Liverpool John Moores University

Title: COMPUTER NETWORKS
Status: Definitive
Code: **7132COMP**   (122200)
Version Start Date: 01-08-2018

Owning School/Faculty: Computer Science
Teaching School/Faculty: Computer Science

Team	Leader
Gyu Myoung Lee	Y

Academic Level:	FHEQ7	**Credit Value:**	20	**Total Delivered Hours:**	36
Total Learning Hours:	200	**Private Study:**	164		

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	12
Practical	12
Tutorial	12

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Research involving analysis of a contemporary computer networking challenge.	60	
Report	AS2	Design and practical investigation of a data networking protocol based on an application scenario.	40	

Aims

To develop the student's understanding of Open Networking Systems (ONS)
To develop the student's understanding of Internet architecture, as a major ONS

To develop the student's understanding of Telecommunications role in ONS
To gain practical experience of communications protocols and architectures.

Learning Outcomes

After completing the module the student should be able to:

1   Critically evaluate computer networks, their architectures, protocols and services.
2   Demonstrate advanced knowledge of the structure and requirements of local and wide area networks.
3   Demonstrate expertise in the problems associated with the construction and management of Open Networking Systems, and their domains of application.
4   Apply advanced knowledge of the up-to-date techniques, methods, and architectures to specify, design, and implement data networking solutions.

Learning Outcomes of Assessments

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

Computer Networks Analysis	1	2
Design Investigation	3	4

Outline Syllabus

Introductory material – the networking problem, applications of networks, protocols and protocol layering, network architecture, open and closed systems, private and public networks, circuit and packet switching.

Data Communications – physical and data link layers protocols and functionality, Local Area Networking, Medium Access Control (MAC), LAN standards including Ethernet.

Internet – Internet architecture, TCP/IP, IPv6, Routing, Internet application layers, DNS, comparison with OSI Model.

Wide Area Network and Access Networks – broadband Internet (CATV, ADSL), telecommunications, enterprise network standards (ATM, Frame Relay, new Ethernet).

Multimedia Networking – multimedia performance requirements (bandwidth, delay, jitter), ATM, QoS (DiffServ, IntServ, MPLS), comparison with 'Best-Effort' approach Network Management – FCAPS model of network management, focus on Network Security to illustrate management; defining network security, secure communications via IPSec encryption, firewalls, intrusion detection, other network access controls (biometrics, smart cards).

Learning Activities

Tutorial and Labs will support the lectures.

Notes

This module covers recent developments in the area of computer networks and distributed applications. Technologies covered include Ethernet, TCP/IP, IPv6, ATM, MPLS, ADSL as well as studying the requirements of multimedia service networks, the Internet vs Telecommunications, and network management. These technologies are put within the context of modern network environments such including enterprise networking, home broadband as well as applications such as VoIP. Students are given the opportunity to study practical aspects of network design through the lab session.