



Subject card

Subject name and code	Decision Sciences, PG_00068507						
Field of study	Engineering Management						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
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 (on-line)		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department Of Informatics In Management -> Faculty Of Management And Economics -> Wydział Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor						
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	8.0	0.0	16.0	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		4.0		47.0	75
Subject objectives	Works in the organization, making rational decisions based on heuristic, descriptive and simulation methods, taking into account the context of management processes						
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 able to make informed decisions with awareness of their broader economic, social, and environmental impact		[SK5] Assessment of ability to solve problems that arise in practice		
	[K6_U04] develops logical solutions to complex or unstructured problems, even under conditions of uncertainty.		is able to select appropriate decision-support methods and apply them to design solutions in situations involving multiple variables and limited information		[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information		
	[K6_W03] knows reliable sources of information and utilizes advanced knowledge to explain contemporary management issues.		has knowledge of approaches that support decision-making in organizational settings and understands how to acquire and interpret information essential for analyzing complex decision scenarios		[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	LECTURES Introduction. Management decisions. The decision-making process and the characteristics of its stages Decision typology. Deciding and solving problems Construction of decision trees. Identification of risk factors Basics of the AHP method. Analysis of the decision problem using the AHP method Sensitivity analysis of the decision problem solution Building a decision model using the ELECTRE method Typical decision problems. Group decision making Decision rules. Decision making barriers. Decision visualization Construction of decision models linear programming models Train models Simulation models Game theory Basic concepts of statistical decision theory Hypothesis testing, point estimation, classification LABORATORY Pivot tables and reports Conducting investment analyzes using decision trees Scenario analysis. Identification, classification and risk analysis. Case study Application of the AHP method. Case study Presentation of own projects Application of the ELECTRE method. Case study Presentation of own projects		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture test	50.0%	60.0%
	Laboratory assignment report	50.0%	40.0%
Recommended reading	Basic literature	Witkowski T.: Decyzje strategiczne w zarządzaniu przedsiębiorstwem. WNT Warszawa 2000 Męczyńska A., Mularczyk A. (red.), Metody statystyczne i optymalizacyjne w arkuszu kalkulacyjnym MS Excel Szapiro T.: Decyzje menedżerskie z Excelem. PWE Warszawa 2000 Bakke D.: The Decision Maker: Unlock the Potential of Everyone in Your Organization, One Decision at a Time Hardcover. Pear Press 2013 Patton B. R.: Decision-Making Group Interaction: Achieving Quality. Pearson 2002 Goodwin P., Wright G.: Decision Analysis for Management Judgment. Wiley 2014	
	Supplementary literature	Winston W.L.: Operations Research: Applications and Algorithms. Cengage Learning 2003 Hillier F. S., Lieberman G. J.: Introduction to Operations Research. Stanford University 2010 Parnell G. S., Driscoll P. J. : Decision Making in Systems Engineering and Management. John Wiley 2011	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Presentation of the optimal structure of manufactured products in terms of resources used Presentation of the optimal investment decision using a decision tree Finding the optimal route between several cities		
Work placement	Not applicable		

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