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| <b>Module Title</b><br><b>Advanced Data Networks</b><br><br><b>Keywords</b><br>Performance Of Packet Switching Networks,<br>Queuing Theory, High Performance LANs,<br>Multimedia Coding and Transport. | Reference EN4530<br>SCQF            SCQF<br>Level            10<br>SCQF Points    15<br>ECTS Points    7.5<br>Created May 2002<br>Approved March 2004<br>Amended August 2011<br>Version No.     2 |
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## This Version is No Longer Current

The latest version of this module is available [here](#)

### Prerequisites for Module

Data Networks (EN3531) or equivalent.

### Indicative Student Workload

|                      | Full Time | Part Time |
|----------------------|-----------|-----------|
| <i>Contact Hours</i> |           |           |
| Assessment           | 18        | 18        |
| Lectures/Tutorials   | 24        | 24        |

### Corequisite Modules

None.

### *Directed Study*

24            24

### Precluded Modules

None.

### *Private Study*

84            84

### 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.

### Mode of Delivery

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

### Assessment Plan

### Learning Outcomes for Module

|                               |
|-------------------------------|
| Learning Outcomes<br>Assessed |
|-------------------------------|

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.

### **Indicative Module Content**

Design and performance of Wide Area Networks.  
Investigation of the performance implications of the hardware and software aspects of network technology.  
Description of the coding and protocols used in the transmission of video and voice across packet switched

|             |         |
|-------------|---------|
| Component 1 | 2       |
| Component 2 | 1,2,3,4 |

Component 2 is a formal, closed book, examination. (70% weighting)

Component 1 is coursework is assessed by the submission of a logbook based on laboratory work.(30% weighting)

### **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.

networks. Local Area:  
performance upgrade  
techniques and alternatives.  
Introduction to wireless LAN  
techniques.