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## MODULE DESCRIPTOR

### Module Title

Introduction to Telecommunications

Reference	EN2520	Version	8
Created	August 2021	SCQF Level	SCQF 8
Approved	March 2004	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

### Aims of Module

To provide the student with the ability to analyse the fundamentals of communication techniques and information theory.

### Learning Outcomes for Module

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

- 1 Discuss the fundamental principles of communication signals, modulation schemes and transmission systems.
- 2 Explain concepts around data transmission devices, channels and information theory.
- 3 Analyse simple digital and analogue based telecommunication systems.
- 4 Investigate and explain the behaviour of circuits and processes relating to telecommunications systems.

### Indicative Module Content

Fundamental concepts: Frequency, phase, amplitude, SNR, BER. Time and frequency domain signal representation, bandwidth, noise. Analogue & digital modulation techniques. Radio transmitter and receiver topologies. Digital transmission: sampling, quantisation, companding, Pulse Code Modulation, Multiplexing. Information Theory: sources, entropy, channels. Data Transmission: Modems, Telecommunications standards.

### Module Delivery

This module is delivered by a combination of lectures and tutorials. It will be supported by lab based practical work and activities involving computer simulation exercises.

### Indicative Student Workload

	Full Time	Part Time
Contact Hours	36	36
Non-Contact Hours	114	114
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: 30% Outcomes Assessed: 4  
 Description: Report or online assessment.

**Component 2**

Type: Examination Weighting: 70% Outcomes Assessed: 1, 2, 3  
 Description: Closed book examination.

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

The module has 2 components and to gain an overall pass a minimum D grade must be achieved in each component. The component weighting is as follows: C1 is worth 30% and C2 is worth 70%.

		Coursework:						NS
		A	B	C	D	E	F	
Examination:	A	A	A	B	B	E	E	
	B	B	B	B	C	E	E	
	C	B	C	C	C	E	E	
	D	C	C	D	D	E	E	
	E	E	E	E	E	E	F	
	F	F	F	F	F	F	F	
NS		Non-submission of work by published deadline or non-attendance for examination						

**Module Requirements**

Prerequisites for Module None.  
 Corequisites for module None.  
 Precluded Modules None.

**INDICATIVE BIBLIOGRAPHY**

- 1 Glover I, Grant PM. Digital communications. Pearson Education; 2010.
- 2 Stallings W. Data and computer communications. Pearson Hall; 2013.
- 3 Schiller JH. Mobile communications. Pearson education; 2003.
- 4 Haykin SS, Moher M. Modern wireless communications. Pearson Education India; 2011.
- 5 Haykin S. Communication systems. John Wiley & Sons; 2008.
- 6 Dunlop J. Telecommunications engineering. Routledge; 2017.