

Module Title:	3D Graphics	
Language of Instruction:	English	
Credits:	10	
NFQ Level:	7	
Module Delivered In	1 programme(s)	
Teaching & Learning Strategies:	A blended teaching strategy will be used where traditional lectures are augmented with online resources. The learning will be reinforced and extended using supervised computer lab sessions where the material is applied.	
Module Aim:	To deliver an understanding of the architecture of a contemporary game engine. To deliver an understanding of the principles and mechanisms of real time 3D graphics rendering To provide the practical skills necessary to render interactive, realistic game objects in real-time with advanced lighting & material techniques using a contemporary game engine.	
Learning Outcomes		
<i>On successful completion of this module the learner should be able to:</i>		
LO1	demonstrate an understanding of the theory behind advanced real time 3D graphics techniques;	
LO2	demonstrate an understanding of the architecture and application of a 3D graphics engine;	
LO3	implement advanced graphics techniques to enhance realism;	
LO4	build a real time interactive 3D game using a contemporary game engine	
Pre-requisite learning		
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>		
No recommendations listed		
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>		
No incompatible modules listed		
Co-requisite Modules		
6990	GAME H3201	Gameplay Programming II
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>		
No requirements listed		

Module Content & Assessment

Indicative Content
Game engine architecture Engine subsystems including engine foundation systems, rendering, physics, animation and game world object models.
Advanced rendering techniques Lighting, post processing, normal maps. Shader programming
Building a 3D Game using a game engine Animating models, user interaction, physics, UI, audio
Tools & Assets Game engine content pipeline. Shader & terrain editors
Basic principles of game art & UX Color theory, proportion, composition & balance.

Assessment Breakdown	%
Continuous Assessment	20.00%
Project	40.00%
Practical	40.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Open-book Examination	Game engine architecture	2	10.00	n/a
Open-book Examination	3D Graphics Theory	1,2	10.00	n/a

Project				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Mini-Project 1	3,4	15.00	n/a
Project	Mini-Project 2	3,4	25.00	n/a

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Laboratory Participation, completion of assigned worksheets	1,2,3,4	40.00	Sem 1 End

No End of Module Formal Examination

ITCarlow reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	20 Weeks per Stage	2.00
Laboratory	20 Weeks per Stage	3.00
Independent Learning Time	20 Weeks per Stage	0.50
Independent Learning Time	20 Weeks per Stage	1.00
Independent Learning Time	20 Weeks per Stage	1.50
Total Hours		160.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_KCCGD_B	Bachelor of Science (Honours) in Computer Games Development	3	Mandatory