

Liverpool John Moores University

Title: COMPUTER GAMES DESIGN AND TECHNOLOGY
Status: Definitive
Code: **5025COMP** (102969)
Version Start Date: 01-08-2016

Owning School/Faculty: Computer Science
Teaching School/Faculty: Computer Science

Team	Leader
William Hurst	Y
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Academic Level: FHEQ5 **Credit Value:** 24 **Total Delivered Hours:** 74
Total Learning Hours: 240 **Private Study:** 166

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Tutorial	24
Workshop	24

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Artefacts	AS1	Individual project involving low polygon 3D modelling, visual effects production and key frame animation.	40	
Report	AS2	Computer Games Design Documentation.	20	
Exam	AS3	Examination.	40	2

Aims

To describe the concepts and evolution of computer and video game technology.

*To examine current technologies used in computer and video games production.
 To analyse technical issues common in computer and video games development.
 To explain the principles of game design
 To provide practical experience in computer and video games analysis.
 To explore the techniques used in 3D model creation and computer animation.
 To provide practical experience in 3D model creation and animation.*

Learning Outcomes

After completing the module the student should be able to:

- 1 Explain various animation and modelling techniques to generate motion and visual effects 3D animated sequences.
- 2 Produce a storyboard, compose, and render animation sequences.
- 3 Create low polygon but complex 3D objects and apply key frame animation using 3D modelling software.
- 4 Evaluate game development life cycle and produce game design documentation.
- 5 Explain various techniques, tools and technologies that are commonly used in modern game production.
- 6 Explain the technical issues and solutions that are common in computer and video games development.

Learning Outcomes of Assessments

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

3D Modelling	1	2	3
Design documentation	4		
Examination	5	6	

Outline Syllabus

-Computer Animation: background and history, principles of 3D animation, computer animation software, animation techniques (flip-book, cell, object-orientated, path-based and tweened animations).

-3D Production: Storyboarding, scene composition and rendering, colour sciences, colour model and image quality.

-3D Modelling: 3-D coordinate systems, 3D graphics model, 3D modelling techniques constructive (solid geometry and spline), converting 2D shapes to 3D models, operations on 3D model, character and organic modelling.

-3D Animation: Key-Framing /Track-based Animation, Inverse Kinematics, Forward Kinematics and Pose to pose animation.

-3D effects: shading, lighting, texturing, particle systems.

-Game Hardware Architecture (Microsoft Xbox 360, Sony Playstation 3 and Nintendo Wii and PC). Hardware considerations for gaming technology: PC and console-based systems.

-Principles of game design. Game design documentation.

- Games genres: implications for design.*
- Personal roles in game development: producer, designer, artist and animator, musician, programmer, tester.*
- Game development tools: programming languages, game engines, physics engines, graphics APIs, multimedia and 3D modeling packages.*
- Networked Games Primer, including network topologies, game servers, network protocols, available libraries for network games.*
- Basic Artificial Intelligence in games, including path findings, Finite State Machine, Rule Based Systems*
- Future trends in Computer Games Technology.*

Learning Activities

Lectures incorporating demonstrations will be followed by tutor-led practical sessions. These will be supported by practical hands-on work in the laboratory.

Notes

This module can be considered as two parts. The first part is Computer Animation. This part concentrates on specific technology used in computer and video games production which is how to create models and apply animation. The second part is Computer Games Technology which covers the theory and techniques used in the design and development of computer and video games. Microsoft XNA will be used as tools to demonstrate the technologies.