MODULE SPECIFICATION

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Refer to guidance notes for completion of each section of the specification.

Module Code:	COM650

Module Title:	Advanced 3D Modelling & Animation for Game Engines

Level:	6	**Credit Value:**	20

Cost Centre(s):	GACP	JACS3 **code**: HECoS code:	I630 101019

Faculty	FAST	**Module Leader:**	Nathan Roberts

Scheduled learning and teaching hours	24 hrs
Placement tutor support	0 hrs
Supervised learning eg practical classes, workshops	0 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total contact hours	**24** hrs
Placement / work based learning	
Guided independent study	176 hrs
Module duration (total hours)	200 hrs

Programme(s) in which to be offered (not including exit awards)	Core	Option
BSc (Hons) Computer Game Development	✓	
BSc (Hons) Computer Game Design and Enterprise	✓	
BSc (Hons) Computer Game Development (with Industrial Placement)	✓	
BSc (Hons) Computer Game Design and Enterprise (with Industrial Placement)	✓	
BA (Hons) Game Art	✓	
BA (Hons) Game Art (with Industrial Placement)	✓	

Pre-requisites
None

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Office use only

Initial approval: 28/11/2019 Version no:1

With effect from: 01/09/2019

Date and details of revision: Revalidated BA (Hons) Game Art approved 15/6/20 with effect from Sept 20 Version no:2

Module Aims
This module will introduce the student to specialist areas within 3D development, physics simulation and scripting techniques to provide proficient production pipelines. This module aims to: • Incorporate dynamic special effects that utilise accurate physics simulation to incorporate environments that react naturally to their surroundings • Application of advanced node systems to provide complex hierarchy texture maps and sophisticated use of animation • Utilisation of technology applications that provide accurate capture and replication of real-life environments • Familiarisation of advanced rendering techniques to provide realistic lighting solutions

Module Learning Outcomes - at the end of this module, students will be able to	
1	Design intricate 3D models and animation techniques that incorporate sophisticated production pipelines.
2	Evaluate appropriate applications of physics that accurately simulate dynamic interaction within 3D environments.
3	Develop mechanisms that provide efficient implementation of complex processes through automation and scripting.
4	Formulate proficient rendering solutions that incorporate realistic lighting effects in both real-time and pre-rendered sequences.

Employability Skills **The Wrexham Glyndŵr Graduate**	**I = included in module content** **A = included in module assessment** **N/A = not applicable**
CORE ATTRIBUTES	
Engaged	**I/A**
Creative	**I/A**
Enterprising	**I/A**
Ethical	**I/A**
KEY ATTITUDES	
Commitment	**I/A**
Curiosity	**I/A**
Resilient	**I/A**
Confidence	**I/A**
Adaptability	**I/A**
PRACTICAL SKILLSETS	
Digital fluency	**I/A**
Organisation	**I/A**
Leadership and team working	**I/A**
Critical thinking	**I/A**
Emotional intelligence	**I/A**
Communication	**I/A**

Derogations
None

Assessment:
Indicative Assessment Tasks:
Assessment will take form as an online reflective journal (blog) of which work will be organised to present a series of briefs chronologically. The reflective journal will serve as part of the student's personal development towards a portfolio that will also be used in conjunction with other modules. Indicative word count is 4000 words. Students will be provided a series of briefs, each one related to specific components taught in the module. Collectively these will provide a breakdown of the areas covered in class and evidenced in the reflective journal. Early briefs will be short and designed to include tasks to substantiate student learning and provide opportunities to assess their competency. As each session progresses the briefs are adapted to encourage opportunities to apply knowledge from across the module and promote the investigation of new approaches and learning outside of the classroom. Deadlines will be fragmented and dependant on the type of brief, imposing varying time frames to evidence efficient management. On occasions briefs will require completion as an individual or team member and provide opportunities to choose from a number of potential solutions. This has been implemented to allow students the ability to specialise in specific areas of 3D development. Work can be assessed concurrently with progression of the module and opportunities provided for feedback as well as offering the potential for students to develop areas further. To finalise the assessment, students will be asked to attend a meeting where they will be given the opportunity to demonstrate work and discuss the processes adopted. This offers the opportunity to provide indicative grades and further feedback once the module has completed.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1,2,3,4	Portfolio	100%

Learning and Teaching Strategies:
This module is supported through a series of practical sessions that are deployed as classroom demonstrations. The module is delivered both by the tutor and through electronic learning resources; demonstrations are recorded and delivered as video tutorials for reference after. The module is designed to introduce students to the fundamental aspects of 3D development and encourage the engagement of problematic scenarios through the application of solutions built upon the knowledge acquired from class sessions; this will involve individuals and teams of students.

Each session will introduce students to a core component of 3D development and encourage application of their knowledge though a series of briefs that introduce a specific problem scenario that requires skills acquired from class sessions.

Progression will dictate the formulation of the briefs, allowing more complex scenarios as the sessions advance and incorporate the application of knowledge from previous ones. To promote the student's learning outside of the classroom each brief will provide scope to apply solutions that can be determined from additional study, found in the recommended reading and online resources associated to the module.

Syllabus outline:

- Dynamics and physics simulation
- Kinematic modifiers • Scripting
- Texture maps
- Motion capture, 3D scanning and synchronisation techniques
- Deformation and control mechanics
- Lighting effects
- Multifaceted node networks for enhanced asset creation

Indicative Bibliography:

Essential reading

Derakhshani, D. (2015) Introducing Autodesk Maya 2016, Sybex.

Palamar, T. (2015) Mastering Autodesk Maya 2016, Sybex.

Other indicative reading

None