STU11004 – Introduction to Management Science

Module Code	STU11004
Module Name	Introduction to Management Science
ECTS Weighting[1]	10 ECTS
Semester taught	Semester 1 & 2
Module Coordinator/s	John McDonagh

Module Learning Outcomes

On successful completion of this Module, students will be able to:

Semester 1

- L01: Explain why the value of money decreases as a function of how far in the future it will be available.
- L02: Compute the simple and compound interest of any amount of money, the value of an annuity and the payment of an amortised loan.
- L03: Identify and solve problems using dynamic programming.
- L04: Compute the shortest spanning tree of a network and the shortest path between two points in a network.
- L05: Derive the maximal flow through a network.
- L06: Compute the optimal inventory policy for the classic formulation, and also with constant receipt and shortages.
- L07: Explain risk averse and risk prone behaviour, give examples of each and demonstrate that decreasing marginal worth leads to risk averse behaviour.
- L08: Calculate properties of a queueing system from information about number of servers, arrival rates and service rate

Semester 2

- L09: Compute basic forecasts of a time series variable and explain how you would assess their accuracy.
- L10: Identify and solve problems using linear programming.
- L11: Understand the decision analysis tools used in Management Science, and carry out analysis using tools such as decision trees and utility.

Module Content

This module covers a range of subjects in Management Science at an introductory level. The objectives of the module are to give students an overview of the subject, to teach important basic techniques and introduce systematic thinking about problems. The first semester begins with the topic of the time value of money, and then looks at the theory of queues, classic network problems, inventory control and then finishes with dynamic programming. The second semester looks at basic forecasting, linear programming and the different decision making tools used in Management Science . The module will use real-world Management Science problems to illustrate concepts and models.

Teaching and learning Methods

There will be three hours of lectures each week.

Assessment Details

Assessment Component	Brief Description	Learning Outcomes Addressed	% of total	Week set	Week due
Examination	In-person Exam (2hrs)	First Semester	35%	n/a	n/a
Coursework	Assignments	First Semester	15%	TBD	TBD
Examination	In-person Exam (2hrs)	Second Semester	35%	n/a	n/a
Coursework	Assignments	Second Semester	15%	TBD	TBD

Reassessment Details

Reassessment is an in-person Exam (2hrs).

Contact Hours and Indicative Student Workload

Contact Hours (scheduled hours per student over full module), broken down by:	**66 hours**	
	Lecture	66 hours
	Laboratory	0 hours
	tutorial or seminar	0 hours
	Other	0 hours
Independent study (outside scheduled contact hours), broken down by:	**144 hours**	
	preparation for classes and review of material (including preparation for examination, if applicable)	132 hours
	completion of assessments (including examination, if applicable)	12 hours
Total Hours	**210 hours**	

Recommended Reading List

A full reading list will be provided at the start of each semester. No one textbook covers the entire module, but some parts of the following books will be useful.

An Introduction to Management Science: Quantitative Approaches to Decision Making (3rd Edition), David Anderson et al. Cengage. 2017.

Introduction to Management Science (10th Edition) by Bernard W. Taylor. Pearson. 2012.

Module Pre-requisites

Prerequisite modules: None

Other/alternative non-module prerequisites: None

Module Co-requisites

None

Module Website

Blackboard