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## MODULE DESCRIPTOR

### Module Title

Introduction to Telecommunications

Reference	EN2520	Version	6
Created	March 2019	SCQF Level	SCQF 8
Approved	March 2004	SCQF Points	15
Amended	May 2019	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 Apply standard mathematical principles to analysing signals and transmission systems.
- 2 Analyse simple digital and analogue based telecommunication systems.
- 3 Investigate and explain the behaviour of circuits and processes relating to telecommunications systems.

### Indicative Module Content

Fundamental concepts: Frequency, phase, amplitude. Information sources, time and frequency domain, bandwidth, noise. Basic modulation techniques. Radio receiver and transmitter topologies and parameters. Introduction to antennas and propagation. Brief history of telecommunications. Overview of analogue and digital communications and analogue and digital transmission. Digital transmission: sampling, Pulse Code Modulation, Multiplexing. Information Theory: channel capacity, performance bounds for data transmission. Data Transmission: Modems, Telecommunications standards, ADSL

### Module Delivery

This is a lecture based course supplemented with tutorial sessions, laboratory exercises and directed study.

### 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: 3  
 Description: A report on a practical laboratory-based investigation.

**Component 2**

Type: Examination Weighting: 70% Outcomes Assessed: 1, 2  
 Description: A closed book examination.

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

To pass the module, you must achieve a 40% weighted average mark from the coursework and the exam. In addition, you need to achieve at least 35% in each Component.

Module Grade	Minimum Requirements to achieve Module Grade:
<b>A</b>	>70%
<b>B</b>	60-69%
<b>C</b>	50-59%
<b>D</b>	40-49%
<b>E</b>	35-39%
<b>F</b>	0-34%
<b>NS</b>	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.