

Liverpool John Moores University

Title: COMPUTER NETWORKS
Status: Definitive
Code: **7006COMP** (103265)
Version Start Date: 01-08-2011

Owning School/Faculty: Computing and Mathematical Sciences
Teaching School/Faculty: Computing and Mathematical Sciences

Team	Leader
Faycal Bouhafis	Y

Academic Level: FHEQ7
Credit Value: 15.00
Total Delivered Hours: 36.00
Total Learning Hours: 150
Private Study: 114

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	12.000
Practical	12.000
Tutorial	12.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	Individual research essay involving analysis of a contemporary computer networking challenge.	60.0	
Technology	AS2	Individual design and practical investigation of a data networking protocol based on an application scenario.	40.0	

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 network analysis	1	2	3
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 incl. 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.

References

Course Material	Book
Author	Comer, D.
Publishing Year	2008
Title	Computer Networks and Internets
Subtitle	
Edition	5th
Publisher	Prentice Hall
ISBN	0136061273

Course Material	Book
Author	Halsall, F.
Publishing Year	2005
Title	Computer Networking and the Internet'
Subtitle	
Edition	5th
Publisher	Addison-Wesley
ISBN	0321263588

Course Material	Book
Author	Kurose, J.F. & Ross, K.W.
Publishing Year	2008
Title	Computer Networking: A Top Down Approach
Subtitle	
Edition	4th
Publisher	Addison-Wesley
ISBN	0321497708

Course Material	Book
Author	Peterson, L.L. & Davie, B.S.
Publishing Year	2007
Title	Computer Networks a Systems Approach
Subtitle	
Edition	2nd
Publisher	Morgan-Kaufman
ISBN	0123739748

Course Material	Book
Author	Tannebaum, A.S.

Publishing Year	2003
Title	Computer Networks
Subtitle	
Edition	4th
Publisher	Prentice Hall
ISBN	0130661023

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.