# IB207-10 Mathematical Programming 2

## 26/27

**Department**
Warwick Business School
**Level**
Undergraduate Level 2
**Module leader**
Bo Chen
**Credit value**
10
**Module duration**
10 weeks
**Assessment**
100% exam
**Study location**
University of Warwick main campus, Coventry

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## 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

This module addresses further theoretical and practical problems of mathematical programming, based on the prerequisite knowledge of linear programming and the duality theory. It provides an introduction to the world of discrete and non-linear optimization with coverage of application context, theoretical basis and methodological skills.

## 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.

This module includes coverage of theoretical and practical aspects of mathematical programming. In particular, it covers: linear programming problems with integer variables; the branch-and-bound algorithm; dynamic programming; network optimization; approximation algorithms; and convexity analysis.

## Learning outcomes

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

- Identify the business problems that can be modelled using optimisation techniques and formulate them in a suitable mathematical form.
- Apply optimisation techniques to the solution of the problems using spreadsheets and other appropriate software.
- Report on the meaning of the optimal solution in a manner suited to a business context.
- List and challenge the assumptions underpinning each of the key models studied.
- Reflect critically on the limitations of each of the models studied.
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## Indicative reading list

Reading lists can be found in Talis

## Interdisciplinary

Core module for key interdisciplinary degree (MORSE).

## Subject specific skills

Analytically solve optimization problems.

## Transferable skills

Model a business optimisation problem and construct spreadsheets to solve an optimisation problem.

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## Study

## Study time

| Type | Required |
| --- | --- |
| Lectures | 10 sessions of 2 hours (20%) |
| Total | 100 hours |

| Type | Required |
| --- | --- |
| Private study | 36 hours (36%) |
| Assessment | 44 hours (44%) |
| Total | 100 hours |

## Private study description

Private Study.

## Costs

No further costs have been identified for this module.

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## Assessment

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

### Assessment group B1

| | Weighting | Study time | Eligible for self-certification |
| --- | --- | --- | --- |
| **Assessment component** | | | |
| Centrally-timetabled examination (On-campus)<br>• Answerbook Pink (12 page) | 100% | 44 hours | No |
| **Reassessment component is the same** | | | |

### Feedback on assessment

Feedback provided via my.wbs.

Past exam papers for IB207

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## Availability

### Pre-requisites

To take this module, you must have passed:

- All of
  - IB104-12 Mathematical Programming I

## Courses

Course availability information is based on the current academic year, so it may change.
This module is Optional for:

- Year 1 of UIOA-EEU Undergraduate EU Exchange
- USTA-Y602 Undergraduate Mathematics,Operational Research,Statistics and Economics
  - Year 2 of Y602 Mathematics,Operational Research,Stats,Economics
  - Year 2 of Y602 Mathematics,Operational Research,Stats,Economics
- UIOA-EOS Undergraduate Overseas Exchange
  - Year 1 of UEOS Undergraduate Overseas Exchange
  - Year 1 of UEOS Undergraduate Overseas Exchange
- Year 1 of UIOA-EUS Undergraduate USA Exchange