

**MODULE CODE:** DH3BAGA01i

**MODULE TITLE:** Intermediate Programming and Animation for Games

**Level:** 5

**Credit Value:** 30

**Pre-Requisites:** NONE

### Module Description

This module is designed to build upon introductory 3D modelling and coding modules in stage one by teaching the skills of creating 3D game assets, prepping for animation and coding for game engines. The student will learn how to construct 3D models and prep them by bounding the models mesh to a system of joints and control handles called rigging, learning about joint hierarchy and kinematics and how to add skin and rig faces. The student will develop skills working with morph targets, and animating models ready for export to a game engine. The student will learn to code the animations in a game engine ready for use in games. The student will develop collaborative working and learning processes. Peer evaluation and self-evaluation techniques will be developed in the context of industry simulation. Work created here will be added to the student's accompanying portfolio this portfolio of design and realisation will be developed, in additional modules to aid course progression and employment.

### Learning Outcomes

On completion of this module, students will be able to:

1. Generate thoroughly thought through designs for 3D asset animations showing creativity and industry standard skills and working independently to professional expectations.
2. Demonstrate knowledge of 3D animation in order to design and import animations for games effectively for a specific target audience.
3. Demonstrate skills in art asset creation, involving low / high-poly modelling, 2D texture creation and material authoring, in either hard surface or organic modelling.
4. Design for games creatively with a secure grasp and understanding of the processes involved.
5. Produce scripting that is technically sophisticated and responds successfully to the given brief.
6. Critically evaluate and evidence the process of creating a game.

### Assessment

Hand-in	Aggregate (Yes/No)	Semester Due
Portfolio including 3D animation with coded movements in game engine (working with a partner on opposing areas) and 1000 word evaluation (100%) LO1, LO2, LO3, LO4, LO5 <u>OR</u> Portfolio including Level Design in 3D software including coded collisions (working with a partner on opposing areas) and 1000 word evaluation (100%) LO1, LO2, LO3, LO4, LO5	N/A	Sem 1 End

**Indicative Content:**

- 3D Animation
- Rigging
- Kinematics
- Joint control handles and hierarchy
- Games testing
- Art asset creation, involving low / high-poly modelling,
- 2D texture creation and material authoring
- Coding and computer programming using C#
- Unity
- Computer graphics
- Game mechanics.
- Movements and decision making for playable characters
- Player character move set
- Co-operative mechanics which are both physical and fun
- Software development

**Learning and Teaching Strategies**

Practical sessions, lectures, workshops, group and individual sessions and tutorials are combined to give a balanced programme of study. The course is supported by the use of varied ICT, and independent learning.

Computer programming and creative skills will be developed through a range of practical work including conceptual planning, gameplay exploration, research, construction of pre-production documentation, product pitching, digital based audio-visual production and post-production and testing used to inform critical, evaluative and reflective practice.

Media production skills are developed through a series of practical tasks which are designed to build on students' skills at entry to the programme leading to the development of secure technique, imagination and creativity as applied to the digital media industry. A suite of computer / video game consoles and a library of PC and console games – including retro equipment will be developed in addition to the students' own home facilities and access to online gaming resources.

**Specific Learning Resources**

- 2D and 3D design and modelling software
- Online and offline games design tools
- Graphics editing software such as Photoshop
- PC or Mac suites
- Games Suite
- Internet resources via Moodle

**Reading Lists****Recommended Reading - 3D Modelling and Animation:**

Derakhshani, D. (2015) *Introducing Autodesk Maya 2016*: Autodesk Official Press. Chichester: Sybex.

Lilly, E. (2015) *The Big Bad World of Concept Art for Video Games: An Insider's Guide for Beginners*. CA: Design Studio Press.

Schell, J. (2016) *The Art of Game Design: A Book of Lenses, Second Edition*. Florida: CRC Press.

McKinley, M. (2006) *The Game Animator's Guide to Maya*. Indiana: Chichester: Wiley Publishing.

McKinley, M. (2010) *Maya Studio Projects: Game Environments and Props*. Indiana: Sybex.

Sorlarski, C. (2012) Drawing Basics and Video Game Art. New York: Watson Guptill.

Watkins, A. (2011) Creating Games with Unity and Maya: How to Develop Fun and Marketable 3D Games. Oxford: Focal Press.

**Recommended Reading - Programming in Games Engines:**

Geig, M., Tristem, B. (2015) Unity Game Development in 24 Hours, Sams Teach Yourself. Bedford: Sam Publications.

Goldstone, W. (2011) Unity 3.x Game Development Essentials. Birmingham: Packt Publishing.

Hocking, J. (2015) Unity in Action: Multiplatform Game Development in C# with Unity. New York: Manning Publications.

Moakley, B., Berg, M., Duffy, S., Van de Kerckhove, E., et.al (2016) Unity Games by Tutorials: Make 4 Complete Unity Games from Scratch Using C#. London: Razeware LLC.

**Assessment Grading Criteria**

<p><b>FIRST CLASS</b> <b>70%+</b></p>	<ul style="list-style-type: none"> <li>• Excellent use of the chosen techniques and a mature use of technical and artistic skills development</li> <li>• Imaginative use of individual techniques breaking new ground or expectations</li> <li>• An effective command of technology</li> <li>• Written work whose presentation is comparable with industry examples</li> <li>• Coursework which shows a very high degree of perception, related imaginatively and clearly to industry practice</li> <li>• A reflective journal which analyses, in considerable detail, the process and development of the product</li> </ul>
<p><b>UPPER SECOND CLASS</b> <b>60%-69%</b></p>	<ul style="list-style-type: none"> <li>• A good use of the chosen technical resources, developing ideas effectively</li> <li>• An effective use of techniques without breaking tradition</li> <li>• A good use of technology</li> <li>• A fluent document with only minor mistakes or omissions</li> <li>• Coursework which demonstrating a good degree of perception, bearing a clear relationship to industry practice</li> <li>• A reflective journal which analyses, in some detail, the process and development of the product</li> </ul>
<p><b>LOWER SECOND CLASS</b> <b>50%-59%</b></p>	<ul style="list-style-type: none"> <li>• A competent use of the chosen technical resources, with some sense of the development of ideas</li> <li>• A satisfactory use of the individual techniques but with limitations</li> <li>• An adequate sense of design and structure</li> <li>• Written work which is largely accurate, though may be unclear in some details</li> <li>• Coursework which shows quite a good degree of awareness, with some reasonably effective relationships to industry practice</li> <li>• A reflective journal which describes the process and development of the product but with limited analysis of its impact</li> </ul>
<p><b>THIRD CLASS</b> <b>40%-49%</b></p>	<ul style="list-style-type: none"> <li>• Satisfactory technique, but uses the resources in a rather limited way</li> <li>• Written work which is not always accurate, but largely decipherable, perhaps lacking some important detail</li> <li>• Basic, but adequate coursework assignments, which may show relatively superficial understanding</li> <li>• Some tenuous but perceptible relationship(s) to industry practice</li> <li>• A journal which outlines the process and development of the product but with limited analysis of its impact and limited examples.</li> </ul>
<p><b>FAIL 0%-39%</b></p>	<ul style="list-style-type: none"> <li>• A poor use of appropriate technical resources</li> <li>• Programming errors which significantly affect the success of the overall product</li> <li>• Mistakes and ambiguities in written work which affect understanding</li> <li>• A journal demonstrating poor understanding with a lack of clear examples</li> </ul>