



MODULE SPECIFICATION

| Part 1: Information | | | |
|---------------------------|--|--------------------|--|
| Module Title | Networking and Security I | | |
| Module Code | UFCFVM-15-2 | Level | Level 5 |
| For implementation from | 2019-20 | | |
| UWE Credit Rating | 15 | ECTS Credit Rating | 7.5 |
| Faculty | Faculty of Environment & Technology | Field | Computer Science and Creative Technologies |
| Department | FET Dept of Computer Sci & Creative Tech | | |
| Module type: | Standard | | |
| Pre-requisites | None | | |
| Excluded Combinations | None | | |
| Co- requisites | None | | |
| Module Entry requirements | None | | |

| Part 2: Description |
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| <p>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.</p> <p>Educational Aims: See Learning Outcomes.</p> <p>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</p> |

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Ways to improve network performance e.g. application of traffic shaping, changes to architecture to avoid bottlenecks, network policy that prohibit streaming protocols

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.

Part 3: Assessment

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

Assessment A – 1.5 Hour Exam (Closed Book) (Component A)

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.

Assessment B – 1500 Word Report (Component B)

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%

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| First Sit Components | Final Assessment | Element weighting | Description |
|---------------------------|------------------|-------------------|-----------------------------|
| Report - Component B | | 70 % | Report (1500 words) |
| Examination - Component A | ✓ | 30 % | 1.5 Hour Exam (Closed Book) |
| Resit Components | Final Assessment | Element weighting | Description |
| Report - Component B | | 70 % | Report (1500 words) |
| Examination - Component A | ✓ | 30 % | 1.5 Hour Exam (Closed Book) |

| Part 4: Teaching and Learning Methods | | | | | | | | | | | | | | | | | |
|--|---|--------------------------|-----------|--|-----|---|------------|--|-----|---|-----|---|-----------|------------------------------|------------|------------------------|------------|
| Learning Outcomes | <p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th>Module Learning Outcomes</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>Explain some of the main factors that affect network performance and propose ways to improve performance</td> <td>MO1</td> </tr> <tr> <td>Give an overview of computer architecture and functions</td> <td>MO2</td> </tr> <tr> <td>Describe the fundamental building blocks of computer networks and the Internet</td> <td>MO3</td> </tr> <tr> <td>Explain data and protocols, including data formats, simple protocols, and failure modes</td> <td>MO4</td> </tr> </tbody> </table> | Module Learning Outcomes | Reference | Explain some of the main factors that affect network performance and propose ways to improve performance | MO1 | Give an overview of computer architecture and functions | MO2 | Describe the fundamental building blocks of computer networks and the Internet | MO3 | Explain data and protocols, including data formats, simple protocols, and failure modes | MO4 | | | | | | |
| Module Learning Outcomes | Reference | | | | | | | | | | | | | | | | |
| Explain some of the main factors that affect network performance and propose ways to improve performance | MO1 | | | | | | | | | | | | | | | | |
| Give an overview of computer architecture and functions | MO2 | | | | | | | | | | | | | | | | |
| Describe the fundamental building blocks of computer networks and the Internet | MO3 | | | | | | | | | | | | | | | | |
| Explain data and protocols, including data formats, simple protocols, and failure modes | MO4 | | | | | | | | | | | | | | | | |
| Contact Hours | <table border="1"> <thead> <tr> <th colspan="2">Independent Study Hours:</th> </tr> </thead> <tbody> <tr> <td>Independent study/self-guided study</td> <td>114</td> </tr> <tr> <td>Total Independent Study Hours:</td> <td>114</td> </tr> <tr> <th colspan="2">Scheduled Learning and Teaching Hours:</th> </tr> <tr> <td>Face-to-face learning</td> <td>36</td> </tr> <tr> <td>Total Scheduled Learning and Teaching Hours:</td> <td>36</td> </tr> <tr> <td>Hours to be allocated</td> <td>150</td> </tr> <tr> <td>Allocated Hours</td> <td>150</td> </tr> </tbody> </table> | Independent Study Hours: | | Independent study/self-guided study | 114 | Total Independent Study Hours: | 114 | Scheduled Learning and Teaching Hours: | | Face-to-face learning | 36 | Total Scheduled Learning and Teaching Hours: | 36 | Hours to be allocated | 150 | Allocated Hours | 150 |
| Independent Study Hours: | | | | | | | | | | | | | | | | | |
| Independent study/self-guided study | 114 | | | | | | | | | | | | | | | | |
| Total Independent Study Hours: | 114 | | | | | | | | | | | | | | | | |
| Scheduled Learning and Teaching Hours: | | | | | | | | | | | | | | | | | |
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| Total Scheduled Learning and Teaching Hours: | 36 | | | | | | | | | | | | | | | | |
| Hours to be allocated | 150 | | | | | | | | | | | | | | | | |
| Allocated Hours | 150 | | | | | | | | | | | | | | | | |
| Reading List | <p>The reading list for this module can be accessed via the following link:</p> <p>https://uwe.rl.talis.com/index.html</p> | | | | | | | | | | | | | | | | |

| Part 5: Contributes Towards |
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| This module contributes towards the following programmes of study: |