Study Abroad Programme

The module description below is from the 2019/20 academic year and is subject to change, and for the use of study abroad students only.

Module name	Management Science
Module code	BM2212
School	Cass Business School
Department or equivalent	Undergraduate Programme
UK credits	15
ECTS	7.5
Level	

MODULE SUMMARY

Module outline and aims

This module introduces you to the discipline of Management Science, which involves representing business decision problems as mathematical models to allow the determination of optimal decisions and the evaluation of impact of change in policy or environment. The focus will be on two major areas of deterministic optimization and stochastic modelling. The first concerns finding the optimal course of action in the presence of large number of potential actions but with perfect information, while the latter involves evaluating performance of a system and potentially improving it in the presence of random variations but with limited number of possible actions.

Content outline

- Introduction to problem solving and decision making using mathematical models.
- Deterministic optimization including
  - Representing business problems as linear (or non-linear) optimization models,
  - finding the optimal solution using graphical method (for simple problems),
  - finding optimal solution using computer packages (for complex problems),
- Stochastic modelling
  - Developing a Monte-Carlo simulation model of a static system facing uncertainty using relevant computer package and performing sensitivity and what-if analysis

Study Abroad Programme

The module description below is from the 2019/20 academic year and is subject to change, and for the use of study abroad students only.

- o Developing a discrete-even simulation model of a dynamic system facing uncertainty using relevant computer package and performing sensitivity and what-if analysis

Relevant applications such as inventory and supply chain, production and distribution planning, and service configuration will be discussed.

To enhance your learning experience modules are designed to reflect contemporary issues in the business and financial world. As such, a degree of flexibility is expected in the exact content in terms of scope and coverage to ensure relevance to current circumstances.

WHAT WILL I BE EXPECTED TO ACHIEVE?

Learning outcomes should capture what the student is expected to know or be able to demonstrate by the end of the module and should:

- *be written at threshold level and at the credit level to be studied*
- *be styled so as to complete the sentence below*
- *be matched to specific content and/or assessment tasks*

On successful completion of this module, you will be expected to be able to:

Knowledge and understanding:

- Recognize the role and importance of mathematical modelling in business decision making
- Appreciate the difference of deterministic optimization models with stochastic simulation models.
- Appreciate the differences of two different types of simulation models, discrete-event and Monte-Carlo.

Skills:

- Develop a deterministic optimization model for a given problem, find the solution using relevant software, and interpret the results
- Develop and run a discrete event simulation model for a given problem, and perform sensitivity and what-if analysis

Study Abroad Programme

The module description below is from the 2019/20 academic year and is subject to change, and for the use of study abroad students only.

- Develop and run a Monte Carlo simulation model for a given problem, and perform sensitivity and what-if analysis
- Combine the three different approaches above for the purpose of solving real business world problems.
- Report and communicate the results of analytical models in lay language.

Values and attitudes:

- Appreciate the benefit and limitations of a mathematical modelling approach to solving business decision problems
- Show sensitivity to the needs of the non-specialist when communicating technical Information
- Demonstrate an appreciation of ethical issues as they relate to both the subject matter and the wider business world.

HOW WILL I LEARN?

A variety of learning and teaching methods will be used in this course.

Lectures are used to introduce context, concepts and techniques illustrated with practical and current examples. You will also have the opportunity to participate in class discussions and work through examples and exercises with the support of the lecturer. It is strongly recommended that you attend ALL lectures.

Key learning and teaching resources will be put on the module website on Moodle.

In the independent study time you are encouraged to read widely and in depth around particular topics in preparation for lectures. You may also spend time working through sample exercises and questions. In addition you will be preparing and undertaking your coursework assignments and preparing for your final examination.

Teaching pattern:

Study Abroad Programme

The module description below is from the 2019/20 academic year and is subject to change, and for the use of study abroad students only.

Teaching component	Teaching type	Contact hours (scheduled)	Self-directed study hours (independent)	Placement hours	Total student learning hours
Lecture	Lecture	22	118		140
Tutorials	Tutorial	10	0		10
Totals		32	118		150

WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?

Assessments

This module is assessed by Coursework and Examination.

During the module you will be required to submit a report based on a case study provided to you. This will be group based and account for 30% of the module mark.

At the end of the module you will sit one final 135 minute exam during the University exam period.

Assessment pattern:

Assessment component	Assessment type	Weighting	Minimum qualifying mark	Pass/Fail?
Coursework	Group report based on	30%	0	N/A

Study Abroad Programme

The module description below is from the 2019/20 academic year and is subject to change, and for the use of study abroad students only.

	analysis of a given case.				
Final Exam	Written exam	70%	0	N/A	

Assessment criteria

Assessment criteria are descriptions of the skills, knowledge or attributes you need to demonstrate in order to complete an assessment successfully and Grade-Related Criteria are descriptions of the skills, knowledge or attributes you need to demonstrate to achieve a certain grade or mark in an assessment. Assessment Criteria and Grade-Related Criteria for module assessments will be made available to you prior to an assessment taking place. More information will be available in the UG Assessment Handbook and from the module leader.

Feedback on assessment

Following an assessment, you will be given your marks and feedback in line with the University's Assessment Regulations and Policy. More information on the timing and type of feedback that will be provided for each assessment will be available from the module leader.

Assessment Regulations

The Pass mark for the module is 40%. Any minimum qualifying marks for specific assessments are listed in the table above. The weighting of the different components can also be found above. The Programme Specification contains information on what happens if you fail an assessment component or the module.

INDICATIVE READING LIST

Winston, W. and Albright, S. C. (2015). *Practical Management Science.* 5th ed. Los Angeles: Cengage Learning.

Study Abroad Programme

The module description below is from the 2019/20 academic year and is subject to change, and for the use of study abroad students only.

Version: 2.0

Version date: February 2019

For use from: 2019-20