

Module Information

2022.01, Approved

Summary Information

Module Code	7122COMP
Formal Module Title	Performance Modelling and Simulation
Owning School	Computer Science and Mathematics
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
Computer Science and Mathematics

Learning Methods

Learning Method Type	Hours
Lecture	11
Practical	11
Tutorial	11

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	To develop a critical understanding of various aspects of modelling for performance evaluation of computer networks and communications systems. To develop modelling skills necessary for the creating appropriate analytical and simulation models for performance evaluation. To evaluate and apply, effectively, computer systems performance evaluation tools and techniques.
------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Compose a model of a network system using appropriate tools and techniques
MLO2	2	Apply, effectively, tools and techniques for solving analytical models
MLO3	3	Design simulation software for performance evaluation of computer systems
MLO4	4	Critically evaluate simulation and modelling techniques of computer networks for their performance evaluation

Module Content

Outline Syllabus	Modelling and Abstraction Operational Laws Markov Processes Queuing Models Traffic Characterisation Petri Nets Main Concepts of performance evaluation by simulation:- Components of Simulation Software- Generating Random Numbers and Random Variates- System Time: Event driven and clock driven simulation techniques- Validation- Simulation Results: data collection and statistical analysis Simulation Packages for Computer Networks
Module Overview	
Additional Information	This module will consider the problem of modelling dynamic systems, and the various tools and techniques used for solving such models. Analytical and simulation based models and solutions will be discussed and assessed in the module.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Portfolio	Performance simulation task	50	0	MLO1, MLO2, MLO3
Centralised Exam	Exam	50	2	MLO2, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Rubem Pereira	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings