

--MODULE DESCRIPTOR

MODULE TITLE	Data Communications		
MODULE CODE	EL2006 (L5)	CREDIT VALUE	20 UK CREDITS / <u>10 ECTS</u>
SCHOOL	SCHOOL OF SCIENCES		

MODULE AIMS

To give students an understanding of the underlying principles in digital communications networks with a special emphasis on the importance of Physical Layer concepts.

MODULE CONTENT

Indicative syllabus content:

ISO-OSI seven layer model.
 TCP/IP implementation of the layer model.
 Transmission Media
 Physical Layer techniques: Modulation, Multiplexing, telephony, switching, ISDN,
 Datalink Layer concepts;
 Error detection and correction, sliding window, HDLC protocol LAN protocols, e.g.
 Ethernet. Routers, Bridges and Switches
 Internetworking protocols, e.g. IP (v4 and v6) and RIP.
 Transport protocols, e.g. TCP and UDP.
 Application Layer protocols, e.g. FTP, HTTP, SMTP, DNS, SNMP.
 Mobile communication systems; TDMA, FDMA, CDMA, GMSK, Speech coding,
 Channel coding, Standards.

INTENDED LEARNING OUTCOMES

On successful completion of this module a student will be able to:

1. Understand the basic concepts and limitations relating to the Physical Layer, and use models to simulate the interaction of these concepts, e.g. bandwidth, noise, data (baud) rates, signals, encoding, etc.
2. Describe the relationships which exist between physical layer modulation techniques and datalink layer protocols.
3. Explain the operation of practical LAN and WAN protocols and systems commonly used in networks and inter-networks, and hence be able to describe the ways that computers communicate with each other.
4. Evaluate different network technologies.
5. Apply knowledge of network protocols to new communications systems, e.g. smartphones, etc.

TEACHING METHODS

Lectures and tutorial exercises will be provided for students to gain an appropriate knowledge base. Current issues in communications systems development will be introduced into the curriculum through magazine articles, websites, and other media where appropriate. Practical work using network systems will reinforce the teaching and learning process.

ASSESSMENT METHODS

This module is assessed through a report and an examination.