

**MODULE SPECIFICATION**

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| **Part 1: Information** | | | | | | | | |
| **Module Title** | | Networking | | | | | | |
| **Module Code** | | CY102 | | **Level** | | 4 | | |
| **For implementation from** | | September 2020 | | | | | | |
| **UWE Credit Rating** | | 30 | | **ECTS Credit Rating** | | 15 | | |
| **Faculty** | | Environment and Technology | | **Field** | |  | | |
| **Department** | | Computer Science and Creative Technologies | | | | | | |
| **Contributes towards** | | BSc (Hons)Cyber Security Technical Professional  Compulsory | | | | | | |
| **Module type:** | | Standard | | | | | | |
| **Pre-requisites** | | | None | | | | | |
| **Excluded Combinations** | | | None | | | | | |
| **Co- requisites** | | | None | | | | | |
| **Module Entry requirements** | | | None | | | | | |
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| **Part 2: Description** | | | | | | | | |
| The aim of this unit is to provide students with knowledge of computer networking essentials, how they operate, protocols, standards, security considerations and a range of networking technologies.  It gives the apprentices the knowledge and skills that they need for the planning, designing, implementation and management of computer networks and understanding of the network infrastructure capabilities and limitations.  Block release lecture sessions cover the technical knowledge required. Designated practical work is included to ensure that apprentices have absorbed and understood the key principles involved.  This module will be based on ensuring that apprentice’s practical skills and knowledge gained in the block release sessions are carried into the workplace to inform their employment and generation of evidence of competency.  You will cover:   * network foundations, connections, internetworking, protocols, standards, performance, security and server virtualisation * fundamental building blocks (e.g. routers, switches, hubs, storage, transmission) and typical architectures (e.g. server/client, hub/spoke) of computer networks and the Internet * data and protocols and how they relate to each other * data formats and simple protocols in current use * failure modes in protocols * error control * network protocols in widespread use on the Internet and their purpose and relationship to each other, including the physical and data link layer – e.g., HTTP, SMTP, SNMP, TCP/IP, BGP, DNS, etc * network performance * virtualisation techniques * network monitoring and mapping * static and dynamic routing protocols * wireless network security * common types of security hardware and software which are used to protect systems e.g., firewalls, encryption for data at rest, encryption for communication, intrusion detection systems (IDS), intrusion protection systems (IPS), identity and access management (IDAM) tools, anti-virus, web proxy, application firewalls, cross domain components, hardware security module (HSM), trusted platform module (TPM), unified threat module (UTM) * how these may be used to deliver risk mitigation or implement a security case   + benefits/limitations   + considering the implicit assurance (including supplier assurance and considering the benefits and risks of open source options) of the component   + residual risks | | | | | | | | |
| **Part 3: Assessment** | | | | | | | | |
| This module is assessed by a combination of techniques: a presentation (30 minutes) and a report (3,000 words)  Component A Practical Report (3,000 words)  Apprentices will build a network to a given specification. They will write a report detailing the selection of components, system configuration, optimisation, testing and troubleshooting. A conclusion will be required stating how well the implementation met the requirements.  Component B Presentation (30 minutes)  Apprentices will be given a design requirement (including security) for a network along with an implementation. In the presentation they will:   * Explain how the given implementation and components function * Explain how the given implementation meets, or does meet, the design requirement * Propose changes to the given implementation to take account of scalability | | | | | | | | |
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| Identify final timetabled piece of assessment (component and element) | | | | | **Component B1** | | | |
| **% weighting between components A and B** (Standard modules only) | | | | | | | **A:** | **B**: |
| **40%** | **60%** |
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| **First Sit** | | | | | | | | |
| **Component A** (controlled conditions)  **Description of each element** | | | | | | | **Element weighting**  **(as % of component)** | |
| 1. Practical Report (3,000 words) | | | | | | | 100% | |
| **Component B**  **Description of each element** | | | | | | | **Element weighting**  **(as % of component)** | |
| 1. Presentation (30 minutes) | | | | | | | 100% | |
| **Resit (further attendance at taught classes is not required)** | | | | | | | | |
| **Component A** (controlled conditions) **Description of each element** | | | | | | | **Element weighting (as % of component)** | |
| 1. Practical Report (3,000 words) | | | | | | | 100% | |
| **Component B  Description of each element** | | | | | | | **Element weighting (as % of component)** | |
| 1. Presentation (30 minutes) | | | | | | | 100% | |
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| **Part 4: Learning Outcomes & KIS Data** | | | | | | | | |
| **Learning Outcomes** | On successful completion of this module students will be able to:   * Design, build, configure, optimise, test and troubleshoot simple and complex networks (component A) * Explain networking devices and operations (component B) * Compare common networking principles and how protocols enable the effectiveness of networked systems. (component B) * Explain the impact of network topology, communication and bandwidth requirements (component B) | | | | | | | |
| **Key Information Sets Information (KIS)**  **Contact Hours**  **Total Assessment** | The table below indicates as a percentage the total assessment of the module which constitutes a;  **Written Exam**: Unseen or open book written exam  **Coursework**: Written assignment or essay, report, dissertation, portfolio, project or in class test  **Practical Exam**: Oral Assessment and/or presentation, practical skills assessment, practical exam (i.e. an exam determining mastery of a technique) | | | | | | | |
| **Reading List** | Reading list to be added | | | | | | | |

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| **First Approval Date (and panel type)** | *Date of first {panel} approval* | | | |
| **Revision ASQC Approval Date**  *Update this row each time a change goes to ASQC* |  | **Version** | *1* | *Link to RIA* |
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