



## **Module Specification**

### **Decision Making Methodologies [TSI]**

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#### **Contents**

<b>Module Specification .....</b>	<b>1</b>
<b>Part 1: Information .....</b>	<b>2</b>
<b>Part 2: Description .....</b>	<b>2</b>
<b>Part 3: Teaching and learning methods .....</b>	<b>3</b>
<b>Part 4: Assessment.....</b>	<b>4</b>
<b>Part 5: Contributes towards .....</b>	<b>6</b>

## Part 1: Information

**Module title:** Decision Making Methodologies [TSI]

**Module code:** UFMFKY-6-M

**Level:** Level 7

**For implementation from:** 2021-22

**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

**Delivery locations:** Transport and Telecommunication Institute Latvia

**Field:** Engineering, Design and Mathematics

**Module type:** Standard

**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:** Component A (controlled conditions):

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.

Component B consists of two elements:

Component B1: A portfolio of computer lab reports (using cases with CBA, AHP,

TOPSIS, PROMETHEE). The work will be carried out by students independently.

Component B2: This is submitted in the form of 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.

**Assessment components:**

**Examination - Component A (First Sit)**

Description: Exam (2 hours)

Weighting: 30 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO3, MO4, MO6

**Laboratory Report - Component B (First Sit)**

Description: Laboratory reports based on work carried out in computer classes (using cases with CBA, AHP, TOPSIS, PROMETHEE). The computer classes should be conducted by students independently; a report should be prepared and assessed by the teaching assistant within specified deadlines.

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO4, MO5

**Report - Component B (First Sit)**

Description: An individual research project on data collection and analysis and requires the application of a decision-making methodologies learnt in this module.

Project will be based on the students' own research, and involve selecting a case in the domain of aviation transportation.

They will have to apply knowledge acquired in this course and include:

Selection of a case in the domain of aviation transportation;

Conduct desktop research for understanding the case and possible interventions;

Identifying similar cases and identifying the interventions and their impact on the specific case.

Weighting: 40 %

Final assessment: No

Group work: No

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

**Examination - Component A (Resit)**

Description: Exam (2 hours)

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested:

**Laboratory Report - Component B (Resit)**

Description: Laboratory reports

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested:

**Report - Component B (Resit)**

Description: Individual Research Project

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} [Feb][FT][TSI][2yrs] MSc  
2021-22