IB104-10 Mathematical Programming 1

22/23

Department
Warwick Business School
Level
Undergraduate Level 1
Module leader
Bo Chen
Credit value
10
Module duration
5 weeks
Assessment
100% exam
Study location
University of Warwick main campus, Coventry

Description

Introductory description

At the end of the module students will be able to recognise, formulate and solve practical resource allocation and planning problems. Module members will also be able to identify the limitations of the approaches. This module serves as a prerequisite for further modules in integer and non-linear programming, which are available to students in their second and final years.

Module web page

Module aims

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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 Operational Research

Introduction to Linear Programming
Introduction to basic algorithms for solving linear programming problems
Practical computer work using a Linear Programming computer package
Formulation methods and Interpretation of solutions
Distribution / transportation models
Introduction to Game Theory

Learning outcomes

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

- Recognise, formulate and solve business optimisation problems.
- List and challenge the assumptions underpinning each of the key models studied.
- Reflect critically on the limitations of each of the models studied.
- Report on the meaning of the optimal solutions in a manner suited to a business context.

Indicative reading list

- WL Winston, Operations Research: Applications and Algorithms, Thompson. (Any edition)
- Hillier and G. Lieberman, Introduction to Operations Research. (Any edition)
- Anderson, Sweeney and Williams, An Introduction to Management Science, West. (Any edition)
- Taylor, Introduction to Management Science, Prentice Hall. (Any edition)
- Taha, Operations Research: An introduction. (Any edition)

Interdisciplinary

Core module for key interdisciplinary degree (MORSE).

Subject specific skills

Analytically solve linear optimisation problems.

Transferable skills

Model a business optimisation problem in a suitable mathematical form and interpret optimal mathematical solutions in the business context.

Study

Study time

Type	Required
Lectures	5 sessions of 4 hours (20%)
Total	100 hours

Type	Required
Seminars	4 sessions of 1 hour (4%)
Private study	30 hours (30%)
Assessment	46 hours (46%)
Total	100 hours

Private study description

Private Study.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group B1

	Weighting	Study time
Online Examination ~Platforms - AEP	100%	46 hours

- Online examination: No Answerbook required

Feedback on assessment

Feedback will be provided via my.wbs.

Past exam papers for IB104

Availability

Courses

This module is Core for:

- USTA-G302 Undergraduate Data Science
    - Year 1 of G302 Data Science

    - Year 1 of G302 Data Science
- Year 1 of USTA-G304 Undergraduate Data Science (MSci)
- Year 1 of USTA-G300 Undergraduate Master of Mathematics,Operational Research,Statistics and Economics
- USTA-Y602 Undergraduate Mathematics,Operational Research,Statistics and Economics
    - Year 1 of Y602 Mathematics,Operational Research,Stats,Economics
    - Year 1 of Y602 Mathematics,Operational Research,Stats,Economics

This module is Optional for:

- UCSA-G500 Undergraduate Computer Science
    - Year 1 of G500 Computer Science
    - Year 1 of G500 Computer Science
- UCSA-G503 Undergraduate Computer Science MEng
    - Year 1 of G500 Computer Science
    - Year 1 of G503 Computer Science MEng
    - Year 1 of G503 Computer Science MEng
- Year 1 of UCSA-I1N1 Undergraduate Computer Science with Business Studies
- Year 1 of USTA-G1G3 Undergraduate Mathematics and Statistics (BSc MMathStat)
- USTA-GG14 Undergraduate Mathematics and Statistics (BSc)
    - Year 1 of GG14 Mathematics and Statistics
    - Year 1 of GG14 Mathematics and Statistics

This module is Option list B for:

- Year 1 of UMAA-G105 Undergraduate Master of Mathematics (with Intercalated Year)
- UMAA-G100 Undergraduate Mathematics (BSc)
    - Year 1 of G100 Mathematics
    - Year 1 of G100 Mathematics
    - Year 1 of G100 Mathematics
- UMAA-G103 Undergraduate Mathematics (MMath)
    - Year 1 of G100 Mathematics
    - Year 1 of G103 Mathematics (MMath)
    - Year 1 of G103 Mathematics (MMath)
- Year 1 of UMAA-G106 Undergraduate Mathematics (MMath) with Study in Europe
- Year 1 of UMAA-G1NC Undergraduate Mathematics and Business Studies
- Year 1 of UMAA-G1N2 Undergraduate Mathematics and Business Studies (with Intercalated Year)
- Year 1 of UMAA-GL11 Undergraduate Mathematics and Economics
- Year 1 of UECA-GL12 Undergraduate Mathematics and Economics (with Intercalated Year)
- Year 1 of UMAA-G101 Undergraduate Mathematics with Intercalated Year