



Subject card

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|---|--|--|--|-------------------------------------|--|------------|-----|
| Subject name and code | Decision analysis, PG_00045316 | | | | | | |
| Field of study | Data Engineering | | | | | | |
| Date of commencement of studies | October 2020 | Academic year of realisation of subject | | | 2022/2023 | | |
| 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 | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr Grażyna Musiatowicz-Podbiał | | | | |
| | Teachers | | dr Grażyna Musiatowicz-Podbiał | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 30.0 | 0.0 | 0.0 | 60 |
| | E-learning hours included: 0.0 | | | | | | |
| Decisions Analysis STAC 22/23 - Moodle ID: 24544 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=24544 | | | | | | | |
| 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 | 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_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. | | Knowledge of methods and tools for optimizing and rationalization of decisions for organizations. | | [SW1] Assessment of factual knowledge | | |
| | [K6_U10] correctly uses legal norms as well as ethical and cognitive rules in solving specific socio-economic problems. | | Ability to apply the decision-making methods in current business practice. | | [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 need for systematic replenishment of knowledge and continuous evaluation of decision analysis methods. | | [SK2] Assessment of progress of work | | |

| Subject contents | <ul style="list-style-type: none"> • Decision-making process. Decision making vs problem solving • Models in decision-making process. • Optimization with deterministic models. Construction of decision-making models -linear programming models. • Linear programming with integer and binary variables. • Non-linear programming. Network methods. • Evolutionary and generic models. • Cooperative and Non-cooperative game theory. • Heuristic methods for decision and choice. • Decisions under uncertainty. Sequence decisioningand decision trees • Socialaspectsof decision-making. • Solving Complex Problems through rationalization. Actors identification. • Problem conceptualization and alternatives elaboration. • Scenario analysis. • Multi Criteria Decision Making and the Analytic Hierarchy Process. • ELECTRE foundations. Decision-making construction model. | | | | | | | | | | | |
|--|--|--|--|--------------------------|-------------------|-------------------------------|----------------|-------|-------|-------------|-------|-------|
| Prerequisites and co-requisites | Basic understanding of phenomena occurring in organizations.Basic ability to use MS Excell in data analysis. | | | | | | | | | | | |
| Assessment methods and criteria | <table border="1"> <thead> <tr> <th data-bbox="456 792 794 815">Subject passing criteria</th> <th data-bbox="799 792 1137 815">Passing threshold</th> <th data-bbox="1142 792 1481 815">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 822 794 844">Knowledge test</td> <td data-bbox="799 822 1137 844">50.0%</td> <td data-bbox="1142 822 1481 844">50.0%</td> </tr> <tr> <td data-bbox="456 851 794 873">Assignments</td> <td data-bbox="799 851 1137 873">50.0%</td> <td data-bbox="1142 851 1481 873">50.0%</td> </tr> </tbody> </table> | | | Subject passing criteria | Passing threshold | Percentage of the final grade | Knowledge test | 50.0% | 50.0% | Assignments | 50.0% | 50.0% |
| Subject passing criteria | Passing threshold | Percentage of the final grade | | | | | | | | | | |
| Knowledge test | 50.0% | 50.0% | | | | | | | | | | |
| Assignments | 50.0% | 50.0% | | | | | | | | | | |
| Recommended reading | Basic literature | Krawczyk S.: Badania operacyjne dla menedżerów. Wrocław: Wyd. Akademii Ekonomicznej 1996.Penc J.: Decyzje w zarządzaniu. Kraków: Wyd. Profesjon. Szkoły Biznesu 1995.Supernat J.: Decydowanie w zarządzaniu. Wrocław: Wyd. Kolonia Ltd 1997.Szapiro T.: Decyzje menedżerskie z Excelem. PWE Warszawa 2000.Baj-Rogowska, A. Decyzje optymalne z Solverem (pp. 1-68). Politechnika Gdańska, 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 | | | | | | | | | | | |
| Example issues/ example questions/ tasks being completed | Presentation of the structure of manufactured products that is optimal in terms of the resources used.Presentation of the optimal investment decision by means of a decision tree.Finding the optimal route of the road between several cities. | | | | | | | | | | | |
| Work placement | Not applicable | | | | | | | | | | | |