Liverpool John Moores University

Title:	Networks and Communications
Status:	Definitive
Code:	**5082ENG** (116964)
Version Start Date:	01-08-2016
Owning School/Faculty:	Electronics and Electrical Engineering
Teaching School/Faculty:	Electronics and Electrical Engineering

Team	Leader
Ronan McMahon	Y
Colin Wright	

Academic Level:	FHEQ5	**Credit Value:**	20	**Total Delivered Hours:**	73
Total Learning Hours:	200	**Private Study:**	127		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	40
Practical	10
Tutorial	20

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam		60	3
Report	Lab prac		20	
Report	Matlab		20	

Aims

Following this module, students will be able to describe different network types, their associated structures and protocols. Students will be familiar with standards, and the various associated bodies. Students will be familiar with modulation and coding used to support the transport of data.

Learning Outcomes

After completing the module the student should be able to:

1	Differentiate between various types of network, network devices and interconnections
2	Explain properties/aspects of various protocols
3	Produce suitable designs for basic transmission lines and antennas
4	Design a simple Huffman code
5	Perform experiments to explain multiplexing system behaviour
6	Use Matlab/Simulink to simulate signal behaviour

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Exam	1	2	3	4
Lab practical experiments	5			
Matlab simulation	6			

Outline Syllabus

Network classification: by geographic scale and by transmission technology.
Network hardware: Cabling, NICs, Repeaters, Hubs, Bridges, Switches and Routers.
The OSI seven layer network architecture.
High and low level protocols SMTP, HTTP, TCP/IP, Ethernet (wired and wireless).
Bandwidth and Fourier synthesis of periodic waves.
Transmission lines, reflection coefficient, propagation, characteristic impedance.
Gain and equivalent isotropically radiated power (EIRP) of antennas
Variable length coding using a Huffman code.
Multiplexing, time division, frequency division.
Decibels, noise, distortion and signal to noise ratio (SNR)
Application of Matlab to communications problems.

Learning Activities

By a series of lectures, tutorials and laboratory assignments

Notes

This module develops the principles of communications, modulation, information theory, local and wide area networks and their protocols.