

Module specification

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Module Code	GME511
Module Title	Asset Production for Game Engines
Level	5
Credit value	20
Faculty	FACE
HECoS Code	101019
Cost Code	GAGM
Pre-requisite module	N/A

Programmes in which module to be offered

Programme title	Core/Optional/Standalone
BSc (Hons) Game Development	Core
BA (Hons) Game Art and Animation	Core

Breakdown of module hours

Learning and teaching hours	30 hrs
Placement tutor support hours	0 hrs
Supervised learning hours e.g. practical classes, workshops	0 hrs
Project supervision hours	0 hrs
Active learning and teaching hours total	30 hrs
Placement hours	0 hrs
Guided independent study hours	170 hrs
Module duration (Total hours)	200 hrs

Module aims

This module aims to do the following:

- Develop advanced knowledge of industry-standard workflows utilised within contemporary 3D game asset production pipelines.
- Enable students to apply high-to-low poly modelling techniques in the creation of optimised game-ready assets for real-time applications.
- Cultivate understanding of topology, UV mapping, and optimisation principles in the production of efficient 3D assets for game engine deployment.
- Explore advanced baking and physically based rendering (PBR) texturing workflows for the creation of visually resolved digital assets.
- Facilitate the implementation and presentation of completed 3D assets within a real-time game engine environment.
- Support the production of portfolio-quality work that demonstrates both technical competency and artistic application across the full asset development pipeline.
- Encourage independent problem-solving and creative interpretation through the translation of 2D concept art into realised 3D game assets.

Module Learning Outcomes

At the end of this module, students will be able to:

1	Construct a workflow document that details a sound 3D game asset production process.
2	Develop 3D game assets with appropriate topology and UV wrapping techniques.
3	Demonstrate high-to-low poly workflow by using baking and equivalent material techniques to retain quality from complex 3D geometry.
4	Analyse game asset work as part of a real-time game engine environment.
5	Construct a showcase piece that demonstrates the full creative and technical workflow of asset production.

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

Within this assessment students will produce 3D game assets from a provided 2D concept, demonstrating application of the full game asset production pipeline. This will include high-to-



low poly modelling, optimisation, UV mapping, baking, texturing, and implementation within a real-time game engine. The assessment is designed to evaluate students' understanding of core technical workflows and industry-standard practices in structured asset development.

Assessment number	Learning Outcomes to be met	Type of assessment	Duration/Word Count	Weighting (%)	Alternative assessment, if applicable
1	1, 2, 3, 4, 5	Portfolio	N/A	100%	N/A

Derogations

None

Learning and Teaching Strategies

The primary skill base of this module will be delivered through a series of lectures, demonstrations and practical work that will equip the students with the technical skills to develop more advanced techniques to produce game-ready 3D Assets. Content will be available for students to access synchronously and asynchronously and may indicatively include first and third-party tutorials and videos, supporting files, online activities any additional content that supports their learning.

As this module progresses, experiential and peer learning strategies will be encouraged as the students' progress with their coursework. Class time will shift to more student-led coursework development time to focus of formative feedback for individual student achievement.

Welsh Elements

Students will have the right to submit assessed work in Welsh, to receive academic supervision and access learning resources and correspondence in Welsh. Students are encouraged to engage with Welsh cultural themes, creative elements and enterprising opportunities as part of student-led activities and assignments to facilitate wider contextual awareness and distinctive creative outputs.

Indicative Syllabus Outline

Indicative Syllabus includes the following topic areas:

- Research and pre-production methodologies.
- Concept interpretation and visual planning.
- Advanced 3D geometry and topology.
- Hard-surface modelling techniques.
- High-to-low poly workflows and baking.
- UV mapping and optimisation.

- Normal map generation and texturing workflows.
- PBR materials and texturing techniques.
- Scale, resolution, and asset optimisation.
- Game engine integration and presentation.
- Portfolio development and professional showcasing.

Indicative Bibliography

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads:

Arevalo, K., Tovar, M., Li, J. (2021), *Creating Games with Unreal Engine, Substance Painter, & Maya*, Boca Raton: CRC Press.

Other indicative reading:

Kumar, A. (2020), *Beginning PBR Texturing : Learn Physically Based Rendering with Allegorithmic's Substance Painter*, New York: Apress.

Murdock, K. (2025), *Autodesk Maya 2026 Basics Guide*, Mission: SDC Publications.

Shah, Z. J. (2022), *Realistic Asset Creation with Adobe Substance 3D: Create Materials, textures, filters, and 3D models using Substance 3D Painter, Designer, and Stager*, Birmingham: Packt Publishing.

Tickoo, S. (2024), *Autodesk Maya 2025: A Comprehensive Guide, 16th Edition*, Indiana: CADCIM Technologies.

Administrative Information

For office use only	
Initial approval date	July 2026
With effect from date	September 2027
Date and details of revision	
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