Liverpool John Moores University

Title:	Operations Research
Status:	Definitive
Code:	**7124MAN** (121996)
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:**	20	**Total Delivered Hours:**	46
Total Learning Hours:	200	**Private Study:**	154		

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	22
Tutorial	22

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS2	Examination	70	2
Report	AS1	Coursework in the form of lab-based, online assignments	30	

Aims

This module introduces a set of fundamental techniques and tools to assist engineers and managers in making better decisions on real world management/business problems.

Learning Outcomes

After completing the module the student should be able to:

1 Select an appropriate mathematical modelling tool
2 Model a problem and apply the most appropriate tools to solve or optimise 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
Lab based online assignments	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, Transhipment problems

Learning Activities

Lectures, tutorial and practicals

Notes

This module 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.