

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:
A	A
B	B
C	C
D	D
E	E
F	F
NS	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.