

H06OPS: Operating Systems

Module Code:	H06OPS
Long Title	Operating Systems APPROVED
Title	Operating Systems
Module Level:	LEVEL 6
EQF Level:	5
EHEA Level:	Short Cycle
Credits:	5
Module Coordinator:	CRISTINA HAVA MUNTEAN
Module Author:	CRISTINA HAVA MUNTEAN
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	Master's degree in computing or cognate discipline. May have industry experience also.
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
#	Learning Outcome Description
LO1	Discuss the theory and concepts involved in an operating system
LO2	Compare and contrast the strengths and weaknesses of different modern operating systems
LO3	Use common tools and techniques to exercise and understand Operating Systems theory and concepts
LO4	Demonstrate competent use of the system utilities, tools and user interface to exercise, demonstrate and investigate an operating system.
Dependencies	
Module Recommendations	
No recommendations listed	
Co-requisite Modules	
No Co-requisite modules listed	
Entry requirements	See section 4.2 Entry procedures and criteria for the programme including procedures recognition of prior learning.

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Module Content & Assessment			
Indicative Content			
An Introduction to Operating Systems Definition of an operating system, Types of operating systems, Evolution of operating system design, Characteristics and main functions of an operating system, Examples of operating systems (e.g. UNIX, Linux, Ubuntu, Windows), Architecture of different Operating Systems			
Interacting with the Operating System Interface and Operating Systems subsystems, Graphical User Interface, Command Line Interface, Batch File programming, Exemplification of Windows and UNIX interface			
Processes and Threads Process and programs, Process states, Concurrency and interprocess communications, CPU Scheduling, Threads			
Scheduling Non pre-emptive scheduling policies, Pre-emptive scheduling policies, Deadlock, Real-time scheduling, examples of scheduling in different operating systems.			
File System Files and file operations, Directories and directories operations, Pathnames and filenames, Types of file systems, File types, File sharing, Links and shortcuts, File attributes, Disk structure, Examples of file systems (MS-DOS, Windows, UNIX)			
Memory Management Memory hierarchy, Address spaces, Static and dynamic memory, Memory allocation to a process, Swapping and relocation, Paging, Segmentation, Virtual memory			
Security Threats, Attackers, malware applications, defenses, authentication, controlling access to resources			
Input/Output Principles of I/O hardware, device drivers and controllers, types of devices, buffering, spooling, device driver structure.			
Assessment Breakdown			%
Coursework			50.00%
End of Module Assessment			50.00%
Assessments			
Full Time			
Coursework			
Assessment Type:	Continuous Assessment (0200)	% of total:	50
Assessment Date:	n/a	Outcome addressed:	1,3,4
Non-Marked:	No		
Assessment Description: In-class sample Assessment: Consider a set of four processes, their arrival time in the system and their burst time, as presented in the provided table. Indicate how these processes will run when Round-Robin scheduling algorithm is used.			
End of Module Assessment			
Assessment Type:	Terminal Exam	% of total:	50
Assessment Date:	End-of-Semester	Outcome addressed:	1,2,3,4
Non-Marked:	No		
Assessment Description: Terminal assessment exam			
No Workplace Assessment			
Reassessment Requirement			
Repeat examination <i>Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.</i>			
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Module Workload				
Module Target Workload Hours 0 Hours				
Workload: Full Time				
Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	in-class lecture session. 2 hours per week	24	Per Semester	2.00
Tutorial	tutorial/lab session. 1 hour per week	12	Per Semester	1.00
Independent Learning Time	independent study	89	Per Semester	7.42
Total Weekly Contact Hours				3.00

Module Resources	
<i>Recommended Book Resources</i>	
Abraham Silberschatz. (2018), Operating System Concepts, 10th. Wiley (WileyPLUS Products).	
<i>Supplementary Book Resources</i>	
Andrew S. Tanenbaum. (2014), Modern Operating Systems, 4th ed. Pearson.	
<i>This module does not have any article/paper resources</i>	
<i>Other Resources</i>	
[website], Ubuntu Operating System, http://www.ubuntu.com/	
Discussion Note:	