

## MODULE DESCRIPTOR

### Module Title

Telecommunications 2

Reference	EN3422	Version	1
Created	July 2023	SCQF Level	SCQF 9
Approved	March 2004	SCQF Points	15
Amended	September 2022	ECTS Points	7.5

### Aims of Module

To provide the student with a wide understanding and technical awareness of modern analogue and digital communication systems.

### Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Investigate the various communication networks used in the processing and transmission of digital signals.
- 2 Experiment appropriate computational and analytical techniques to model complex wired or wireless network, discussing the limitations of the techniques employed.
- 3 Adopt a holistic and proportionate approach to the mitigation of security risks in a telecom network.
- 4 Use practical laboratory skills to investigate the design of IP network systems and define factors influencing design, operation, and performance.
- 5 Select an appropriate types of antennas, radar systems, satellite networks, and fibre optic communications, and distinguish important design features for long-range and short-range communication systems and processes while recognising their limitations.

### Indicative Module Content

Wireless networks (Satellite, cellular, Zigbee, Bluetooth, Wi-Fi.). Wired network (Fibre optics). Transmission lines, Maxwells equations. LANs/WANs: OSI layer, data transmission protocols, IPV4, IPV6. Cyber security and risk assessment. Features of digital signals (error coding and detection, jitter, eye diagrams.). Spread spectrum systems. Antennas & propagation (Maxwells). Transmitter and receiver architectures (frequency synthesis, phase noise.). Radar systems, Cyber Security.

### Module Delivery

This module is delivered by a combination of lectures and tutorials. It will be supported by practical examples and activities including computer based laboratory exercises.

**Indicative Student Workload**

	Full Time	Part Time
Contact Hours	40	40
Non-Contact Hours	110	110
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

**ASSESSMENT PLAN**

If a major/minor model is used and box is ticked, % weightings below are indicative only.

**Component 1**

Type: Coursework Weighting: 100% Outcomes Assessed: 1, 2, 3, 4, 5

Description: Portfolio of evidence logbook.

**MODULE PERFORMANCE DESCRIPTOR****Explanatory Text**

Component 1 comprises 100% of module grade. To pass the module, a D grade is required.

Module Grade	Minimum Requirements to achieve Module Grade:
<b>A</b>	A
<b>B</b>	B
<b>C</b>	C
<b>D</b>	D
<b>E</b>	E
<b>F</b>	F
<b>NS</b>	Non-submission of work by published deadline or non-attendance for examination

**Module Requirements**

Prerequisites for Module EN2520 or similar.

Corequisites for module None.

Precluded Modules None.

**ADDITIONAL NOTES**

An Indicative Bibliography will normally reference the latest edition of a text. In some cases, older editions are equally useful for students and therefore, those are the editions that may be stocked.

**INDICATIVE BIBLIOGRAPHY**

- 1 Bensky A. Short-range wireless communication. Newnes; 2019 Aug 1.
- 2 Kumar S. Wireless Communications Fundamental & Advanced Concepts: Design Planning and Applications. River Publishers; 2015 Mar 31.
- 3 Stallings W. Data and computer communications. Pearson Hall, 10th edition; 2014.
- 4 Introduction to Networks Companion Guide (CCNAv7) By Cisco Networking Academy, 2020.
- 5 Roshan, Pejman, and Jonathan Leary. 802.11 Wireless LAN fundamentals. Cisco press, 2004.