

Module specification

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Module Code	COM482
Module Title	Network Fundamentals
Level	4
Credit value	20
Faculty	FACE
HECoS Code	100365
Cost Code	GACP

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
BSc (Hons) Cyber Security	Core
BSc (Hons) Cyber Security with Industrial Placement	Core
Stand-alone module aligned to BSc (Hons) Cyber Security for QA and assessment	Option

Pre-requisites

N/A

Breakdown of module hours

Learning and teaching hours	18 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	18 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	36 hrs
Placement / work based learning	0 hrs
Guided independent study	164 hrs
Module duration (total hours)	200 hrs

For office use only	
Initial approval date	08/11/2023



For office use only	
With effect from date	Sept 2024
Date and details of revision	
Version number	1

Module aims

This module introduces the architecture, structure, functions, components and models of computer networks and the Internet. It uses the OSI and TCP layered models to examine the nature and roles of protocols and services at the application, network, data link and physical layers. The principles and structure of IPv4 and IPv6 addressing, and the fundamentals of Ethernet concepts, media and operations are introduced to provide a foundation for the curriculum. The module introduces routing protocols, emphasising the fundamental concepts of routing within networks and the internet.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Describe the principles of networking hardware and software in relation to network layer models.
2	Analyse the role of technologies utilised in the infrastructure of computer networks and the internet.
3	Design, plan and implement a simple network involving LAN and WAN technologies.

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

Coursework will take place throughout the module using scenarios based upon current networking technologies. Areas of network design, implementation and testing will be key areas of the assessment tasks. The creation of local area networks and appropriate IP addressing schemes. The configuration of switches and routers to enable connectivity across a network topology.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1,2,3	Coursework	100%

Derogations

None



Learning and Teaching Strategies

In line with the Active Learning Framework, this module will be blended digitally with both a VLE and online community. Content will be available for students to access synchronously and asynchronously and may indicatively include first and third-party tutorials and videos, supporting files, online activities any additional content that supports their learning.

As this module progresses, the strategies will change to best support a diverse learning environment. Initially, the module will start with a heavier reliance on engaging tutor-led lectures, demonstrations, and workshops to ensure that the students get the relevant threshold concepts. As the module continues experiential and peer learning strategies will be encouraged as the students' progress with their coursework.

Assessment will occur throughout the module to build student confidence and self-efficacy in relation to networking concepts.

Indicative Syllabus Outline

Yearly content will be updated to represent the most appropriate content for current industry technologies, but a list of indicative topics could include:

- IPv4 Addressing
- IPv6 Addressing
- Transmission Control Protocol
- User Datagram Protocol
- Routing protocols
- Networking devices; routers and switches.
- Ethernet standards
- Designing Local Area Networks (LANs)
- Linking LANs via Wide Area Networks (WANs)

Indicative Bibliography:

Please note the essential reads and other indicative reading are subject to annual review and update. Please *ensure correct referencing format is being followed as per University [Harvard Referencing Guidance](#)*.

Essential Reads

L. Peterson, B. Davie, *Computer Networks: A Systems Approach (The Morgan Kaufmann Series in Networking)*, Morgan Kaufmann, 2021.

Other indicative reading

J. Kurose, *Computer Networking: A Top-Down Approach*, Global Edition, Pearson, 2021.

H. Weber, *Computer Systems and Networking Guide: A Complete Guide to the Basic Concepts in Computer Systems, Networking, IP Subnetting and Network Security (Hacking Network Protocols)*, Independently Published, 2019.