

## Subject card

Subject name and code	Decision analysis, PG_00045316								
Field of study	Data Engineering								
Date of commencement of studies	October 2022		Academic year of realisation of subject			2024/2025			
Education level	first-cycle studies		Subject group			Optional subject group 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	3		Language of instruction			English			
Semester of study	5		ECTS credits			6.0			
Learning profile	general academic profile		Assessment form			exam			
Conducting unit	Department Of Informatics In Management -> Faculty Of Management And Economics -> Wydziały Politechniki Gdańskiej								
Name and surname of lecturer (lecturers)	Subject supervisor		dr Nina Rizun						
	Teachers		mgr Jaromir Durkiewicz						
			dr Nina Rizun	1					
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	:t	Seminar	SUM	
of instruction	Number of study hours	30.0	0.0	30.0	0.0		0.0	60	
	E-learning hours inclu	uded: 0.0							
Learning activity and number of study hours	Learning activity	g activity Participation in classes include plan				Self-study		SUM	
	Number of study hours	60		8.0		82.0		150	
Subject objectives	The aim of the lecture is to discuss the issues concerning decision analysis and rationale procedures based on the heuristics, descriptive and simulative methods in the context of the applications in management area.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K6_U10] correctly uses legal norms as well as ethical and cognitive rules in solving specific socio-economic problems.		Knowledge of descriptive methods Extended knowledge of decision analysis applied in economics			[SU1] Assessment of task fulfilment			
	[K6_K02] is aware of the role of a technical university graduate in the society; reflects on ethical, scientific and social aspects of the performed work; understands the necessity of participation in social projects and complies with copyright law, taking into account economic, legal and technical aspects.		Understanding the basic problems with decision-making Understanding the need for systematic analysis and systematic evaluation decisions			[SK2] Assessment of progress of work			
	[K6_W06] Knows the criteria and concepts of artificial intelligence, understands the operation of algorithms for intelligent computing, the concept of descriptive logic, combinatorial optimization algorithms, methods of construction, analysis and evaluation of algorithms, including discrete ones and problems of resolving conflicts in non-algorithmic decision making.		Understands the main principles and methods for constructing, analyzing and evaluating algorithms, and understands the operation of intelligent computing algorithms in the context of their application to support decisionmaking in complex systems			[SW3] Assessment of knowledge contained in written work and projects			

Data wygenerowania: 16.04.2025 17:03 Strona 1 z 3

LECTURES						
<ul> <li>Introduction. Decisions in management. Decision-making process and its description.</li> <li>A decision typology. Decisions-making process and problems troubleshooting.</li> <li>Decision trees concept and construction. Risk factors identification.</li> <li>AHP foundations. Problem analysis and decision-making based on the AHP.</li> <li>Sensitivity analysis in problem solving and decision-making processes.</li> <li>ELECTRE foundations. Decision-making construction model.</li> <li>Typical problems of decision-making. Group decision making.</li> <li>Decision rules. Barriers to decision-making. Visualization decision.</li> <li>Construction of decision-making models - linear programming models.</li> <li>Railway model.</li> <li>Simulation models</li> <li>Game Theory.</li> <li>Basic concepts of statistical decision theory.</li> <li>Statistical hypothesis testing, point estimation, classification.</li> </ul>						
<ul> <li>Pivot tables and reports.</li> <li>Investment analysis using decision trees.</li> <li>Scenario analysis. Identification, classification, and risk analysis. Case study.</li> <li>AHP application. A case study.</li> <li>Students project presentation.</li> <li>ELECTRE application. A case study</li> <li>Students project presentation.</li> </ul>						
No requirements						
Subject passing criteria	Passing threshold	Percentage of the final grade				
exam	<del>-</del>	60.0%				
colloquium	50.0%	40.0%				
Basic literature  Supplementary literature	O'Callaghan M. Decision intelligence: humanmachine integration for decision-making. CRC Press, 2023.  Kochenderfer M. J., Wheeler T. A., Wray K. H. Algorithms for decision making. MIT press, 2022.  Amor S. B. et al. (ed.). Advanced Studies in Multi-Criteria Decision Making. CRC Press, 2019.  Ali I. et al. (ed.). Optimal Decision Making in Operations Research and Statistics: Methodologies and Applications. CRC Press, 2021.  Danielson M., Ekenberg L. Real-Life Decision-Making. Taylor & Francis, 2024. 140.  Bakke D.: The Decision Maker: Unlock the Potential of Everyone in					
eResources addresses	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.  Podstawowe https://enauczanie.pg.edu.pl/moodle/course/view.php?id=31501 - The Decisions Analysis course in E-Nauczanie contains all the necessary didactic materials (lecture notes) and additional literature for independent reading.  Adresy na platformie eNauczanie: Decisions Analysis 2024/2025 - Moodle ID: 40081					
	Introduction. Decisions in man A decision typology. Decision Decision trees concept and co AHP foundations. Problem an Sensitivity analysis in problem ELECTRE foundations. Decis Typical problems of decision- Decision rules. Barriers to dec Construction of decision-making and the construction and	Introduction. Decisions in management. Decision-making process: A decision typology. Decisions-making process and problems trout Decision trees concept and construction. Risk factors identification. AIP Foundations. Problem analysis and decision-making based on Sensitivity analysis in problem solving and decision-making proces ELECTRE foundations. Decision-making consultation model: Typical problems of decision-making. Group decision making. Decision rules. Barriers to decision-making consultation models. Construction of decision-making models - linear programming mod Railway model. Simulation models Game Theory. Basic concepts of statistical decision theory. Statistical hypothesis testing, point estimation, classification.  LAB  Pivot tables and reports. Investment analysis using decision trees. Scenario analysis. Identification, classification, and risk analysis. C AIP application. A case study Students project presentation.  No requirements  Subject passing criteria Passing threshold exam 50.0% colloquium 50.0%  Railway and Passing criteria Passing threshold exam 50.0% colloquium 50.0%  Rocenario analysis. Case study Air Judents project presentation.  Kochenderfer M. J., Wheeler T. A. making. MIT press, 2022.  Amor S. B. et al. (ed.). Advanced of Making. CRC Press, 2019.  Ali I. et al. (ed.). Optimal Decision Statistics: Methodologies and App Danielson M., Ekenberg L. Real-L Francis, 2024. 140.  Supplementary literature  Bakke D.: The Decision Maker: Ur Your Organization, One Decision A 2013.  Patton B. R.: Decision-Making Gropers of the present of the				

Data wygenerowania: 16.04.2025 17:03 Strona 2 z 3

Example issues/ example questions/ tasks being completed	Analysis of study executive in terms of location and construction of an industrial facility.
	Simulation game for settlement of commercial contracts. Decision rules construction.
	Building the knowledge base for health care facilities.
Work placement	Not applicable

Document generated electronically. Does not require a seal or signature.

Data wygenerowania: 16.04.2025 17:03 Strona 3 z 3