

IB9MG-15 Optimal Decision Making

26/27

Department

Warwick Business School

Level

Taught Postgraduate Level

Module leader

Xuan Vinh Doan

Credit value

15

Module duration

10 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module aims to provide doctoral students with skills and knowledge to model and formally define decision and optimisation problems and apply a range of methods to solve these problems.

Module aims

Understand how to model and formally describe a decision and optimisation problem
Understand different classes of optimisation problems, and the associated challenges
Develop skills to solve such problems by a variety of Operational Research methods, based on examples in a variety of business applications

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Introduction to programming in Python or Matlab
Design of computer experiments
Linear Optimisation
Integer programming

Global Optimisation
Multi-objective optimisation and decision making
Stochastic modelling of optimisation problems
Simulation

Learning outcomes

By the end of the module, students should be able to:

- An in-depth knowledge of different types of optimisation and decision problems, and their respective challenges
- An in-depth understanding of assumptions underlying various optimisation and modelling approaches
- An in-depth knowledge of analytics tools commonly used in operational research

Indicative reading list

[Reading lists can be found in Talis](#)

Subject specific skills

An in-depth knowledge of different types of optimisation and decision problems, and their respective challenges

An in-depth understanding of assumptions underlying various optimisation and modelling approaches

An in-depth knowledge of analytics tools commonly used in operational research

Model and formally define a decision and optimisation problem

Understand the different categories of optimisation problems

Understand the strengths and limitations of different algorithmic approaches

Use a variety of methods to solve specific optimisation problems

Transferable skills

Problem solving abilities.

Modelling skills.

Analytical skills.

Programming skills.

Confidence as user of optimisation software

Study

Study time

Type	Required
Lectures	10 sessions of 3 hours (38%)
Private study	48 hours (62%)
Total	78 hours

Private study description

Self study and reflective learning.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A

	Weighting	Study time	Eligible for self-certification
Assessment component			
Individual assignment	100%	72 hours	Yes (extension)

Reassessment component is the same

Feedback on assessment

Module leader feedback

Availability

There is currently no information about the courses for which this module is core or optional.