**COURSE DETAILS**

**Course Code:** F21GP  
**Full Course Title:** Computer Games Programming  
**SCQF Level:** 11  
**SCAF Credits:** 15  
**Available as Elective:** No

**DELIVERY LEVEL**

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**Additional Information:**

**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.
F21GP Computer Games Programming

- 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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