

IB104-10 Mathematical Programming 1

26/27

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

This is an elective module designed specifically for non-WBS students. To find detailed availability and to apply for this module, log in to my.wbs.ac.uk using your normal IT login details and apply via the my.wbs module application system. Once you've secured a place on my.wbs you should apply via your home department's usual process, which usually takes place via eVision. Note that you do not require the module leader's permission to study a WBS module, so please do not contact them to request it.

[Module web page](#)

Module aims

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.

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

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

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	24 sessions of 1 hour (24%)
Private study	30 hours (30%)
Total	100 hours

Type	Required
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 B3

Assessment component	Weighting	Study time	Eligible for self-certification
Centrally-timetabled examination (On-campus)	100%	46 hours	No
- Graph paper - Answerbook Pink (12 page)			

Reassessment component is the same

Feedback on assessment

Feedback will be provided via my.wbs.

[Past exam papers for IB104](#)

Availability

Courses

Course availability information is based on the current academic year, so it may change.

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)
- USTA-G300 Undergraduate Master of Mathematics, Operational Research, Statistics and Economics
 - Year 1 of G30A Master of Maths, Op.Res, Stats & Economics (Actuarial and Financial Mathematics Stream)
 - Year 1 of G30J Master of Maths, Op.Res, Stats & Economics (Data Analysis Stream)
 - Year 1 of G30B Master of Maths, Op.Res, Stats & Economics (Econometrics and Mathematical Economics Stream)
 - Year 1 of G30C Master of Maths, Op.Res, Stats & Economics (Operational Research and Statistics Stream)
 - Year 1 of G30C Master of Maths, Op.Res, Stats & Economics (Operational Research and Statistics Stream)
 - Year 1 of G30D Master of Maths, Op.Res, Stats & Economics (Statistics with Mathematics Stream)
 - Year 1 of G300 Mathematics, Operational Research, Statistics and Economics
 - Year 1 of G300 Mathematics, Operational Research, Statistics and Economics
 - Year 1 of G300 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