Liverpool John Moores University

Title:	COMPUTER GAMES DEVELOPMENT
Status:	Definitive
Code:	**5059COMP** (117393)
Version Start Date:	01-08-2016
Owning School/Faculty:	Computer Science
Teaching School/Faculty:	Computer Science

Team	Leader
Mark Allen	Y
Andrew Simpson	

Academic Level:	FHEQ5	**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	48

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Artefacts	AS1	Development of Object Oriented Game Prototype.	50	
Artefacts	AS2	Group - Development of 2D game.	50	

Aims

To develop the concepts of object oriented philosophy as applied to development for computer games.
To develop programming skills and techniques suitable for computer games development and application.
To provide skills in using software APIs relevant for the computer games industry.

To provide students with knowledge, skills and experience in interactive application and games development.
To introduce students to different types of data structures suitable for games programming.

Learning Outcomes

After completing the module the student should be able to:

1	Apply knowledge of the concepts of object oriented philosophy as applied to software development for computer games.
2	Implement various techniques applicable to the games software development life-cycle using object oriented concepts.
3	Explain and implement 2D game programming techniques in the games software development life-cycle.
4	Appraise and utilise the features in software APIs for computer games software development.
5	Utilise correct data structures in computer games development.

Learning Outcomes of Assessments

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

Game Prototype	1	2	
2D game	3	4	5

Outline Syllabus

Functional, modular and object oriented programming approach.
Object oriented philosophy. Classes and objects.
Object oriented techniques: Encapsulation, Inheritance, Polymorphism.
Introduction to object oriented programming. Class declaration, member data and member functions, instantiation.
Programming techniques: pointers, memory allocation and de-allocation, type casting
Data Structures: One-dimensional arrays, multi dimensional arrays, Linked lists and operations on these data structures, Stacks and operations on stacks, Queues and operations on queues, Trees, binary trees, binary search trees, inserting and deleting objects in binary search trees.
2D Game Engine Architecture and Components, including Game management structure.
2D Game Programming Techniques: 2D Collision detection, camera and scene management, and sprite animation.
Sound Programming including sound effect and music playback.
Managing multiple game objects. Polymorphism, update and draw.
Introduction to Resource Optimisation.

Learning Activities

Lectures incorporating demonstrations will be followed by tutor-led practical sessions.

Notes

In this module students will learn about intermediate level of computer programming using C/C++ object oriented programming and data structures and their application to game programming. The game programming techniques in this module will cover game management structure, camera, objects and scene management, 2D collision detection, game loop and timers, and sprite animation.