

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

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
STEM FY Programmes	Optional

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	30 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	10 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	40 hrs
Placement / work based learning	0 hrs
Guided independent study	160 hrs
Module duration (total hours)	200 hrs

For office use only	
Initial approval date	Dec 2018
With effect from date	Sept 2024
Date and details of revision	Sept 2024: reapproved during the FACE FY revalidation
Version number	2



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:

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	Weighting (%)
1	1,2,3,4	Portfolio	100

Derogations

N/A

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.



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.

