

Module Title:	Gameplay Programming II
Language of Instruction:	English

Credits:	10
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NFQ Level:	7
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Module Delivered In	1 programme(s)
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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.
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Module Aim:	To give the student a thorough understanding of the application of physics to gameplay for mobile platforms.
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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
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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.

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

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
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

Module Delivered In

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