



Module Specification

Decision Making Methodologies [TSI]

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Part 1: Information

Module title: Decision Making Methodologies [TSI]

Module code: UFMFKY-6-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 6

ECTS credit rating: 3

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: Transport and Telecommunication Institute

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module will consider the management role, while providing students with the opportunity to develop the business decision-making skills that are vital to how managers make effective and strategic decisions.

Features: Not applicable

Educational aims: The module aims to help students to understand the basic decision making methodologies by exploring different characteristics and features of each one and demonstrate how these can be applied in real life problems.

Outline syllabus: An Introduction to decision - making: background, techniques, concerns

Monetary-based techniques (cost-effectiveness and cost-benefit analyses)

Multi-stakeholder multi-criteria analysis (Delphi, weighing, normalisation, Analytical Hierarchy Process)

Multiattribute Utility Theory. Outranking methods (Electre, Promethee)

Multi objective mathematical programming

Decision making in project management (transportation projects)

Part 3: Teaching and learning methods

Teaching and learning methods: Learning and teaching will be provided to students in two forms: lectures and computer classes.

During lectures, theoretical aspects of the module will be provided to students by the teaching staff. Lectures will be supported by presentation published and available to the students on e.tsi.lv as well as additional materials (publications, videos, etc.).

Computer classes are devoted to practical cases using EXCEL. The classes are reserved for requirement clarifications, problem discussion, and assessment.; students are expected to carry out the work independently outside the classes.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Identify promising business and research applications of decision making methods

MO2 Describe a problem systematically, define possible solutions and their components and formulate into a decision making framework

MO3 Apply modern decision-making techniques (monetary-based techniques, multi criteria and multi-attribute utility techniques, outranking methods etc)

MO4 Evaluate and explain the results of different techniques

MO5 Apply multicriteria, outranking and cost-benefit analysis methods for a real cases and obtain well-grounded business insights

MO6 Communicate using the conventional terminology of the discipline

Hours to be allocated: 60

Contact hours:

Independent study/self-guided study = 56 hours

Face-to-face learning = 24 hours

Total = 80

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://rl.talis.com/3/uwe/lists/C6AF86D0-BF72-663A-0CCB-CAE82B1B9721.html?lang=en-GB&login=1) via the following link <https://rl.talis.com/3/uwe/lists/C6AF86D0-BF72-663A-0CCB-CAE82B1B9721.html?lang=en-GB&login=1>

Part 4: Assessment

Assessment strategy: The assessment for this module is as follows:

A written 2-hour closed-book exam of theoretical questions. Students are expected to demonstrate their knowledge of terms and algorithms as well as understanding of general concepts of data analysis methods.

A portfolio of computer lab reports (using cases with CBA, AHP, TOPSIS, PROMETHEE). The work will be carried out by students independently.

An individual research project on data collection and analysis and requires the application of a decision-making methodology learnt in this module. Project will be based on the students' own research, and involve selecting a case in the domain of aviation transportation.

Resit is the same as the first sit

Assessment tasks:

Examination (First Sit)

Description: Exam (2 hours)

Weighting: 30 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO3, MO4, MO6

Laboratory Report (First Sit)

Description: Laboratory reports based on work carried out in computer classes.

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO4, MO5

Report (First Sit)

Description: An individual research project on data collection and analysis. (max 400 words)

Weighting: 40 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO4, MO5, MO6

Examination (Resit)

Description: Exam (2 hours)

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested:

Laboratory Report (Resit)

Description: Laboratory reports based on work carried out in computer classes.

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested:

Report (Resit)

Description: An individual research project on data collection and analysis. (max 400 words)

Weighting: 40 %

Final assessment: No

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Aviation Management and Sustainability {Double Degree} [TSI] MSc 2023-24