

Liverpool John Moores University

Title: Operations Research
Status: Definitive
Code: **7013MSC** (121683)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Engineering

Team	Leader
Trung Thanh Nguyen	Y

Academic Level: FHEQ7
Credit Value: 10
Total Delivered Hours: 19
Total Learning Hours: 100
Private Study: 81

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	11
Tutorial	6

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS2	Examination	70	2
Report	AS1	Report	30	

Aims

This module introduces a set of fundamental techniques and tools to assist engineers/managers in making better decisions on real world management/business problems. It will teach you how to model an operational problem in your business or organisation, how to select and apply a quantitative method to solve it, and how to interpret the results to make a better management decision.

Learning Outcomes

After completing the module the student should be able to:

- 1 Familiar with fundamental mathematical modelling tools used in Operations Research (OR)
- 2 Model a problem and apply the most appropriate tools to solve solving or optimise optimising it
- 3 Interpret the results to make a better management/business decision

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Examination	1	2	3
Report	2	3	

Outline Syllabus

Quantitative methods. Operations Research. Operations Research (OR) solver software.

Mathematical Programming: Modelling problems in mathematical programming, Solving operational/management problems using mathematical programming techniques.

Sensitivity Analysis: Effect of changes on current optimal settings, Changes in profit or cost, Changes in the availability/capacity/demand of resources. Addition of new products/activities/constraints.

Network models and applications: Network modelling and designing networks, Finding the least amount of travel/lines/cables to connect multiple locations. Finding the shortest transport route, Maximising amount of goods sent between locations.

Applications of transport models: Dealing with product supplies and demands in multiple locations, . Production scheduling to meet future demands, Allocation of workers/machines to jobs, Transshipment problems

Learning Activities

Lectures, tutorial and practicals

Notes

The module is designed to deliver students with the skills to apply research methods, modelling and quantitative techniques in an engineering context

