Liverpool John Moores University

Title:	PERFORMANCE MODELLING AND SIMULATION
Status:	Definitive
Code:	**7122COMP** (121345)
Version Start Date:	01-08-2021
Owning School/Faculty:	Computer Science and Mathematics
Teaching School/Faculty:	Computer Science and Mathematics

Team	Leader
Rubem Pereira	Y

Academic Level:	FHEQ7	**Credit Value:**	20	**Total Delivered Hours:**	35
Total Learning Hours:	200	**Private Study:**	165		

Delivery Options
Course typically offered: Semester 1

Component	Contact Hours
Lecture	11
Practical	11
Tutorial	11

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Performance simulation task	50	
Exam	AS2	Examination	50	2

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.

Learning Outcomes

After completing the module the student should be able to:

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

Learning Outcomes of Assessments

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

Performance simulation task	1	2	3
Exam	2	4	

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

Learning Activities

Students will participate in lectures, tutorials, and practical/lab sessions.

Notes

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.