

Module specification

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Module Code	GME420
Module Title	Games Programming Fundamentals
Level	4
Credit value	20
Faculty	FACE
HECoS Code	101020
Cost Code	GAGM
Pre-requisite module	N/A

Programmes in which module to be offered

Programme title	Core/Optional/Standalone
BSc (Hons) Game Development	Core

Breakdown of module hours

Learning and teaching hours	40 hrs
Placement tutor support hours	0 hrs
Supervised learning hours e.g. practical classes, workshops	0 hrs
Project supervision hours	0 hrs
Active learning and teaching hours total	40 hrs
Placement hours	0 hrs
Guided independent study hours	160 hrs
Module duration (Total hours)	200 hrs

Module aims

This module aims to do the following:

- Introduce the practice of programming via traditional, syntax and structure-based means.
- Explore a relevant, contemporary programming language and how it aligns to Game Development.
- Explore the uses of an Integrated Development Environment (IDE) to implement programming code.
- Demonstrate core technical and design fundamentals to structure a variety of games-based computer programs.

Module Learning Outcomes

At the end of this module, students will be able to:

1	Identify syntax and structure of an industry-standard programming language.
2	Relate programming concepts to the context of game development.
3	Apply programming techniques within an Integrated Development Environment.
4	Demonstrate design solutions to contextualised, games-based problems.

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

This module will indicatively be made of several practice-based coursework pieces that build on/focus on individual areas of expertise within programming and IDE activities. This may include smaller, sequential activities for students to build up skills and self-efficacy towards the start of the module and finalise with a larger piece or pieces that demonstrates their cumulative skill learned throughout.

Assessment number	Learning Outcomes to be met	Type of assessment	Duration/Word Count	Weighting (%)	Alternative assessment, if applicable
1	1, 2, 3, 4	Coursework	N/A	100%	N/A

Derogations

None

Learning and Teaching Strategies

The primary skill base of this module will be delivered through a series of lectures, demonstrations and practical work that will equip the students with the technical skills and confidence to develop small computer programs. This content will also be fully represented online through VLE content and will be available to students as they progress with the module. Indicatively these could be sections of code/diagrams/PDF tutorials/pre-recorded videos depending on what is most appropriate.

Assessment will occur throughout the module to solidify key threshold concepts of programming fundamentals. Individual briefs will be given to clearly identify areas of focus through each stage, so students are fully aware of their progress throughout.

Welsh Elements

Students will have the right to submit assessed work in Welsh, to receive academic supervision and access learning resources and correspondence in Welsh. Students are encouraged to engage with Welsh cultural themes, creative elements and enterprising opportunities as part of student-led activities and assignments to facilitate wider contextual awareness and distinctive creative outputs.

Indicative Syllabus Outline

Indicative Syllabus includes the following topic areas:

- Data Types, Inputs & Outputs
- Conditionals & Loops
- Random Numbers
- Arrays & Sorting
- Saving & Loading
- Introduction to Data Structures
- Enumerated Data Types
- Methods & Functions
- Return Types, Parameters & Access.
- Objects & Instances
- Console Interfaces & Simple Graphics
- Introduction to Source Control

Indicative Bibliography

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads:

Horton, J. (2024), *Beginning C++ Game Programming: Learn C++ from scratch by building fun games*, Third Edition, Birmingham: Packt Publishing.

Other indicative reading:

Ferrone, H. (2025), *Learning C# by Developing Games with Unity 6: Get to grips with coding in C# and build simple 3D games in Unity from the ground up*, Eighth Edition, Birmingham: Packt Publishing.

McGrath, M. (2025), *C++ Programming in Easy Steps, Seventh Edition*, Warwickshire: In Easy Steps.

Administrative Information

For office use only	
Initial approval date	July 2026
With effect from date	September 2027
Date and details of revision	
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