

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: |
|--------------|--|
| A | >70% |
| B | 60-69% |
| C | 50-59% |
| D | 40-49% |
| E | 35-39% |
| F | 0-34% |
| 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 DUNLOP, J. and SMITH D.G., 1998. Telecommunications Engineering. 3rd ed. Cheltenham: Stanley Thornes.
- 2 HAYKIN, S. and MOHER, M., 2009. Communications Systems. 5th ed. Hoboken, NJ: John Wiley & Sons.
- 3 STALLINGS, W., 2013. Data and Computer Communications. 10th ed. Upper Saddle River, NJ: Prentice Hall.
- 4 GLOVER, I.A. and GRANT P.M., 2010. Digital Communications. 3rd ed. Pearson.