

H8GP: Games Programming

Module Code:	H8GP
Long Title	Games Programming APPROVED
Title	Games Programming
Module Level:	LEVEL 8
EQF Level:	6
EHEA Level:	First Cycle
Credits:	10
Module Coordinator:	
Module Author:	Alex Courtney
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	PhD or Master's degree in a business and/or tech-related field. May have industry experience also.
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
#	Learning Outcome Description
LO1	Create functional games with game objects, components, and scenes using latest tools, techniques and algorithms underlying game design and development.
LO2	Apply artificial intelligence to the game and simulate senses for agents to make decisions based on the environment using the latest techniques
LO3	Enhance games with special effects, online multiplayer technology, mobile adjusting, etc.
LO4	Test and deploy a game to the internet or host it in cloud.
Dependencies	
Module Recommendations	
No recommendations listed	
Co-requisite Modules	
No Co-requisite modules listed	
Entry requirements	Learners should have attained the knowledge, skills and competence gained from stage 3 of the BSc (Hons) in Computing.

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Module Content & Assessment			
Indicative Content			
Fundamentals and C# Scripting Creating projects, importing assets, starting a level, transformations and navigations, scene building, lighting and sky, play testing and game tab, adding water, adding a coin to collect, creating materials, applying various functions on assets such as counting, collecting etc.			
Post processing stack Installation, using grain, vignetting and depth of field, mimicking real life, mood, fog and colour grading			
Shaders, Textures, Mapping Adding shaders, surface shaders, adding properties to shaders , diffuse shading , adding texture to shader, creating holographic shader, mobile shader adjustments, normal mapping, creating transparent material, packing and blending textures			
Lighting models and Rendering Diffuse lighting model, various specular type models, Metallic setup. Adding transparency to PBR, creating mirrors and reflecting surfaces, baking lights in your scenes			
Vertex functions and Screen Effects Accessing a vertex colour, animating vertices, extruding models, snow shaders, volumetric explosion, using brightness, saturation and contrast, overlay mode			
Physics, Animation and Artificial Intelligence Behaviour template, pursuing and evading, adjusting the agents of physics, arriving and leaving, facing objects, wandering around, following a path, avoiding agents, blending behaviours, projectiles, jump system, navigation, best-promising path, decision making, agent awareness			
Assessment Breakdown			%
Coursework			100.00%
Assessments			
Full Time			
Coursework			
Assessment Type:	Formative Assessment	% of total:	Non-Marked
Assessment Date:	n/a	Outcome addressed:	1,2,3,4
Non-Marked:	Yes		
Assessment Description: Formative assessment will be provided on the in-class individual or group activities.			
Assessment Type:	Continuous Assessment	% of total:	50
Assessment Date:	n/a	Outcome addressed:	1,2
Non-Marked:	No		
Assessment Description: Create a functional game with game objects, components, and scenes and apply artificial intelligence to the game			
Assessment Type:	Continuous Assessment	% of total:	50
Assessment Date:	n/a	Outcome addressed:	3,4
Non-Marked:	No		
Assessment Description: Enhance games with special effects and make it a multiplayer game or mobile enabled. Deploy the game in cloud.			
No End of Module Assessment			
No Workplace Assessment			
Reassessment Requirement			
Repeat examination <i>Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.</i>			
Reassessment Description Coursework Only This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination. The repeat strategy for this module is to repeat the project, learners may build upon previous submissions. Learning Environment Learning will take place in a classroom/lab environment with access IT resources. Learners will have access to library resources, both physical and electronic and to faculty outside of the classroom where required. Module materials will be placed on Moodle, the College's virtual learning environment			

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Module Workload				
Module Target Workload Hours 0 Hours				
Workload: Full Time				
Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	Classroom & Demonstrations (hours)	24	Every Week	24.00
Tutorial	Other hours (Practical/Tutorial)	36	Every Week	36.00
Independent Learning	Independent learning (hours)	190	Every Week	190.00
Total Weekly Contact Hours				60.00

Module Resources	
<i>Recommended Book Resources</i>	
Alireza Tavakkoli ,. (2018), ,Game Development and Simulation with Unreal Technology, Second Edition. (2019), ,Hands-On Game Development Patterns with Unity. Alan Thorn (Author), P. Doran, John (Author), Alan Zucconi (Author), Jorge Palacios (Author) ,. (2019), ,Complete Unity.	
<i>Supplementary Book Resources</i>	
Mat Buckland ,Programming Game AI by Example (Wordware Game Developers Library). Harrison Ferrone ,. (2019), ,Learning C# by Developing Games with Unity. Joseph Hocking ,. (2018), ,Unity in Action, Second Edition: Multiplatform game development in C#.	
<i>This module does not have any article/paper resources</i>	
<i>This module does not have any other resources</i>	
Discussion Note:	