

University of the West of Scotland

Module Descriptor

Session: 2022/23

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Title of Module: Operating Systems

Code: COMP08074	SCQF Level: 8 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of Computing, Engineering and Physical Sciences		
Module Co-ordinator:	Tony Gurney		

Summary of Module

An operating system module is one of the most important professional and fundamental modules taught in the computing curriculum. The user interacts with the computer system, during the design and development and use of the computer applications. The module builds upon previously presented concepts. The module will provide understanding of the principles behind the design of centralized and distributed operating systems observing how these principles are put into practice in real operating systems. It will also look at solved and open problems and issues in OS design as well as recent trends.

The module will provide students with an introduction to the concepts, structure and mechanisms of Operating Systems. The main topics covered by the module include: Basic Principles, Kernel, Input/Output, File Management, Network File Systems, Memory Management, Scheduling and Dispatch, Concurrency and Synchronisation, Security and Protection.

The teaching and assessment contained in this module are specifically designed to encourage independent, critical thinking. In addition students are encouraged to work through problems both independently and as part of a group. Tutorials, as well as group interactions, are expressly structured to encourage the creation and dispersal of solutions using a critical approach to problem solving whilst bearing in mind best industry practice both legally and ethically.

Module Delivery Method

Face-To-Face	Blended	Fully Online	HybridC	HybridO	Work-based Learning
✓					

Face-To-Face

Term used to describe the traditional classroom environment where the students and the lecturer meet synchronously in the same room for the whole provision.

Blended

A mode of delivery of a module or a programme that involves online and face-to-face delivery of learning, teaching and assessment activities, student support and feedback. A programme may be considered "blended" if it includes a combination of face-to-face, online and blended modules. If an online programme has any compulsory face-to-face and campus elements it must be described as blended with clearly articulated delivery information to manage student expectations

Fully Online

Instruction that is solely delivered by web-based or internet-based technologies. This term is used to describe the previously used terms distance learning and e learning.

HybridC

Online with mandatory face-to-face learning on Campus

HybridO

Online with optional face-to-face learning on Campus

Work-based Learning

Learning activities where the main location for the learning experience is in the workplace.

Campus(es) for Module Delivery

The module will **normally** be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit)

Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
✓		✓	✓			

Term(s) for Module Delivery

(Provided viable student numbers permit).

Term 1	✓	Term 2	✓	Term 3	
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Learning Outcomes: (maximum of 5 statements)

On successful completion of this module the student will be able to:

L1. Demonstrate an understanding of the principles, structure and functions of operating systems as an integral part of the design of modern computer system.

L2. Investigate, analyse and define the requirements for an operating system given an application scenario relating its functions to the architecture of the machine.

Employability Skills and Personal Development Planning (PDP) Skills

SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	SCQF Level 8. Knowledge & understanding of working principle of computer components and an operating system.
Practice: Applied Knowledge and Understanding	SCQF Level 8. Knowledge of applying practical skills in designing and building simple communications between computer components and systems software.
Generic Cognitive skills	SCQF Level 8. Students will learn how to bring together information from various sources so as to complete their laboratory and tutorial tasks.
Communication, ICT and Numeracy Skills	SCQF Level 8. Working in interacting groups and compiling individual reports students will develop communication skills as well as the ability to write technical report and documentation. The practical problem solving exercises will enhance students' numerical skills.
Autonomy, Accountability and Working with others	SCQF Level 8. Students will be encouraged to work with others in tutorials and lab sessions for finding information and solving problems on the assigned task. In doing so, students will develop a sense of accountability to the other members.

Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code: COMP07061	Module Title: Computing Systems
	Other:	
Co-requisites	Module Code:	Module Title:

* Indicates that module descriptor is not published.

Learning and Teaching

The module will be delivered by means of lectures, tutorials and practical lab work aimed at developing the knowledge and skills on Operating systems. The lectures will introduce techniques and cover core concepts, principles and theories of the operating system. These will be supported by practical exercises undertaken during tutorials, labs and direct study. Additional reading material - classic papers on operating systems and papers covering some new developments - is provided as part of coursework that involves critically evaluating the ideas presented in the papers. The follow-on lab work will enable students to put the theory into practice what they have learned. The tutorial sessions will help consolidate both the lecture material and the skills practiced during the lab work. Oral feedback will be given during the tutorials and labs. Practical understanding and skills and learning outcomes will be tested through coursework and the formal examination.

Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	Student Learning Hours (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture/Core Content Delivery	24
Tutorial/Synchronous Support Activity	12
Laboratory/Practical Demonstration/Workshop	12
Independent Study	152
	200 Hours Total

**Indicative Resources: (eg. Core text, journals, internet access)

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

Module Resources on Moodle

Little Man Computer software

PC-SPIM software

YASS OS simulator software

The World Wide Web

Operating System Concepts, Ninth Edition, Silberschatz, Galvin and Gagne, John Wiley & Sons, 2012.

Computer Organisation and Architecture, Ninth Edition, William Stallings, Pearson, 2013.

Modern Operating Systems, (3rd ed), Andrew Tanenbaum, Pearson, 2009.

Computer architecture and Logic Design, Thomas Bartee, McGraw-Hill, 2010.

The architecture of Computer Hardware and Software: An Information Technology Approach, forth edition, Irv Englander, Wiley, 2009.

Computer Organization and Design The Hardware/Software Interface, Fifth Edition, David A Patterson and John L Hennessey; Elsevier, 2008.

(**N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Engagement Requirements

In line with the Academic Engagement Procedure, Students are defined as academically engaged if they are regularly engaged with timetabled teaching sessions, course-related learning resources including those in the

Library and on the relevant learning platform, and complete assessments and submit these on time. Please refer to the Academic Engagement Procedure at the following link: [Academic engagement procedure](#)

Supplemental Information

Programme Board	Computing
Assessment Results (Pass/Fail)	No
Subject Panel	Business & Applied Computing
Moderator	Henry Hunter
External Examiner	R Khusainov
Accreditation Details	
Version Number	1.07

Assessment: (also refer to Assessment Outcomes Grids below)

An individual coursework assignment (weighted at 20%).

A group coursework assignment (weighted at 40%).

Two knowledge based class tests (each weighted at 20% for a total of 40%).

(N.B. (i) **Assessment Outcomes Grids** for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed.

(ii) An **indicative schedule** listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Handbook.)

Assessment Outcome Grids (Footnote A.)

Component 1

Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Report of practical/ field/ clinical work	✓	✓	20	0

Component 2

Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Dissertation/ Project report/ Thesis	✓	✓	40	0

Component 3

Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Class test (written)	✓	✓	40	2
Combined Total For All Components			100%	2 hours

Footnotes

A. Referred to within Assessment Section above

B. Identified in the Learning Outcome Section above

Note(s):

1. More than one assessment method can be used to assess individual learning outcomes.
2. Schools are responsible for determining student contact hours. Please refer to University Policy on contact hours (extract contained within section 10 of the Module Descriptor guidance note).
This will normally be variable across Schools, dependent on Programmes &/or Professional requirements.

Equality and Diversity

This module is suitable for any student. The assessment regime will be applied flexibly so that a student who can attain the practical outcomes of the module will not be disadvantaged. When a student discloses a disability, or if a tutor is concerned about a student, the tutor in consultation with the School Enabling Support coordinator will agree the appropriate adjustments to be made. (N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School).

[UWS Equality and Diversity Policy](#)

(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)