Module Specification

Computer and Network Systems

Version: 2021-22, v3.0, 13 Sep 2021

Contents

Part 1: Information

Module title: Computer and Network Systems

Module code: UFCF93-30-1

Level: Level 4

For implementation from: 2021-22

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Environment & Technology

Department: FET Dept of Computer Sci & Creative Tech

Partner institutions: None

Delivery locations: Frenchay Campus, Global College of Engineering and Technology (GCET), Northshore College of Business and Technology, Taylors University, Villa College

Field: Computer Science and Creative Technologies

Module type: Standard

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: This module seeks to introduce the concepts of computer hardware, operating systems, programming and networking.

Computer Hardware:

The Principal Functional Units and the Fetch-execute cycle
Interrupts
Numbers and Logic circuits
Memory circuits
Adding, Subtraction, Multiplication, Division circuits.

Operating Systems:

Memory Management and Scheduling
Processes and Threads
Introduction to Linux
Comparing Windows and Linux
Caching

Programming:

Languages and Compilers
Different ways to programme
Finite State Machine
Using Threads and Semaphores
Data Structures

Networking:

LAN and WAN
Cell Phone Network
Client Server
Security Problems
Security Solutions

Rounding up:

The move to low power consumption and sustainability
Pulling it all together

Part 3: Teaching and learning methods

Teaching and learning methods: The module is delivered through weekly and fortnightly lectures and weekly lab sessions. Each lecture will direct the course and introduce the new ideas and skills required. Then small group lab sessions will enable each student to carry out the practical exercises described in the associated work-sheet under the guidance of a Lab Tutor. Highly effective PAL tutoring sessions are provided to support students every week.

The teaching material is available from Blackboard. A course text is also recommended.

Scheduled learning includes lectures, tutorials, practical lab classes, and PAL mentoring

Independent learning includes time engaged with essential reading, assignment coursework and self-assessment tests.

This module will involve 9 hours contact time per fortnight (3 hours of lectures, 4 hours practical and 2 hours of PAL sessions).

Activity (hrs)
Contact time (108)
Assimilation and development of knowledge (117)
Exam preparation (37.5)
Coursework preparation (37.5)
Total study time (300)

Module Learning outcomes:

MO1 Demonstrate detailed knowledge and understanding of the structure and function of modern computer systems

MO2 Apply fundamental principles of combinatorial digital logic to expose the principal building blocks of computer systems

MO3 Recognise that computers can be viewed a hierarchy of functional layers, and understand the close interplay of hardware and software

MO4 Compare features of new computer architectures with the original von Neumann model.

MO5 Understand the important role of an Operating System

MO6 Write programs using assembler

MO7 Use numeric and character data typing and convert between them

MO8 Understand some of the technical principles and practical details of computer networking

MO9 Conduct research into the impact on society of decisions related to sustainability, e.g. decisions on power consumption by computing devices

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 192 hours

Face-to-face learning = 108 hours

Total = 300

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/index.html

Part 4: Assessment

Assessment strategy: The assessment is split 50/50 between practical coursework and tests. Component B, coursework normally involves the production of software to

implement a specification, coupled with a report on its implications. The actual assignment topics are carefully chosen to demonstrate some basic principles which are especially significant to the course. For example, data transmissions flow, error control, multi-tasking, and the use of FSDs or runtime debugging. There is a library exercise which gives students practice in using research techniques for use in their reports.

The programming will be challenging for most of the students and must be demonstrated and explained orally to a tutor for part of the assessment. In this way, students develop the skill and confidence to talk about the subtle intricacies of their software, and so become aware and proud of their achievements.

All the coursework is required to be carried out individually but team working will be allowed in the second assignment to encourage communication.

More often than not, the coursework will contain proven source code to assist students to start the assignment. This in itself is a considerable challenge because reading other's code is not a facile accomplishment.

The component A grade will be obtained from two tests. By offering within-course tests, helpful feedback can be delivered, and students can work to improve their final grade. Tests will be delivered in a multiple choice format, with the marked scripts returned quickly to the students for immediate review.

Assessment components:

In-class test - Component A (First Sit)
Description: 90 minute examination of the students theoretical knowledge
Weighting: 25 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO7, MO8

In-class test - Component A (First Sit)

Description: 90 minute examination of the students theoretical knowledge
Weighting: 25 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO7, MO8

Set Exercise - Component B (First Sit)
Description: Library Exercise
Weighting: 5 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO6, MO8, MO9

Report - Component B (First Sit)
Description: Programming assignment with report (800 words)
Weighting: 22.5 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO6, MO8, MO9

Report - Component B (First Sit)
Description: Programming assignment with report (800 words)
Weighting: 22.5 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO6, MO8, MO9

Examination - Component A (Resit)
Description: PC Lab exam - a two hour examination of the students theoretical knowledge
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested:

Set Exercise - Component B (Resit)

Description: Programming assignment with report (1600 words)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Cyber Security and Digital Forensics [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Cyber Security and Digital Forensics [Jan][FT][TBC][3yrs] BSc (Hons) 2021-22

Computer Security and Forensics {Foundation} [Feb][FT][GCET][4yrs] BSc (Hons) 2020-21

Computer Security and Forensics {Foundation} [Oct][FT][GCET][4yrs] BSc (Hons) 2020-21

Forensic Computing and Security {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Forensic Computing and Security {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2020-21

Cyber Security and Digital Forensics {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Cyber Security and Digital Forensics {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2020-21