

Prifysgol Wreccsam Wrexham University

Module specification

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Module Code	COM307
Module Title	Computer Hardware and Software
Level	3
Credit value	20
Faculty	FACE
HECoS Code	100336
Cost Code	GACP
Pre-requisite module	N/A

Programmes in which module to be offered

Programme title	Core/Optional/Standalone
STEM Foundation Year	Optional

Breakdown of module hours

Learning and teaching hours	30 hrs
Placement tutor support hours	0 hrs
Supervised learning hours e.g. practical classes, workshops	10 hrs
Project supervision hours	0 hrs
Active learning and teaching hours total	40 hrs
Placement hours	0 hrs
Guided independent study hours	160 hrs
Module duration (Total hours)	200 hrs

Module aims

This module aims to provide students with a comprehensive understanding of modern computer hardware and software systems. Students will explore the fundamental components of computers, the architecture of modern operating systems, and the interaction between hardware and software in computing environments.

Module Learning Outcomes

At the end of this module, students will be able to:

1	Describe the fundamental components of a computer system, including their purpose.
2	Explain the architecture and functions of modern operating systems.
3	Analyse the interaction between hardware and software within computer systems.
4	Evaluate and communicate emerging trends and technologies within the computer hardware and software sectors

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

Assessment 1:

Throughout the module, students will complete a variety of portfolio tasks to assess their understanding of computer hardware and software concepts. These tasks may include an online quiz on the fundamental components of a computer system and their purposes, a presentation on emerging trends and technologies in the computer hardware and software sectors, and a report analysing the interaction between hardware and software within computer systems while evaluating their fitness for specific purposes. These tasks will develop and assess students' comprehension, analytical skills, and communication abilities.

Assessment number	Learning Outcomes to be met	Type of assessment	Duration/Word Count	Weighting (%)	Alternative assessment, if applicable
1	1,2, 3, 4	Portfolio	N/A	100	N/A

Derogations

None

Learning and Teaching Strategies

Aligned with the principles of the Active Learning Framework (ALF), the module will incorporate a blended digital approach utilising a Virtual Learning Environment (VLE). These resources may include a range of content such as first and third-party tutorials, instructional videos, supplementary files, online activities, and other relevant materials to enhance their learning experience.

The module will be delivered through a combination of lectures, practical demonstrations, case studies, and group discussions. Practical exercises and hands-on labs will allow students to gain practical experience in configuring and troubleshooting computer systems.

Welsh Elements

Elements of the Welsh language and culture will be embedded throughout the module.

Indicative Syllabus Outline

- Introduction to Computer Systems:
 - Overview of Computer Architecture
 - Key Components: CPU, memory, storage, input and output devices
- Fundamental Hardware Components:
 - Processors: Types and functions
 - Memory Hierarchy: RAM, cache, and storage
 - Input/Output Devices: Keyboards, mice, displays, printers
- Operating Systems:
 - OS Architecture and Functions
 - Process Management: Scheduling and execution
 - Memory Management: Allocation, paging, segmentation
 - File Systems: Organisation and storage management
 - Security Features: Authentication, authorisation, encryption
- Hardware-Software Interaction:
 - Device Drivers and Their Role
 - Application Programming Interfaces (APIs)
 - System Utilities and Their Functions
- Networking Fundamentals:
 - Network Architectures: LAN, WAN, MAN
 - Network Topologies: Bus, star, ring, mesh
 - Networking Hardware: Routers, switches, hubs
- Emerging Trends and Technologies:
 - Cloud Computing: Impact on hardware and software
 - Virtualisation: Concepts and applications
 - Internet of Things (IoT): Devices, communication, and security
 - Current Trends in Computer Hardware: Advancements in processors, memory technologies

Indicative Bibliography

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads:

Gertsing, J and Schnieder G.M (2018), *Invitation to Computer Science*, 8th Ed. Course Technology Inc.

Other indicative reading:

Stallings, W. (2021), *Computer Organization and Architecture*. 11th ed, Pearson.

Administrative Information

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Initial approval date	Dec 2018
With effect from date	Sept 2024
Date and details of revision	Sept 2024: reapproved during the FACE FY revalidation July 2025: reapproved during IFY validation Sept 26 Template update
Version number	4