

Summary Information

Module Code	7124MECH
Formal Module Title	Operations Research
Owning School	Engineering
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	22
Tutorial	22

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks

Aims and Outcomes

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.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Select an appropriate mathematical modelling tool
MLO2	2	Model a problem and apply the most appropriate tools to solve or optimise it
MLO3	3	Interpret the results to make a better management/business decision

Module Content

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
Module Overview	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.
Additional Information	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.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	70	2	MLO1, MLO2, MLO3
Portfolio	Lab based online assignments	30	0	MLO2, MLO3

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Trung Thanh Nguyen	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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