tools to analyze economic and social phenomena	The student is able to apply methods and techniques from operations research and put them into practice in business.	[SU2] presentation/project/paper/report
	[IiEMU2_W08] Possesses a comprehensive understanding of the methods, conditions, directions, and dilemmas involved in applying advanced econometrics, informatics or statistics tools in response to dynamic environmental changes	The student knows and understands the analytical methods that support decision-making in business.	[SW4] test/exam - oral or written
	[IiEMU2_W05] Possesses advanced knowledge and understanding of informatics, statistics, and econometrics techniques and tools used to acquire, process, or visualise data to aid in decision-making and verify research hypotheses	The student knows and understands the methods, techniques and tools of quantitative analysis, as well as methods of data collection and processing; they know and understand methods of interpreting the results of such analyses for the purposes of management and quality sciences.	[SW4] test/exam - oral or written
Subject contents	1. An overview of the basic concepts, definitions and methodological principles of operations research. 2. An analysis of decision-making, optimisation and cost issues arising in business processes. 3. The characteristics and application of linear, non-linear, network and dynamic programming methods in solving optimisation problems. 4. The application of game theory and multi-criteria decision support methods in management and decision-making processes within business operations. 5. Solving selected problems relating to production planning, transport organisation, inventory management and risk analysis in business operations, using methods and techniques specific to operations research.		
Prerequisites and co-requisites	Students are expected to have knowledge of the fundamentals of applied mathematics, statistical analysis methods, organisational and management theory, process management, corporate finance, and issues relating to the identification and assessment of risk in business operations.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	51.0%	30.0%
	Team project with presentation	51.0%	30.0%
	Exam	51.0%	40.0%
Recommended reading	Basic literature	1. Gajda J., Jadczyk R. (2016), Badania operacyjne. Przykłady zastosowań, Wydawnictwo Uniwersytetu Łódzkiego, Łódź. 2. Jędrzejczyk, Z., Kukuła, K., Skrzypek, J., Walkosz, A. (2016), Badania operacyjne w przykładach i zadaniach, PWN, Warszawa. 3. Kozubski, J.J. (2004), Wprowadzenie do badań operacyjnych, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk. 4. Sikora W. (red.) (2018), Badania operacyjne, PWE, Warszawa. 5. Straffin P. D. (2004), Teoria gier, Wydawnictwo Naukowe Scholar, Warszawa. 6. Trzaskalik, T., (red.), Badania operacyjne. Metody i zastosowania, Wyd. UE w Katowicach, Katowice, 2011.	
	Supplementary literature	1. Anderson, D., Sweeney, D., Williams, T., Camm, J., Cochran, J. (2018). An Introduction to Management Science. Quantitative Approach to Decision Making, Cengage, Boston. 2. Cormen T.H., Leiserson Ch.E., Rivest R.L., Stein C. (2012), Wprowadzenie do algorytmów, Wydawnictwo Naukowe PWN, Warszawa. 3. Laraki R., Renault J., Sorin S. (2022), Teoria gier. Podstawy matematyczne, Wydawnictwo Naukowe PWN, Warszawa. 4. Lipiec-Zajchowska M. (red.) (2003), Wspomaganie procesów decyzyjnych, tom III. Badania Operacyjne, Wydawnictwo C.H.Beck, Warszawa.	
	eResources addresses		
Example issues/ example questions/ tasks being completed			

Work placement	Not applicable
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