### COURSE DETAILS

<table>
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<tr>
<th>Course Code:</th>
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<tr>
<td>Full Course Title:</td>
<td>Computer Games Programming</td>
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<tr>
<td>SCQF Level:</td>
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### DELIVERY LEVEL

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<th>Undergraduate:</th>
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### COURSE AIMS

To develop programming skills and techniques specific to the area of 2D and 3D computer games

### LEARNING OUTCOMES – SUBJECT MASTERY

- Critical appreciation of game theory and computer games history, genres and impact
- Ability to critically evaluate game design concepts, elements and characters.
- Critical understanding of available tools and their application.
- Knowledge of algorithms for path planning and navigation
- Understanding and knowledge of physically-based modelling in games and selection of techniques.
- Understanding and knowledge of AI techniques in games and selection of techniques.
- Ability to design and implement a small-scale game using 2D and 3D tools.
- Practical skills in graphics and AI programming in the computer games context.

### LEARNING OUTCOMES – PERSONAL ABILITIES

- Ability to think and plan in three dimensions
- Representation of, planning for, and solution of problems

Team working skills

Ability to plan, design, prototype critically evaluate and communicate a game

### SYLLABUS

- Computer Games Design Concepts (Genres, Narrative and Fun).
- Elements of Game Design (Formal, Dramatic and System Dynamics).
- Character and World Design.
• Design Programming Patterns (Input, loops, structures, objects and optimisation).
• Games Creation Concepts (Conceptualisation, Prototyping, Playtesting).
• Game-state, simulator, renderer, (hierarchical) controllers.
• Tools, environments and coding practices— e.g. graphics, C++ and engines.
• 2D and 3D game programming techniques.
• Physically-based modelling, particle systems, flocking.
• Obstacle avoidance and path planning.
• Group movement.
• Learning and adaptation in games.
• Action and behaviour selection.
• Procedural Generation.
• Course summary and review.

NOTE: A pre-requisite of this course is that students must have C++ programming skills

COURSE RELATIONSHIPS
N/A

LOCATION AND ASSESSMENT METHODS

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<th>Ork</th>
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