

## Liverpool John Moores University

Title: MULTIPLAYER ONLINE GAMES DEVELOPMENT  
Status: Definitive  
Code: **6059COMP** (117474)  
Version Start Date: 01-08-2019  
Owning School/Faculty: Computer Science  
Teaching School/Faculty: Computer Science

Team	Leader
David Tully	Y
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**Academic Level:** FHEQ6  
**Credit Value:** 24  
**Total Delivered Hours:** 72  
**Total Learning Hours:** 240  
**Private Study:** 168

### 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 an end-to-end solution for a distributed multimedia application, encompassing data manipulation and storage both at client and server, transmission, scheduling and routing across a computer network.	50	
Artefacts	AS2	Programming project involving online gaming design, architecture and programming.	50	

## Aims

*To develop an understanding of distributed multimedia system components, including compression and storage of multimedia data;*

*To examine the time constraints and synchronisation aspects associated with the delivery of video and audio streams and develop the networking requirements of distributed multimedia systems.*

*To explore the various design, technical and interactivity issues involved in multiplayer games.*

*To identify key factors affecting multiplayer games;*

*To study architectures, techniques and methods to use in online games design and implementation.*

## Learning Outcomes

After completing the module the student should be able to:

- 1 Analyse end-to-end design issues for distributed multimedia systems.
- 2 Critically evaluate the main components of distributed multimedia systems, including software, hardware, compression algorithms and storage schemes.
- 3 Elicit the transmission requirements of specific distributed multimedia applications.
- 4 Critically evaluate interactivity requirements of online games and other media productions.
- 5 Use advanced techniques for the design and implementation of online games.
- 6 Critically evaluate and select appropriate architectures for the development of large scale online games.

## Learning Outcomes of Assessments

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

Distributed multimedia app	1	2	3
Programming project	4	5	6

## Outline Syllabus

*Multimedia traffic types;*

*Digital video systems hardware and software.*

*Image and video compression techniques and related standards, e.g. JPEG. MPEG.*

*Storage and retrieval aspects of video data:*

*Case study: VoD storage scheme*

*Server and client Buffering;*

*Algorithms for distributed multimedia support.*

*End-to-end QoS mechanisms: Admission Control, Resource allocation;*

*Issues and opportunities in online games;*

*The Internet model: Main protocols and implications for real-time traffic;*

*Networking Game Development: Architecture (peer-to-peer, client/server, floating server, (multiple)-Servers Network), Issues (latency, reliability, Bandwidth, Security, Scalability), Tools (protocols, APIs) and Techniques (Dead-Reckoning, Interest Management, etc...); Interactivity Design: The Importance of Interactivity; Interactivity for Multiplayer Online Games.*

## **Learning Activities**

Lectures, tutorials, seminar/group work, and practical/lab sessions.

## **Notes**

This module will help students develop knowledge distributed multimedia systems and techniques for support of distributed multimedia applications. Students will explore the various design, technical and interactivity issues involved in multiplayer games. By understanding these issues, developers can identify the factors that affect them, and learn which architecture, techniques and methods to use in online games design and implementation.