



Subject card

Subject name and code	DECISION SCIENCES, PG_00070738						
Field of study	Engineering Management						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2028/2029		
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	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department of Informatics In Management -> Faculty of Management and Economics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Nina Rizun				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	9.0	0.0	18.0	0.0	0.0	27
	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	27		3.0		70.0	100
Subject objectives	to prepare students to make rational and justified decisions in complex organizational systems, based on knowledge of the analysis of processes and relationships between phenomena, and to shape attitudes of responsibility and ethical action in the context of creating economic, social and environmental values.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_K02] is prepared to make competent and ethical decisions to create and maintain economic, social, and environmental values, demonstrating entrepreneurial actions.		is ready to consciously make justified and ethical decisions, taking into account economic, social, and environmental consequences, and actively participates in team-based projects focused on digital and social innovation.		[SK3] Assessment of ability to organize work		
	[K6_U04] develops logical solutions to complex or unstructured problems, even under conditions of uncertainty.		is able to develop logical solutions to complex and unstructured decision problems under conditions of uncertainty, applying quantitative and qualitative decision science methods, including optimisation models, scenario analysis, and decision-support tools.		[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_W03] knows reliable sources of information and utilizes advanced knowledge to explain contemporary management issues.		knows and understands reliable sources of information as well as advanced concepts and models of decision sciences used to explain and interpret contemporary management problems, particularly in the areas of risk, uncertainty, and multi-criteria decision-making processes.		[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge		

Subject contents	Course content – lecture 1. The decision-making process. 2. Decision-making modeling. 3. Multi-criteria decision support. 4. Methods for sorting alternatives. 5. Optimization under conditions of certainty. 6. Decision-making under conditions of risk and uncertainty. 7. Multi-attribute online decision-making driven by opinion mining 8. Social network analysis 9. The social context of decision-making. 10. Solving complex business problems. 11. Option planning in a volatile market environment.		
	Course content – laboratory 1. Preparing the decision-making process. 2. Decision-making modeling using Excel (pivot tables, solver, and scenario search). 3. Problem definition (conceptualization) and development of decision alternatives. 4. Multi-criteria decision support 5. Decision-making scenarios under conditions of risk and uncertainty 6. Using decision trees 7. Social network analysis 8. Multi-attribute online decision-making driven by opinion mining		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Colloquial tests	60.0%	40.0%
	Presentation of the results of decision-making tasks	60.0%	60.0%
Recommended reading	Basic literature	1. Gaspars-Wieloch, H. (2020). Podejmowanie decyzji w warunkach niepewności. Planowanie scenariuszowe, reguły decyzyjne i wybrane zastosowania ekonomiczne. Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu. https://doi.org/10.18559/978-83-66199-81-1 2. Kahneman, D. (2024). Pułapki myślenia. O myśleniu szybkim i wolnym. Wyd. Media Rodzina. 3. Gressel, Simone, Nazim Taskin, and David Pauleen. "Management decision-making, big data and analytics." (2020): 1-336.. 4. Nermend, K., Łatuszyńska, M., & Thalassinou, E. (Eds.). (2021). <i>Decision-making in management: Methods and behavioral tools</i> . Springer Nature. 5. Marchau, V. A. W. J., et al. "Decision making under deep uncertainty: from theory to practice." (<i>No Title</i>) (2019). 6. Materiały udostępniane na eKursie.	
	Supplementary literature	1. Baj-Rogowska, A. (2020). Decyzje optymalne z Solverem (pp. 1-68). Politechnika Gdańska. 2. Heilig, Thorsten, and Ilhan Scheer. <i>Decision intelligence: Transform your team and organization with AI-Driven decision-making</i> . John Wiley & Sons, 2023. 3. Bakke D.: The Decision Maker: Unlock the Potential of Everyone in Your Organization, One Decision at a Time Hardcover. Pear Press, 2013. 4. Fisher, T., & Adams, R. (2018). Problem Solving in Organizations: A Methodological Handbook for Business and Management Students	
	eResources addresses		
Example issues/ example questions/ tasks being completed	• Applying the decision-making process to an example situation. • Presenting the optimal production structure in terms of resource utilization. • Presenting the optimal investment decision using a decision tree. • Presenting a solution with social impact that is optimal in terms of stakeholder expectations.		
Practical activities within the subject	Not applicable		