

Liverpool John Moores University

Title: COMPUTER GAMES DEVELOPMENT
Status: Definitive
Code: **5059BECK** (118379)
Version Start Date: 01-08-2011

Owning School/Faculty: Computing and Mathematical Sciences
Teaching School/Faculty: Beckett College London

Team	Leader
Mark Allen	Y

Academic Level: FHEQ5
Credit Value: 24.00
Total Delivered Hours: 72.00
Total Learning Hours: 240
Private Study: 168

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24.000
Practical	48.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Artefacts	AS1	Individual - Development of text based game.	50.0	
Artefacts	AS2	Group - Development of 2D game.	50.0	

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:

Text based game	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, Scrolling, Tiling, Clipping, 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.

References

Course Material	Book
Author	Steve Rabin, Stacy L. Hiquet, Sarah Panella, and Jessica McNavich
Publishing Year	2009
Title	Introduction to Games Development
Subtitle	
Edition	2nd
Publisher	Cengage Learning Inc
ISBN	0840031033

Course Material	Book
Author	Cawood, S and McGee, P
Publishing Year	2009
Title	Microsoft ® XNA Game Studio Creators Guide
Subtitle	
Edition	2nd
Publisher	McGraw-Hill Osborne Media
ISBN	0071614060

Course Material	Book
Author	Shreiner, D.
Publishing Year	2009
Title	OpenGL Programming Guide: The Official Guide to Learning OpenGL, Versions 3.0 and 3.1
Subtitle	
Edition	7th
Publisher	Addison-Wesley Professional
ISBN	0321552628

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

Course Material	Book
Author	Mike Dickheiser

Publishing Year	2006
Title	C++ for Game Programmers
Subtitle	
Edition	2nd
Publisher	Charles River Media
ISBN	1584504528

Course Material	Book
Author	Sherrod, A.
Publishing Year	2007
Title	Data Structures and Algorithms for Game Developers
Subtitle	
Edition	
Publisher	Delmar
ISBN	1584504951

Notes

In this module students will learn about intermediate level of computer programming using C/C++ and C# programming languages, object oriented programming and its application to game programming, data structures. The programming techniques covered in this module is restricted to 2D games, such as game management structure, clipping, tiling, scrolling, sprite animation, 2D collision detection, and managing game objects. The implementation will use Microsoft XNA and OpenGL APIs.