

University of the West of Scotland

Module Descriptor

Session: 2024/25

Title of Module: Computing Systems

Code: COMP07061	SCQF Level: 7 (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:	Henry Hunter		

Summary of Module

This is a core module for the undergraduate programmes in Computer Games Technology, Business Technology, Computer Networking and Web Development. It also forms part of the BSc Computing. It is an option on a number of other computing and related degrees.

Two complementary approaches are used in teaching and learning, and woven together over the weeks of teaching. In the first approach, students look at different examples of computer systems, hardware and software, and learn about the different hardware and software components that together form a computer system. In this way, a top-down view of a computer system is formed. Second, students learn about how computer processors are built up from simple digital logic circuits into distinct components and then to complete CPUs and GPUs.

This top-down/bottom-up approach is also used to examine the software running on today's computer systems. A broad view of the OS and software environments is complemented by a machine level view. This moves from the machine code used by computers, to the high-level programming languages favoured by human programmers and the processes by which these are translated into machine code for execution on the computer.

The module also introduces the (GCHQ – 'Operational Security Management' discipline) topics: Internet, Network and Applications Security. As each of these topics are covered, students will research, in groups, recent threats targeting new platforms.

Undertaking this module will develop a range of **graduate attributes** including: critical thinking; problem solving; effective communication and research skills.

- Computers and processors are now an ever present part of normal life, found not only in PCs, but in mobile phones, digital cameras, games consoles and in a myriad of places around the home and workplace. Security is now a core requirement when creating systems and software. This module will introduce students to some of the fundamentals of computer security including internet threats, network security and application security.

Module Delivery Method					
Face-To-Face	Blended	Fully Online	HybridC	HybridO	Work-based Learning
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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

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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:
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Term(s) for Module Delivery

(Provided viable student numbers permit).

Term 1

Term 2

Term 3

Learning Outcomes: (maximum of 5 statements)

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

L1. Demonstrate an awareness of the range of hardware and software components and devices that are brought together in modern information, entertainment and ubiquitous computer systems showing an understanding of the security issues which are associated with the components.

L2. Identify and use a variety of approaches associated with representation of data

L3. Convey and demonstrate their understanding of the organization and operation of low level computer system organization and architecture.

L4. Identify and describe concepts from operating system and software translation that demonstrate their understanding of bridging the gap from a problem-oriented level to machine execution level.

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 (Kand U)	SCQF Level 7. Demonstrate a broad knowledge of the various levels contributing to computer system organisation.
Practice: Applied Knowledge and Understanding	SCQF Level 7. Explaining ways in which data may be represented within a computer system and performing conversions between number systems Illustrating the steps involved in the detailed execution of instructions at the logic and machine levels and solve related problems in lab exercises
Generic Cognitive skills	SCQF Level 7. Use a range of approaches to address defined and/or routine problems within familiar contexts
Communication, ICT and Numeracy Skills	SCQF Level 7. Use of standard word processing applications Use of a range of numerical and investigative skills
Autonomy, Accountability and Working with others	SCQF Level 7. Work with others to solve defined problems

Pre-requisites: Before undertaking this module the student should have undertaken the following:

Module Code:	Module Title:

Other:

Co-requisites	Module Code:	Module Title:

* Indicates that module descriptor is not published.

Learning and Teaching	
An extended overview of the subject area is presented in a series of introductory lectures, before focusing in more detail on each of instruction set architectures, operating systems, representation of data, computer language levels, internet threats, network security and application security. Tutorials involve students working in groups on exercises and problems relating to the taught material, and serve, with the coursework, to encourage wider reading and reflection on some of the design and implementation issues for modern computer systems.	
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

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Engagement Requirements

Laboratory/Practical Demonstration/Workshop	24
Independent Study	152
	200 Hours Total
**Indicative Resources: (eg. Core text, journals, internet access)	
<p>The following materials form essential underpinning for the module content and ultimately for the learning outcomes:</p> <p>Course booklet and online resources will be provided/referenced.</p> <p>Additional text: How Computers Work, Ron White</p> <p>Recommended reading material from: Computers and Computer Systems, OpenLearn, http://openlearn.open.ac.uk/course/view.php?id=2584</p> <p>Principles of Computer Hardware, Alan Clements</p> <p>Elements of Computing Systems, Nissan & Schocken</p> <p>Schaums Outline of Computer Architecture</p>	
<p>(**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)</p>	

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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	Tony Gurney
External Examiner	D Doolan
Accreditation Details	This module is accredited by BCS as part of a number of specified programmes. It is also accredited by Skillset as part of BSc (Hons) Computer Games Technology. GCHQ accreditation.

Version Number 3

Assessment: (also refer to Assessment Outcomes Grids below)

Intermediate class Tests 50%, Group Report 50%

(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)	Learning Outcome (3)	Learning Outcome (4)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Class test (written)	✓	✓	✓	✓	50	3
Report of practical/ field/ clinical work	✓				50	0
Combined Total For All Components					100%	3 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

The University policies on equality and diversity will apply to this module: the content and assessment are based on the ability to communicate in English but are otherwise culture-neutral. This module is almost entirely computer based and students must be proficient computer users within a windows, icons and mouse pointer environment with the use of suitable aids where required. When a student discloses a disability an Enabling Support Advisor will agree the appropriate adjustments to be made, consulting with the module coordinator if

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necessary.

UWS Equality and Diversity Policy

[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)