

Liverpool John Moores University

Title: REAL-TIME SYSTEMS
Status: Definitive
Code: **7059COMP** (120316)
Version Start Date: 01-08-2015

Owning School/Faculty: Computing and Mathematical Sciences
Teaching School/Faculty: Computing and Mathematical Sciences

Team	Leader
David Lamb	Y
Denis Reilly	

Academic Level: FHEQ7 **Credit Value:** 20.00 **Total Delivered Hours:** 38.00
Total Learning Hours: 200 **Private Study:** 162

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	12.000
Workshop	24.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Artefacts	AS1	Development of a Real-Time Systems Model.	50.0	
Exam	AS2	Examination.	50.0	2.00

Aims

To provide an in-depth study various modelling methods for real-time software systems.

To develop knowledge of the selection and use of appropriate modelling methods for real-time software systems development.

To develop practical experience in the use of modelling methods for the analysis and

design of real-time software systems.

Learning Outcomes

After completing the module the student should be able to:

- 1 Critically evaluate the operational characteristics of real-time systems and their development techniques.
- 2 Critically review the theoretical aspects of real-time systems.
- 3 Apply Data Flow modelling methods to the analysis, specification and design of real-time systems/applications.
- 4 Apply Object Oriented modelling methods to the analysis, specification and design of real-time systems/applications.
- 5 Solve scheduling problems in real-time systems.

Learning Outcomes of Assessments

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

Real-Time Systems Model Examination	3	4	
	1	2	5

Outline Syllabus

Real-Time Systems - Operations: characteristics, timing issues, mechanisms, structures, and applications. Safety critical systems: concepts, features, criticality, requirements, and controls. Operation modelling: concepts, methods, analysis, and applications.

Requirements Analysis for Real-Time Software Systems - Structured requirements analysis: concepts, principles, timing requirements, processes, methods, and applications. Object oriented requirements analysis: principles, processes, identification of objects and classes, analysis of external system behaviours, modelling of object interactions, defining class structures, and analysis and modelling of object behaviours.

Real-Time Software Systems Design – Structured system design: concepts, principles, safety issues, fault tolerance techniques, design methods, and applications. Object oriented system design: design principles, architecture design, mechanistic design, detailed design, design strategies, design patterns, and activity modelling.

Learning Activities

Lectures will be followed by tutor-led practical sessions.

Notes

This module covers analysis, specification and design issues related to real-time software systems/applications.