Liverpool John Moores University

Title:	REAL-TIME SOFTWARE MODELLING AND WORKSHOP
Status:	Definitive
Code:	**6036COMP** (103082)
Version Start Date:	01-08-2011
Owning School/Faculty:	Computing and Mathematical Sciences
Teaching School/Faculty:	Computing and Mathematical Sciences

Team	Leader
Somasundaram Ravindran	Y

Academic Level:	FHEQ6	**Credit Value:**	24.00	**Total Delivered Hours:**	68.00
Total Learning Hours:	240	**Private Study:**	172		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	17.000
Practical	22.000
Tutorial	11.000
Workshop	16.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Coursework	60.0	
Exam	AS2	Examination	40.0	2.00

Aims

To develop knowledge of various modelling methods for real-time software systems.
To foster student's insights into the selection and use of appropriate modelling methods for real-time software systems development.
To develop practical experience in the use of modelling methods and associated CASE tools for the analysis and design of real-time software systems.

Learning Outcomes

After completing the module the student should be able to:

1 Demonstrate knowledge of operational characteristics of real-time systems and their development techniques.
2 Assess the suitability of different real-time software systems modelling methods and tools for a range of practical applications.
3 Apply appropriate modelling methods to the analysis, specification and design of real-time systems/applications.
4 Use software tools to facilitate the application of the modelling methods.

Learning Outcomes of Assessments

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

Report	1	3		
Exam	1	2	3	4

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.

CASE Tools: Effectiveness of CASE tools, and use of CASE tools for the analysis and design of real-time software systems.

Learning Activities

Include attending lectures, tutorials and labs, as well as reading books and handouts.

References

Course Material	Book
Author	Hatley, D.J. Pirbhai, I.A.
Publishing Year	1988
Title	Strategies for Real-Time System Specification
Subtitle	
Edition	
Publisher	John Wiley & Sons
ISBN	0-932633-11-0

Course Material	Book
Author	Douglass, B.P.
Publishing Year	2004
Title	Real Time UML: Advances in the UML for Real-Time Systems
Subtitle	
Edition	3rd
Publisher	Addison Wesley
ISBN	9780321160768

Course Material	Book
Author	Booch,G . Rumbaugh, J. Jacobson, I.
Publishing Year	2005
Title	The Unified Modeling Language User Guide
Subtitle	
Edition	2nd
Publisher	Addison Wesley
ISBN	9780321267979

Course Material	Book
Author	Cooling, J.
Publishing Year	2003
Title	Software Engineering for Real-Time Systems
Subtitle	
Edition	
Publisher	Addison-Wesley
ISBN	9780201596205

Course Material	Book
Author	Stevens, P.
Publishing Year	2005
Title	Using UML: Software Engineering with Objects and Components
Subtitle	

Edition	2nd
Publisher	Addison Wesley
ISBN	9780321269676

Course Material	Book
Author	Roques, P.
Publishing Year	2003
Title	UML in Practice: The Art of Modeling Software Systems Demonstrated Through Worked Examples and Solutions
Subtitle	
Edition	
Publisher	Wiley Higher Education
ISBN	978-0470848319

Course Material	Book
Author	Burns, A.
Publishing Year	2001
Title	Real -Time Systems and their Programming Languages
Subtitle	
Edition	3rd
Publisher	Addison Wesley
ISBN	9780201729887

Course Material	Book
Author	Peckol, J.K.
Publishing Year	2007
Title	Embedded Systems: A Contemporary Design Tool
Subtitle	
Edition	
Publisher	Wiley Higher Education
ISBN	978-0471721802

Notes

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