

Liverpool John Moores University

Title: ADVANCED COMPUTER GAMES DEVELOPMENT
Status: Definitive
Code: **6041BECK** (118383)
Version Start Date: 01-08-2011

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

Team	Leader
Sud Sudirman	Y

Academic Level: FHEQ6
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
Tutorial	24.000
Workshop	24.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Technology	AS1	Development of 2D game with emphasis on User Interface design and development.	50.0	
Technology	AS2	Development of 3D game. Students are expected to provide full details of the software development process. Group based and must include peer assessment report.	50.0	

Aims

*To develop a user-centered philosophy in game interface design.
To develop skills and expertise in developing computer games.*

To present advanced game programming techniques and technologies applicable to game development.

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

To teach the process and techniques of creating advanced computer/video games under simulated conditions of a real-world video game software development company.

Learning Outcomes

After completing the module the student should be able to:

- 1 Specify, design and implement a user-centered philosophy of game interface.
- 2 Use an appropriate API (DirectX, OpenGL, etc...) to implement a particular aspect of computer games development.
- 3 Apply suitable programming techniques and game technologies to solve particular game development problems.
- 4 Demonstrate understanding and skill in solving 3D game programming problems.
- 5 Apply Software Development Methodologies to game development.
- 6 Produce documentation for complete process of game development.

Learning Outcomes of Assessments

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

Game user interface design	1	2	3
3D games development	4	5	6

Outline Syllabus

Human Computer Interactions: Software development methods and tools, accessibility and special needs in interaction.

Prototyping user-centered interface design for computer games.

Windows game programming and DirectX programming.

2D game programming techniques using DirectX.

Sound programming techniques using DirectX.

3D game programming techniques using DirectX: rendering pipeline, drawing primitives, transformation, camera setting, meshes and landscape rendering, spatial data structures, 3D collision detection.

Network game programming using DirectX: Architecture, protocol, and event synchronization.

Applying physics in computer games: Basic Newtonian Law, rigid body dynamics, elasticity, numerical calculus.

Artificial Intelligence techniques in computer games: path finding, flocking.

Memory, CPU and GPU optimization techniques and tools.

Game Engine Architecture and Components.

Learning Activities

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

Practical use of Software engineering techniques, game APIs and programming language, in game development for individual and team-based assignments.

References

Course Material	Book
Author	Jones, W.
Publishing Year	2007
Title	Beginning DirectX 10 Game Programming
Subtitle	
Edition	
Publisher	Delmar
ISBN	1598633619

Course Material	Book
Author	Gregory, J., Lander, J. and Whiting, M.
Publishing Year	2009
Title	Game Engine Architecture
Subtitle	
Edition	
Publisher	AK Peters
ISBN	1568814135

Course Material	Book
Author	Hight, J. and Novak, J.
Publishing Year	2007
Title	Game Development Essentials
Subtitle	Game Project Management
Edition	
Publisher	Cengage Delmar Learning
ISBN	1418015415

Course Material	Book
Author	Dix, A. Finlay, J., Abowd, G., Beale, R. and Lauesen, S.
Publishing Year	2005
Title	Human-Computer Interaction
Subtitle	
Edition	
Publisher	Prentice Hall
ISBN	140583871X

Course Material	Book
Author	Rucker, R.
Publishing Year	2003
Title	Software Engineering and Computer Games
Subtitle	
Edition	
Publisher	Addison Wesley
ISBN	0201767910

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	DeLoura, M.
Publishing Year	2001
Title	Game Programming Gems 2
Subtitle	
Edition	
Publisher	Charles River Media
ISBN	1584500549

Course Material	Book
Author	Treglia, D.
Publishing Year	2000
Title	Game Programming Gems 3
Subtitle	
Edition	
Publisher	Charles River Media
ISBN	1584502339

Course Material	Book
Author	Harbour, J.
Publishing Year	2006
Title	Begining Game Programming
Subtitle	
Edition	2nd Edition
Publisher	Course Technology PTR
ISBN	1598632884

Notes

This module covers advanced techniques in modern games software implementation. The main objective of this course is to expose the students to the process and techniques of creating advanced computer/video games under simulated conditions of a real-world video game software development company.