

## Liverpool John Moores University

Title: COMPUTER SYSTEMS TECHNOLOGY  
Status: Definitive  
Code: **7500DCOM** (103691)  
Version Start Date: 01-01-2012

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

Team	Leader
Rubem Pereira	Y

**Academic Level:** FHEQ7      **Credit Value:** 15.00      **Total Delivered Hours:** 38.00

**Total Learning Hours:** 150      **Private Study:** 112

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	18.000
Practical	6.000
Tutorial	12.000

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	50.0	2.00
Essay	AS2	Coursework - Applied study of selected computing technology or technologies	50.0	

### Aims

*To develop and reinforce the understanding of techniques and concepts required for the development of computer systems.*

*To evaluate the effect of distribution, benefits and problems, on the design and implementation of computer based solutions, using performance analysis tools.*

*To gain experience in analysing functional system requirements and specify suitable*

*solutions using available knowledge, software and hardware technologies.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Design and implement a computer system performance evaluation experiment and critically evaluate the result of such experiment.
- 2 Analyse the requirements of a distributed system and critically review the suitability of existing distributed systems paradigms.
- 3 Demonstrate mastery of advanced topics in distributed operating systems and middleware.
- 4 Select appropriate middleware tools and design a distributed application.

## **Learning Outcomes of Assessments**

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

EXAM	1	2	3	4
ESSAY	1			

## **Outline Syllabus**

*Techniques and methodologies for performance evaluation: Evaluation techniques, metrics and workload. Computer based simulation. Computer Systems Architectures - Evolution of Computer Systems: Centralised, Parallel and Distributed Architectures. The issue of Centralised versus Distributed Solutions. Distributed Systems Concepts and Architectures - Concepts of distribution, the Client Server model. Networked applications, Message passing, request/reply protocol, RPC mechanisms, Distributed System design goals. The World Wide Web model and its evolution. Proxy servers, servers clusters and other performance enhancing solutions. Distributed Operating Systems and Network Operating Systems. Operating systems micro kernels, middleware. Distributed File Systems Technology developments in Computer Systems Architecture Critical evaluation and comparison of the business driven distributed computing offering of Cloud Computing, e.g. Amazon's EC2, and the academic based offering of Grid Computing, e.g. EGEE. Examination of the virtualization of computing resources and how that technique is used in creating dynamically allocated resources. e.g. Xen, VMware.*

## **Learning Activities**

Lectures, tutorials, directed reading of books and advanced journal and conference papers and other publications.

## References

<b>Course Material</b>	Book
<b>Author</b>	Andrew Tanenbaum and Martin van Steen
<b>Publishing Year</b>	2003
<b>Title</b>	Distributed Systems, Principles and Paradigms
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	Prentice Hall
<b>ISBN</b>	0131217860

<b>Course Material</b>	Book
<b>Author</b>	George Coulouris, Jean Dollimore and Tim Kindberg
<b>Publishing Year</b>	2001
<b>Title</b>	Distributed Systems, Concepts and Design
<b>Subtitle</b>	
<b>Edition</b>	3rd
<b>Publisher</b>	Addison Wesley
<b>ISBN</b>	0201-61918-0

<b>Course Material</b>	Book
<b>Author</b>	O Leary, T. J.
<b>Publishing Year</b>	2008
<b>Title</b>	Computing Essentials
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	McGraw-Hill Companies
<b>ISBN</b>	0073294683

<b>Course Material</b>	Book
<b>Author</b>	Tanenbaum A. S.
<b>Publishing Year</b>	1995
<b>Title</b>	Distributed Operating Systems
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	Prentice-Hall
<b>ISBN</b>	0132199084

<b>Course Material</b>	Book
<b>Author</b>	Emmerich, W.
<b>Publishing Year</b>	2000
<b>Title</b>	Engineering Distributed Objects
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	Wiley
<b>ISBN</b>	

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<b>Course Material</b>	Book
<b>Author</b>	Coulouris, G.
<b>Publishing Year</b>	2001
<b>Title</b>	Distributed Systems: Concepts and Design
<b>Subtitle</b>	
<b>Edition</b>	3rd
<b>Publisher</b>	Addison-Wesley
<b>ISBN</b>	0201619180

<b>Course Material</b>	Book
<b>Author</b>	Attiya, H & Welch, J.
<b>Publishing Year</b>	2004
<b>Title</b>	Distributed Computing: Fundamentals, Simulations, and Advanced Topics
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	Wiley
<b>ISBN</b>	

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## Notes

Modern computing technologies and their trends are presented. The distributed paradigm is analysed, including distributed operating systems and applications. The Client/Server model and its support for distributed applications is presented. Current hardware technological advances are covered. Middleware case studies are used to illustrate distributed solutions.