Digital Games Content Production

Module Information

2022.01, Approved

Summary Information

Module Code	5109COMP
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

Teaching Responsibility

LJMU Schools involved in Delivery
Computer Science and Mathematics

Learning Methods

Learning Method Type	Hours
Lecture	22
Practical	33

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	To explain the digital game content creation workflow.To develop theoretical knowledge of the concepts and techniques required for 2D graphics, 3D modelling and 3D animation.To provide students 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 producing pre-rendered cinematics.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Identify and interpret artistic requirements of 3D models.
MLO2	2	Apply appropriate low polygon modelling operations and textures to 3D models for incorporation into a game engine using the appropriate techniques and software tools.
MLO3	3	Manage and reuse assets for composition of populated 3D scene.
MLO4	4	Plan and communicate motion graphic sequences for a short cinematic.
MLO5	5	Apply principles of 3D animation to the production of 3D animation sequences for a short cinematic.
MLO6	6	Apply appropriate approach to render 3D animation sequences to file.

Module Content

Outline Syllabus	Digital Game Content Creation Pipeline: Game Production Timeline, Economic Constraints, Roles in the Game Production Team, Documenting Art Requirements (Concept Art, Storyboarding, Moodboard, Colours), Exporting, Optimising and Loading. 2D Graphics: Bitmap, Colour Format, Alpha channel, Resizing and Cropping, Dynamic Range, File Formats (lossy and lossless), Sprite Design, Tiles Design.3D Modelling: Vertices, Edges, Polygons, Primitives, Approaches to Low-poly Modelling (Box-modelling, Virtual Studio setup, Sculpting and retopologising), Operations in Modelling.Texture: Mapping strategies, UV Mapping, Types of Maps (Light Map, Shadow Map, Occlusion Map, Specular/Glossiness Map, Bump Map, Normal Map, Displacement Map), Procedural Textures, Implications of texture size. 3D Animation: Evolution of Computer Animation, Principles of 3D Computer Animation, Rigging, Skinning, Kinematics and Constraints, Keyframe animation, Cleaning Motion, Blendshapes, Locomotion, Facial Animation.3D Virtual Scene Composition: Asset planning, Reusing assets, Level of Details (LoD), Procedural Level Generation.Rendering and Lighting: Rendering Pipeline, Lighting and Shadows, Specular and Diffused Light, Radiosity and Global Illumination, Rendering still and animation.Assets Conditioning for Game Engines.
Module Overview	
Additional Information	In this module, students learn about the digital content creation pipeline for games, the associated techniques and tools for creation 2D graphics, 3D models and 3D animation, and rendering and lighting using off the shelf 3D software packages. In the first piece of coursework, students will solely be producing fully textured low-poly 3D models and conditioning it for game engine. In the second coursework, students take a different role within the creative department and will be given ready made 3D models which they need plan out the animation as a team, then rig, skin and animate the 3D models. They will also have to light and render the environment individually for compilation of a short cinematic.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	3D Modelling and Texturing	50	0	MLO1, MLO2, MLO3
Report	Pre-rendered 3D Animation	50	0	MLO4, MLO5, MLO6

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Yun Sheng	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings