

Liverpool John Moores University

Title: ADVANCED COMPUTER GAMES TECHNOLOGY
Status: Definitive
Code: **6019COMP** (102996)
Version Start Date: 01-08-2011

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

Team	Leader
David Llewellyn-Jones	Y

Academic Level: FHEQ6 **Credit Value:** 12.00 **Total Delivered Hours:** 38.00
Total Learning Hours: 120 **Private Study:** 82

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	12.000
Practical	12.000
Tutorial	12.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Programming assignment to implement advanced techniques (Graphics, AI or Networking)	60.0	
Exam	AS2	Examination	40.0	2.00

Aims

To present advanced techniques applicable to game programming.

Identify, formulate and apply solutions to a diverse range of advanced computer game problems.

Select and supply concrete data types in the representation, storage, communication and manipulation of game world data;

*Design and develop two-dimensional and three dimensional animations;
Deploy simulation methods to model behaviour in computer games;
Appraise different artificial intelligence techniques and their relevance for a particular game solution;
Learn about Game Networking and their problems.*

Learning Outcomes

After completing the module the student should be able to:

- 1 Demonstrate awareness of advanced techniques applicable to games software.
- 2 Demonstrate knowledge of advanced gaming technology.
- 3 Critically evaluate current API's and discuss relative strengths and weaknesses.
- 4 Use an appropriate API to implement a particular advanced aspect of computer games technology.

Learning Outcomes of Assessments

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

Advanced techniques	1	3	4
Exam	1	2	

Outline Syllabus

*3D Game Engines Components
DirectX D3D, 3D Modelling and Rendering
Camera Setting and Animation
Meshes, Level Loading and Editing, LOD
Terrain Rendering
Spatial Data structure : BSP and PVS
NPC Behaviour and 3D PathFinding : A*, Flocking, Scripting
3D Collision Detection
Shading languages
Game networking Issues : Architecture, Protocol, Event Synchronisation
Console Programming*

Learning Activities

Lectures will be accompanied by hands-on practical laboratory sessions. Directed reading (Internet Based) will be used to supplement the course material.

References

Course Material	Book
Author	Luna, F.
Publishing Year	2003
Title	Introduction to 3D Game Programming with DirectX 9
Subtitle	
Edition	
Publisher	Wordware Publishing, Inc.
ISBN	1556229135

Course Material	Book
Author	Luna, F.
Publishing Year	2006
Title	Introduction to 3D Game Programming with Direct X 9.0c
Subtitle	A Shader Approach
Edition	
Publisher	Wordware Publishing, Inc.
ISBN	1598220160

Course Material	Book
Author	DeLoura, M.
Publishing Year	2000
Title	Game Programming Gems
Subtitle	
Edition	
Publisher	Charles River Media
ISBN	1584500492

Course Material	Book
Author	Watt, A., Policarpo, F.
Publishing Year	2001
Title	3D Games: Real-time Rendering and Software Technology Vol 1
Subtitle	
Edition	
Publisher	Addison-Wesley
ISBN	0201619210

Course Material	Book
Author	Eberly, D.
Publishing Year	2001
Title	3D Game Engine Design
Subtitle	
Edition	
Publisher	Morgan Kaufmann
ISBN	1558605932

Notes

This module covers advanced techniques to modern games software implementation.