Module Code:	**CFS 2143**
Module Name:	**HARDWARE AND NETWORKS**
Schools Involved in Delivery	Computing and Engineering
Name(s) of Course(s)	BSc Software Development BSc Software Development with... BSc Internet Systems Development BSc Secure & Forensic Computing BSc Computer Games Programming BSc Computing BSc Computer Science MEng Software Engineering MEng European Computer Science
Module Leader	Hugh Osborne
Location	Queensgate
Module Type	Core
Credit Rating	20 credits
Level	Foundation
Learning Methods	**Lectures:** 24 hrs **Tutorials/Practicals:** 24 hrs **Directed Unsupervised Activity:** 152 hrs
Prerequisites	None
Recommended Prior Study	None
Corequisites	None
Professional body requirements	N/A
Graded or Non-Graded	Graded
Barred Combinations	None

Synopsis

This module will provide the fundamental knowledge of computer hardware, software and interconnection required by a learner on a computing degree course. Learners will develop practical skills in using typical examples of contemporary computer systems. Knowledge of typical local and wide area networks will be developed, from local communication up to the World Wide Web.

Outline Syllabus

Classification of computer systems
Design of a simple processor
Stored program concept
Fetch–Execute cycle
Data representation and storage
Features of a disk operating system
Computer peripherals and their operation
Alternative architectures – e.g. parallel processors, quantum computing
ISO 7-layer model
TCP/IP and internet working
Protocols of different network types
Hardware and software elements of LANs and WANs
Data packets, error detection and correction
Encryption and authentication
Resource management in networks
Wireless networks
Network applications
Interfacing networks and operating systems

Learning outcomes:

1. Knowledge and Understanding

On completion of this module the learner will:

1.1 Understand the structure, relationships and characteristics and operation of the various components of single computer systems.

1.2 Understand the structure, relationships and characteristics and operation of the various components of computer networks.

1.3 Understand how data is represented in computers and networks

2. Abilities

On completion of this module the learner will be able to:

2.1.1 Employ appropriate tool s to access and use components of computer systems.

2.1.2 Make informed judgements in selecting and specifying single computer systems .

2.1.3 Communicate their reasons for these judgements

2.2.1 Employ appropriate tools to establish simple networks

2.2.2 Make informed judgements in selecting and specifying single computer systems .

2.2.2 Communicate their reasons for these judgements

Assessment Strategy

Formative assessment for this module will take the form of weekly exercises with appropriate feedback, including model solutions.

Summative assessment is by an assignment consisting of an extended case study and practical application. The assignment will address learning outcomes 1.1, 1.3, 2.1.1, 2.1.2 and 2.1.3. Weighting 50%. There will also be a two hour end examination addressing all learning outcomes, but with an emphasis on learning outcomes 1.2, 2.2.1, 2.2.2 and 2.2.3. Weighting 50%

Assessment criteria

In the case study the learners must show an adequate understanding of the components of single computer systems and their interrelationships. In the practical application they must demonstrate a clear ability to employ appropriate tools to access and use components of a computer.

In the exam learners must demonstrate an ability to describe, and to evaluate the performance and behaviour of, computer and network systems and their components.

Learning Strategy

The lectures will be used to develop the underlying principles of the subject, addressing the knowledge outcomes. Practical work will enable the learner to develop the basic skills required by the ability outcomes and give a practical setting to the theory delivered in the lectures. Tutorials will support both lectures and practicals and will allow the studying of current examples of computer systems and peripherals, through demonstrations and group discussion.

Indicative References

Osborne, Hugh — The Postroom Computer User's Guide, University of Huddersfield, 2002

http://scom.hud.ac.uk/scomhro/Courses/PostroomComputer

Hennessy, John L & Patterson, David A — Computer Architecture, A Quantitative Approach, 4th Edition, Morgan Kaufmann, 2006

Patterson, David A & Hennessy, John L — Computer Organization & Design, The Hardware/Software Interface, 3rd Edition, Morgan Kaufmann, 2004

Stallings, William — Computer Organisation & Architecture: Designing for Performance

7h Edition, Prentice Hall, 2006

Englander, Irv The Architecture of Computer Hardware and Systems Software: An Information Technology Approach
3rd Edition, Wiley, 2003

Stallings, William Data & Computer Communications
7th Edition, Prentice Hall, 2004

Tanenbaum, Andrew S Computer Networks
4th Edition, Prentice Hall, 2003