

Liverpool John Moores University

Title: COMPUTER SYSTEMS
Status: Definitive
Code: **4008COMP** (115996)
Version Start Date: 01-08-2012

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

Team	Leader
Abir Hussain	Y
Denis Reilly	

Academic Level: FHEQ4 **Credit Value:** 24.00 **Total Delivered Hours:** 74.00
Total Learning Hours: 240 **Private Study:** 166

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24.000
Tutorial	48.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Test	AS1	In class test	25.0	
Report	AS2	Students will design and construct a logic circuit to solve a problem.	25.0	
Exam	AS3	Examination	50.0	2.00

Aims

The aim of the module is to enable students to gain a detailed view of computer architecture at the hardware and software levels and basic networking concepts.

Learning Outcomes

After completing the module the student should be able to:

- 1 Manipulate the various numbers bases applicable to computing
- 2 State the operation and design of logic gates and analyse their use in synchronous and asynchronous circuits. Use Boolean algebra in representing logic circuits.
- 3 Explain basic computer architecture in terms of processor, memory, bus interconnection, machine instruction cycle and different I/O devices.
- 4 Explain the role of different languages ranging from machine languages to higher level programming languages and explain the relationships between the different languages and their use of resources such as memory.
- 5 Explain principles of data communication, internetworking and wireless networks.
- 6 Explain principles of operating systems and explain their operation via processes, threads and scheduling.

Learning Outcomes of Assessments

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

In class test	1				
Logic circuit	2				
Examination	3	4	5	6	

Outline Syllabus

Number systems: binary, hex and decimal and how to convert numbers between systems. Consideration of number systems for data representation and storage.

Logic circuits: The use of Boolean algebra to write equations that describe logic circuits and the basic techniques used to manipulate Boolean equations. The design and Construction of Logic circuits, both synchronous and asynchronous, including encoders, decoders and adders.

Hardware: processor design and operation, memory and memory organization, I/O devices and peripherals, bus architectures, fetch-execute cycle

Operating systems: The role of the operating system, resource management, processes, threads and scheduling

Language systems: different language systems from machine code to assembler and operating system and high level programming languages and the software to bridge between them

Network systems: data communication principles, types of networks, topologies. Internetworking and the Internet. Wireless networks, radio and WiFi

Learning Activities

The module consists of 24 lectures, which will cover areas listed under Learning Outcomes. Tutorials will follow lectures with the tutorial activities covering the topic covered in the preceding lecture. Tutorials will take place in the computing laboratories when appropriate and use appropriate tools and applications.

References

Course Material	Book
Author	Clements, A.
Publishing Year	2006
Title	The Principles of Computer Hardware
Subtitle	
Edition	4th
Publisher	Oxford University Press
ISBN	9780199273133

Course Material	Book
Author	Williams, R.
Publishing Year	2006
Title	Computer Systems Architecture
Subtitle	
Edition	2nd
Publisher	Prentice-Hall
ISBN	9780321340795

Course Material	Book
Author	Tanenbaum, A.S.
Publishing Year	2008
Title	Modern Operating Systems
Subtitle	
Edition	3rd
Publisher	Prentice-Hall
ISBN	9780136006633

Notes

This module provides an overview of number systems for data representation, logic circuits, hardware, operating systems, language systems and network systems and their roles in modern computer systems.