Module Proforma

Approved, 2022.02

Summary Information

Module Code	5209COMP
Formal Module Title	Digital Games Content Production
Owning School	Computer Science and Mathematics
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Abdennour El Rhalibi	Yes	N/A

Module Team Member

Contact Name	Applies to all offerings	Offerings
Yann Savoye	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings

Teaching Responsibility

LJMU Schools involved in Delivery
Computer Science and Mathematics

Learning Methods

Learning Method Type	Hours
Workshop	44

Module Offering(s)

Offering Code	Location	Start Month	Duration
JAN-CTY	CTY	January	12 Weeks

Aims and Outcomes

Aims	To explain the digital game content creation workflow.To explain the requirements for geometric content and animations that are targeting games produced using modern game engines.To develop theoretical knowledge of the concepts and techniques required for, 3D modelling, 3D animation and Material Representation.To provide students with an opportunity to practice the principles of 3D modelling and 3D animation using appropriate tools, techniques and methods.To explain the concepts and techniques for integrating content into modern game engines.

Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Identify and interpret artistic requirements of 3D models for use in modern games engines.
MLO2	Apply appropriate polygon modelling operations and material creation to 3D models for incorporation into a game engine using the appropriate techniques and content creation workflow.
MLO3	Apply the principles of 3D Animation to the production and conditioning of skeletally animated game content.
MLO4	Synthesize a real-time, interactive virtual world composed of animated and static game content which conforms to an artistic scene specification.

Module Content

Outline Syllabus
Digital Game Content Creation Pipeline: Game Production Timeline, Economic Constraints, Roles in the Game Production Team, Documenting Art Requirements, Exporting, Optimising and Importing into Games Technologies.Asset Planning: Game Genre, Game Culture, Game World Planning, Scene Composition.3D Modelling: Vertices, Edges, Polygons, Modelling in Quads, Primitives, Approaches to Modelling targeting Games applications, Operations in Modelling, Asset Conditioning and Optimisation for Game Engine applicationsRendering and Lighting: Rendering Pipeline, Direct and Indirect Lighting, Global Illumination, Cinematographic Rendering.Material representation and modern techniques for representing lighting and object details and interactions with light in content creation.3D Animation: Evolution of Computer Animation, Principles of 3D Computer Animation, Rigging, Skinning, Kinematics and Constraints. 3D Virtual Scene Composition: Asset planning, Reusing assets, Level of Detail (LoD). Indoor and Outdoor Scenes Scene Organization, Hierarchies and Relationships between different objects. Compositing Level, Scene Outlining and Logical Structuring and Layering.3D Cameras and Cinematographic Concepts.

Module Overview

In this module, you will learn about the associated techniques and tools for creating 3D models for 3D animation and games. This incorporates the digital content creation pipeline for games, rendering and lighting, to generate static and animated content that can be utilised inside a modern games' engine for representation of scene geometry and game avatars. You will cover the various tools and techniques that are used to build assets for games from conception to realisation. You will be exposed to both Digital Content Creation Tools and in-engine editing tools in order to understand the workflow for creating real-time content.

Additional Information

In this module, students learn about the associated techniques and tools for creating 3D models for 3D animation and games. This incorporates the digital content creation pipeline for games, rendering and lighting, in order to generate static and animated content that can be utilized inside a modern games' engine for representation of scene geometry and game avatars. The focus of the module will be to cover the various tools and techniques that are used to build assets for games from conception to realization, with appropriate workflows for the creation of geometry, asset conditioning preparation for animation and articulation and surface detailing and lighting for the production of real-time scenes. Students will be exposed to both Digital Content Creation Tools and in-engine editing tools in order to understand the workflow for creating real-time content.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Report	3D Modelling	50	0	MLO1, MLO2
Technology	Avatar Animation	50	0	MLO4, MLO3