

Module Title	Operating Systems & Concurrency	School	Mathematical and Computer Sciences				On or Off-Campus	On	
Module Co-ordinator	Pierluigi Frisco	SCQF Level	9	Module Code	F29OC	Semester	2	Credits	15

1. Pre-requisites	F28PL Programming Languages, F28DA Data Structures & Algorithms								
2. Linked Modules (specify if synoptic)	N/A								
3. Excluded Modules	None								
4. Replacement Module	Code:	5. Availability as an Elective		Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>		
	Date Of Replacement:								
6. Degrees for which this is a core module	Mandatory module for BSc Computer Science, MEng Software Engineering, BEng/MEng Computing & Electronics								
7. Aims									
<p><i>For the Operating system part: To provide an introduction to operating systems, their basic principles and shell programming.</i></p> <p><i>For the Concurrency part: To introduce the theory and practice of concurrent hardware and software systems</i></p>									
8. Syllabus									
<p><i>For the Operating system part: overview on operating systems concepts and structures, processes, threads, classical inter-process communication problems, Linux shell scripting.</i></p> <p><i>For the Concurrency part: Process and Threads, Concurrent Execution, Shared Objects and Mutual Exclusion, Monitors and Condition Synchronisation, Deadlock, Safety and Liveness, Model Based Design. Performance, Introductions, Processors, Pipelines.</i></p>									

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9. Learning Outcomes (HWU Core Skills: Employability and Professional Career Readiness)

Subject Mastery	<p>Understanding, Knowledge and Cognitive Skills Scholarship, Enquiry and Research (Research-Informed Learning)</p> <p><i>For the Operating systems part:</i></p> <ul style="list-style-type: none"> ◆ Understanding of the concepts and structures present in modern operating systems. ◆ Ability to write Linux shell scripting. <p><i>For the Concurrency part:</i></p> <ul style="list-style-type: none"> ◆ Broad and integrated knowledge and understanding of concurrency concepts, techniques and problems ◆ Critical understanding of exclusion, synchronisation and deadlock ◆ Detailed knowledge of abstract modelling and model-based design
Personal Abilities	<p>Industrial, Commercial & Professional Practice Autonomy, Accountability & Working with Others Communication, Numeracy & ICT</p> <ul style="list-style-type: none"> ◆ Critically evaluate the problematic and concepts related to operating systems. ◆ Analysis of the different possible solutions to the problematic.

10. Assessment Methods				11. Re-assessment Methods	
Method	Duration of Exam (if applicable)	Weighting (%)	Synoptic modules?	Method	Duration of Exam (if applicable)
Exam	2 hours	50%		Exam	2 hours
Coursework/Small application		50%			

12. Date and Version							
Date of Proposal	October 2007	Date of Approval by School Committee	December 2007	Date of Implementation	September 2008	Version Number	