

## Module specification

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Module code	COM560
Module title	Securing networks and infrastructure
Level	5
Credit value	20
Faculty	FAST
Module Leader	Nigel Houlden
HECoS Code	100376
Cost Code	GACP

## Programmes in which module to be offered

Programme title	Is the module core or option for this programme
BSc (Hons) Applied Cyber Security	Core

## Pre-requisites

None

## Breakdown of module hours

Learning and teaching hours	30 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	0 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
<b>Total active learning and teaching hours</b>	<b>30 hrs</b>
Placement / work based learning	0 hrs
Guided independent study	170 hrs
<b>Module duration (total hours)</b>	<b>200 hrs</b>

<b>For office use only</b>	
Initial approval date	10 Nov 2021
With effect from date	Jan 2022

<b>For office use only</b>	
Date and details of revision	
Version number	1

## Module aims

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This module, which aims to deal with selected, advanced topics in networking and data communications, is intended to:

- Develop, in depth, issues relating to network security and services provision
- Consider the modelling, simulation, planning and security of communication networks
- Investigate various forms of layered networking defence
- Provide students with an insight into cutting-edge and emergent network technology.

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

1	Analyse different security threats in networking and potential solutions including Access Control lists, VPNs and firewall configuration, applying this to defence in depth.
2	Evaluate the use of wireless networks and the associated technologies
3	Analyse the resilience of networking covering aspects of redundancy, link aggregation, VLANs, trunking, backup routes
4	Describe the principles of Open Systems networking

## Assessment

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Indicative Assessment Tasks:

Assessment 1 is portfolio typically including a design / case study of a network, various short reports and practical activities.

Assignment 2 is a practical given to the students in advance, for them to improve and build the system(s) given. They are required to write this practical up in a report / log format.

Where practical assessment 1 will be related / carried out in the workplace.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	2,3,4	Portfolio	50%
2	1	Practical	50%

## **Derogations**

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None

## **Learning and Teaching Strategies**

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Lectures will deliver key concepts, ideas, theories and examples. Tutorials and workshops (lab sessions) will allow the further exploration of the lectures and use scenarios, exercises, etc to give students the opportunity to investigate, discuss and acquire further subject specific knowledge through both individual and group work and how this applies to the real world.

Self-study exercises and reading are also given.

## **Indicative Syllabus Outline**

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- OSI Network Protocols and Communications in particular the TCP/IP model
- Physical network design including Ethernet and Wan technologies
- IP Networks Addressing including ipv4 & ipv6
- Routing concepts
- Access Control Lists
- DHCP
- Network Address Translation
- LAN Redundancy
- Link Aggregation
- Securing Site-to-Site Connectivity
- Monitoring the Network

## **Indicative Bibliography:**

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Please note the essential reads and other indicative reading are subject to annual review and update.

### **Essential Reads**

William Stallings (2013). Data and Computer Communications. 10th ed. New York: Prentice Hall.

### **Other indicative reading**

Muhammad Afaq Khan (2013). Building Service-Aware Networks: The Next-generation WAN/MAN (Networking Technology): Cisco press

Irving, P. (2010), Computer Networks. 3rd ed. Colchester: Lexden Publishing

Stallings, W. (2015), Computer Organization and Architecture: Designing for Performance. 10th ed. Boston: Pearson.

## **Employability skills – the Glyndŵr Graduate**

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Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas.

**Core Attributes**

Engaged  
Enterprising  
Creative  
Ethical

**Key Attitudes**

Commitment  
Curiosity  
Resilience  
Confidence  
Adaptability

**Practical Skillsets**

Digital Fluency  
Organisation  
Critical Thinking  
Emotional Intelligence  
Communication