

Liverpool John Moores University

Title: PRINCIPLES OF COMPUTER NETWORKS
Status: Definitive
Code: **4112COMP** (121210)
Version Start Date: 01-08-2021

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

Team	Leader
Mark Allen	Y

Academic Level: FHEQ4 **Credit Value:** 20 **Total Delivered Hours:** 55
Total Learning Hours: 200 **Private Study:** 145

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	22
Practical	22
Tutorial	11

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Network fundamentals	40	
Report	AS2	Network design scenario	60	

Aims

To understand the principles and fundamental concepts that run through the study of computer networks

To understand the structure and components of typical computer networks, including routing and switching

To understand information system requirements regarding computer networking.

Learning Outcomes

After completing the module the student should be able to:

- 1 Display an in-depth understanding of a range of fundamental concepts in computer networks
- 2 Identify the computer communication requirements of an computing system
- 3 Explain quantitative and qualitative data relating to a computer network's performance

Learning Outcomes of Assessments

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

Network fundamentals	1	
Network design scenario	2	3

Outline Syllabus

Overview: applications of networks, types of networks, the Internet, protocols, OSI 7-layer model, infrastructure.

Application layers: Services and primitives, HTTP, SMTP, DNS.

Transport layers: Connection-oriented vs. Connectionless protocols, TCP, UDP, Sockets, Client-Server.

Network layers: routing and switching, addressing, Internet Protocol (versions 4 and 6).

Data Link: data transmission, framing, error detection/correction, link control and multiple access control, multiplexing, Ethernet, Wi-Fi, ATM, PPP.

Multimedia: streaming audio and video, best-effort, Quality of Service.

Security: concepts in security, secure communications, cryptography, denial of service.

Network Management: management information, SNMP, Firewalls.

Learning Activities

Students will attend lectures, supported by tutorials and lab sessions to develop their theoretical and practical knowledge through tasks and discussions.

Notes

This is an introductory course in computer networking and aims to provide a broad theoretical underpinning for students continuing to study networking and related areas such as web development. Practical lab work supports the learning.