Module Specification

Networking and Security I

Version: 2023-24, v2.0, 16 Mar 2023

Contents

Part 1: Information

Module title: Networking and Security I

Module code: UFCFVM-15-2

Level: Level 5

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Computer Sci & Creative Tech

Partner institutions: None

Delivery locations: Not in use for Modules

Field: Computer Science and Creative Technologies

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This topic introduces the basic computer system organisation and network infrastructures, with an overall focus on the services and capabilities that network infrastructure solutions enable in an organisational context.

Features: Not applicable

Educational aims: See Learning Outcomes.

Outline syllabus: The syllabus includes:
Overview of computer architecture and functions that includes; CPU, memory, instructions, instruction cycle, I/O, interrupts, peripheral devices, instructions and memory architecture
How software is run and how operating system services create an interaction between hardware and software
The fundamental building blocks e.g. routers, switches, hubs, storage, transmission
Typical architectures of computer networks and the Internet e.g. server/client, hub/spoke
The meaning of data and protocol and how they relate to each other
Data formats
Simple protocols including failure modes in protocols e.g. why a protocol may ‘hang’ and the effect on a protocol of data communication errors
Some of main factors that affect network performance e.g. the relationship between bandwidth, number of users, nature of traffic, contention
Ways to improve network performance e.g. application of traffic shaping, changes to architecture to avoid bottlenecks, network policy that prohibit streaming protocols

Part 3: Teaching and learning methods

Teaching and learning methods: Introductory lectures are supported by seminars, case studies, visits and practical workshops. In addition this module will be supported by interactive forums and learning tools.

150 hours study time of which 36 hours will represent scheduled learning. Scheduled learning includes lectures, seminars, tutorials, demonstration, practical classes and workshops; external visits; supervised time in studio/workshops.

Independent learning includes hours engaged with essential reading, case study preparation, assignment preparation and completion. Apprentice study time will be organised each week with a series of both essential and further readings and preparation for practical workshops. It is suggested that preparation for lectures, practical workshops, session delivery and seminars will take 7 hours per week.

Contact Hours:

36 hours scheduled learning
114 hours research, independent study and preparation for assessment work

Scheduled learning will typically include lectures, seminars, supervision, external visits and an interactive forum.

All apprentices are expected to attend a series of tutorials.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Explain some of the main factors that affect network performance and propose ways to improve performance

MO2 Give an overview of computer architecture and functions

MO3 Describe the fundamental building blocks of computer networks and the Internet

MO4 Explain data and protocols, including data formats, simple protocols, and failure modes

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

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: This module is assessed by a combination of techniques: an examination (1.5 hours) (closed book) and a report
(1,500 words).

1.5 Hour Exam (Closed Book)
Apprentices will need to undertake a 1.5 hour unseen exam based on the main factors that affect network performance, including improvement measures. It is suggested that apprentices be provided a case study within the exam – this case study could outline an organisations current network infrastructure, requiring the apprentices to analyse the main factors that are currently affecting their network performance. Apprentices could then propose ways to improve performance.

1500 Word Report
Apprentices will be expected to produce a 1500 word report discussing the core technical theory of a network engineer. Apprentices are expected to demonstrate appreciation of computer architecture and functions, the fundamentals of computer networks, data formats and protocols. Apprentices should also show wider skills i.e. researching, written communication, and academic language/writing skills.

Total Assessment:

Practical Exam: Oral Assessment and/or presentation, practical skills assessment, practical exam

Coursework: Written assignment or essay, report, presentation, dissertation, portfolio, project

Please note that this is the total of various types of assessment and will not necessarily reflect the component and module weightings in the Assessment section of this module description:

Total assessment of the module:
Coursework assessment percentage: 70%

Practical exam assessment percentage: 30%

Total: 100%

Assessment components:

Report - Component B (First Sit)

Description: Report (1500 words)

Weighting: 70 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3, MO4

Examination - Component A (First Sit)

Description: 1.5 Hour Exam (Closed Book)

Weighting: 30 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1

Report - Component B (Resit)

Description: Report (1500 words)

Weighting: 70 %

Final assessment: No

Group work: No

Learning outcomes tested:

Examination - Component A (Resit)

Description: 1.5 Hour Exam (Closed Book)

Weighting: 30 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Digital and Technology Solutions (Software Engineer) {Apprenticeship-UCW} [UCW] BSc (Hons) 2022-23

Digital and Technology Solutions (Data Analyst) {Apprenticeship-UCW} [UCW] BSc (Hons) 2022-23

Digital and Technology Solutions (Business Analyst) {Apprenticeship-UCW} [UCW] BSc (Hons) 2022-23

Digital and Technology Solutions (Cyber Security Analyst) {Apprenticeship-UCW} [UCW] BSc (Hons) 2022-23