

## MODULE DESCRIPTOR

### Module Title

Advanced Data Networks

Reference	EN4530	Version	6
Created	August 2021	SCQF Level	SCQF 10
Approved	March 2004	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

### Aims of Module

To provide the student with the ability to evaluate the techniques and systems used in the design and operation of high speed data networks.

### Learning Outcomes for Module

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

- 1 Identify and explain the factors that affect the design and performance of high speed wide area networks.
- 2 Evaluate the coding and protocols used in the transmission of multimedia.
- 3 Apply knowledge of network simulation software and understanding of the factors influencing the design and performance of data networks, to design an optimised network from user specifications.
- 4 Apply knowledge of operating principles of high performance Local Area Networks, to predict network performance and select appropriate technology for network design.
- 5 Critically compare and evaluate different coding approaches for a variety of video sequences.

### Indicative Module Content

Multimedia Coding and Transport: Transform coding, entropy coding, evaluation of codec performance, network protocols for video. Wide Area Networks: Design and performance, congestion and traffic analysis, routing. Wireless Local Area Networks: Standards, topology, design, performance.

### Module Delivery

This is a lecture-based course supplemented with tutorial, laboratory sessions and student-centred learning.

<b>Indicative Student Workload</b>	Full Time	Part Time
Contact Hours	42	42
Non-Contact Hours	108	108
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
<b>TOTAL</b>	<b>150</b>	<b>150</b>
<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: 5  
 Description: Logbook based on laboratory work.

**Component 2**

Type: Examination Weighting: 70% Outcomes Assessed: 1, 2, 3, 4  
 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:						
		A	B	C	D	E	F	NS
Examination:	<b>A</b>	A	A	B	B	E	E	
	<b>B</b>	B	B	B	C	E	E	
	<b>C</b>	B	C	C	C	E	E	
	<b>D</b>	C	C	D	D	E	E	
	<b>E</b>	E	E	E	E	E	F	
	<b>F</b>	F	F	F	F	F	F	
	<b>NS</b>	Non-submission of work by published deadline or non-attendance for examination						

**Module Requirements**

Prerequisites for Module	Data Networks (EN3531) or equivalent.
Corequisites for module	None.
Precluded Modules	None.

**INDICATIVE BIBLIOGRAPHY**

1	RICHARDSON, I. E. G., H.264 and MPEG-4 Video Compression ? Video Coding for Next-generation Multimedia, John Wiley & Sons Ltd, 2003
2	STALLINGS, W., 2014. Data and Computer Communications, 10th ed, Prentice Hall.