GAME H3201: Gameplay Programming II

Module Title:	Gameplay Programming II
Language of Instruction:	English

Credits:	10

NFQ Level:	7

Module Delivered In	No Programmes

Teaching & Learning Strategies:	This module is delivered as a mix of traditional lectures and practical sessions within a laboratory setting with a blend of interactive lectures and practical work. Learners are actively participating in class work throughout each scheduled session. Students will be assigned practical exercises that address the learning outcomes.

Module Aim:	To give the student a thorough understanding of the application of physics to gameplay for mobile platforms.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Design, implement and demonstrate 2D game prototypes for mobile platforms; Incorporating physics simulations based on mathematical modelling.
LO2	Use an appropriate networking API to exchange game data with other game clients in realtime.
LO3	Design and implement a rudimentary multiplayer game, which includes physics elements, for mobile platforms.
LO4	Incorporate particle physics into computer games and debug by comparing computer output to results predicted by theoretical physics.
LO5	Simulate the physics of the collision of regular rigid body shapes in 2D using the full theoretical application.

Pre-requisite learning		
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*		
No recommendations listed		
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*		
No incompatible modules listed		
Co-requisite Modules		
4418	PROG H4203	Prog for Games Devices I
Requirements *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*		
Successful completion of year 2 or equivalent.		

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Module Content & Assessment

Indicative Content
1. Applied Physics Content to include Particle kinematics and dynamics (projectiles, circular motion, particle systems, Forces, force fields, gravitational fields, friction, fluid resistance, pressure, buoyancy, springs with damping, torque: Approximation Methods: Rigid body dynamics (centres of mass, moments of inertia, torque, angular velocity and acceleration,): Collisions (conservation of linear and angular momentum, Newton's law of restitution, impulse on collision, resolution of collisions in 2D. Applications in 2D rigid body.)
2. Introduction to mobile development environments.
3. Creating game menus and navigating between them.
4. Deploying and debugging an application on a mobile device.
5. Supporting multiple screen resolutions.
6. Loading game data from external resources.
7. Fundamentals of mobile 2D game programming: sprites, collision detection, game input, audio, timers, animation.
8. Modelling collisions in 2D.
9. Designing movement systems: walking and jumping, managing collision boundaries.
10. Modelling projectile motion with and without air resistance.
11. Modelling deformable soft physics bodies using physics joints.
12. Modelling physics concepts eg buoyancy
13. Networking: Using a networking library to exchange messages with other clients in realtime.

Assessment Breakdown	%
Project	30.00%
Practical	30.00%
End of Module Formal Examination	40.00%

No Continuous Assessment

Project

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Project	Mobile Project 1	1	15.00	Sem 1 End
Project	Mobile Project 2 (develop multiplayer game and publish)	3	15.00	n/a

Practical

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	Practical Work	1,2,3,4,5	30.00	Sem 1 End

End of Module Formal Examination

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	n/a	1,4,5	40.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

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Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Laboratory	20 Weeks per Stage	4.00
Lecture	20 Weeks per Stage	2.00
Independent Learning	20 Weeks per Stage	2.00
	Total Hours	160.00