Prifysgol Wrecsam
Wrexham University

Module specification

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Module Code	GME701
Module Title	3D Games Technology
Level	7
Credit value	20
Faculty	FACE
HECoS Code	101019
Cost Code	GAGM

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
MSc Computer Game Development	Core
MSc Computer Game Development (with Advanced Practice)	Core
MA Game Art	Core
MA Game Art (with Advanced Practice)	Core

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	12 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	9 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	**21** hrs
Placement / work based learning	0 hrs
Guided independent study	179 hrs
Module duration (total hours)	200 hrs

For office use only	
Initial approval date	10/05/2023
With effect from date	September 2023
Date and details of revision	March 24 Change of module code from COM750
Version number	1

Module aims

This module will focus on the design, development, and implementation of immersive or emerging technologies within a 3D prototype or application. Students will be tasked with evaluating practical uses of immersive or emerging technologies within industry standard development practices. Students will also present professional standard workflows and techniques within the design and production of game components and assets. Reinforced with research elements, students will build upon new or existing knowledge of game design, 3D, and immersive technology.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Critically evaluate immersive and technological trends within the contemporary games industry.
2	Devise a technical specification for a project that incorporates applied research practice and 3D design proficiencies.
3	Create a 3D prototype that incorporates the use of immersive or emerging technologies, tools or systems.

Assessment

Indicative Assessment Tasks:

Students will provide an initial research document and proposal on their chosen immersive technology which encourages project planning, topic exploration and written skills.

As the module progresses, the student will be required to develop a prototype which involves immersive technology and encapsulates 3D designs and environments. Additionally, students will produce a workflow and design documentation which details their development.

Throughout the module several milestones will be planned (indicatively, this could be a milestone every 3-4 weeks). Assessment will occur at each of these milestones to ensure that students get the relevant feedback as the module progresses. These assessments will be largely based on the relevant concepts, skills and design solutions required to meet that milestone.

The final assessment will take part as a demonstration of the final project which is to be reinforced with research and reflection.

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.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1, 2, 3	Portfolio	100%

Derogations

None

Learning and Teaching Strategies

In line with the Active Learning Framework, this module will be blended digitally with both a VLE and online community. 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, the strategies will change to best support a diverse learning environment. Initially, the module will start with a heavier reliance on engaging tutor-led lectures, demonstrations, and workshops to ensure that the students get the relevant threshold concepts. As the module continues experiential and peer learning strategies will be encouraged as the students progress with their coursework. Sessions will shift to more tutorial-based sessions to focus of formative feedback for individual student achievement.

Indicative Syllabus Outline

- Academic writing and research
- Optimised 3D development workflow for game engines
- Optimised 3D topology and edge flow techniques
- Industry standard optimisation workflows
- Physics based rendering techniques
- Immersive technology within industry (Virtual Reality and Augmented Reality)
- Flexible electronic prototype development (e.g. Arduino, Raspberry Pi, 3D printing)
- Rapid development techniques (3D scanning and Motion Capture)
- Game engine utilisation
- Industry software integration

Indicative Bibliography:

Please note the essential reads and other indicative reading are subject to annual review and update. Please *ensure correct referencing format is being followed as per University Harvard Referencing Guidance.*

Essential Reads

Kumar, A. (2021), *Immersive 3D Design Visualization: with Autodesk Maya and Unreal Engine 4*, New York: Apress.

Other indicative reading

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

McDermott, W. (2018), *The PBR Guide: A Handbook for Physically Based Rendering*, Clermont-Ferrand: Allegorithmic.

Murdock, K. L. (2022), *Autodesk Maya 2023 Basics Guide,* Kansas: SDC Publications.

Romero, M.F., Sewell, B., Cataldi, L. (2022), *Blueprints visual scripting for Unreal Engine 5*, Third Edition, Birmingham: Packt Publishing.