

## Liverpool John Moores University

Title: COMPUTER NETWORKS  
Status: Definitive  
Code: **5001ESE** (120624)  
Version Start Date: 01-08-2016

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

Team	Leader
Omar Abuelma'atti	Y
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**Academic Level:** FHEQ5      **Credit Value:** 20      **Total Delivered Hours:** 72  
**Total Learning Hours:** 200      **Private Study:** 128

### Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	12
Seminar	12
Tutorial	24

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Students will develop a networking design plan for a particular application development project.	50	
Artefacts	AS2	Develop a prototype mobile application.	50	

### Aims

*Develop understanding of computer networks, their protocols and architecture.*

*Study the Internet as the major example of a Wide Area Network.  
Understand the problems inherent in providing wireless communications systems.  
Develop skills relating to the development of mobile computing applications.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Evaluate computer networks, their architectures and protocols.
- 2 Analyse the requirements and formulate solutions for networking computing applications.
- 3 Apply knowledge of the structure of mobile/wireless computing architectures.
- 4 Analyse requirements for a mobile applications scenario and develop ideas about the problems in developing such an application.

## **Learning Outcomes of Assessments**

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

Design plan	1	2
Prototype	3	4

## **Outline Syllabus**

*Within the core themes outlined in the learning activities, contemporary examples of social technology will be discussed which may include topics such as:*

- Networking; applications, protocols, architecture*
- Data Communications; physical layer, data-link, LANs*
- Internet; TCP/IP, routing, DNS*
- Internet application protocols; SMTP, HTTP, P2P*
- WAN/Access – broadband, enterprise networks*
- Network Management – SNMP, security, multimedia and traffic*
- Wireless networks; Wi-Fi, Bluetooth*
- Mobile telecommunications; GSM, 3G, 'Smartphones'*
- Mobile and Wireless applications; location-based services*
- Resource challenges of mobile/wireless*
- Security in mobile/wireless; privacy, authentication*
- Trends such as Cloud, Sensors, Ubiquitous/pervasive computing*

## **Learning Activities**

Students will participate in lectures, tutorials, seminar/group work, and practical/lab sessions.

## Notes

This module provides the student with the underpinning concepts and knowledge of modern computer communications systems, both fixed infrastructure systems and mobile-wireless. The Internet is at the heart of many IT systems so it is important to provide this knowledge and skill to apply ideas. Students involved in the development of major IT projects increasingly need to have a background of how to connect application components together over the Internet, and further these increasingly will have mobile-wireless requirements. The module begins by outlining the general problems of computer networking, structure of the Internet and its protocols, network management. Then the study turns to mobile and wireless systems and how the problems already considered become more challenging.