

# WM9M5-15 Games Engine Design and Development

**23/24**

**Department**

WMG

**Level**

Taught Postgraduate Level

**Module leader**

Kurt Debattista

**Credit value**

15

**Module duration**

4 weeks

**Assessment**

100% coursework

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

In the majority of cases, video game development makes use of already available software, primarily commercial game engines such as Unreal or Unity, or in-house game engines developed by the company eg ID Tech, Snowdrop, Frostbite, CryEngine. Our students will develop the capabilities of implementing and/or understanding the theoretical and fundamental aspects of how to create such engines from the ground up. However, on occasions they will be asked to use existing engines due to the maturity such engines exhibit in their current form. This module will expose the students to the intricacies of these engines, enable students to develop game engines using them, and help them understand their capabilities and limitations. Based on the previous modules students will be able to develop their own sub systems to replace or extend the systems available in these engines. They will be able to integrate their own and others' developments into a coherent whole. Students will understand the bigger picture of the how game studios run, including the types of documentation produced when making a game, how to evaluate the success of game systems and the game as a whole, roles within a studio and how all these complicated software components are connected in the games development pipeline.

### Module aims

This module aims to provide students with detailed knowledge of the functionality and limitations of commercially available game engines. At the end of this module students will be able to identify which components of commercially-available game engines to use and/or extend when working on games. It will also give them the ability to be able to develop sub systems that would be integrated into a final system developed by other colleagues or made available separately.

## Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Overview of commercial game engines

- Unreal Engine
- Unity

Systems development in games engines

Game development processes (Technical Design Documents, Games Design Documents)

Critical evaluation of game systems

Professional tools for the game development pipeline

Game tool development

Practical considerations for game system development

Studio roles and management

## Learning outcomes

By the end of the module, students should be able to:

- Use and manipulate advanced level commercially-available game engines with significant in-depth knowledge
- understand the sophistication required and the in-depth ability to develop and integrate sub systems into commercial game engines
- Have the applied ability and specialist knowledge on how to develop games as part of a large group of developers

## Indicative reading list

Gregory, J. (2018). Game engine architecture. AK Peters/CRC Press.

[View reading list on Talis Aspire](#)

## Interdisciplinary

The skills developed here can find application in a number of different fields in which bringing

multiple systems into existing software frameworks is required.

## Subject specific skills

Mathematical skills and programming skills. Understanding of industry specific roles and current best practice for studios

## Transferable skills

Technology literacy, adaptability. Team management.

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## Study

### Study time

Type	Required
Lectures	10 sessions of 1 hour 30 minutes (10%)
Seminars	1 session of 1 hour 30 minutes (1%)
Tutorials	9 sessions of 1 hour 30 minutes (9%)
Online learning (independent)	7 sessions of 1 hour 30 minutes (7%)
Other activity	29 hours 30 minutes (19%)
Assessment	80 hours (53%)
Total	150 hours

## Private study description

No private study requirements defined for this module.

## Other activity description

29.5 hours of student self directed study in preparation for in class work. Guidance on self directed study will be provided in class.

## Costs

No further costs have been identified for this module.

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## Assessment

You must pass all assessment components to pass the module.

## Assessment group A

	Weighting	Study time	Eligible for self-certification
Assessment component			
Project	100%	80 hours	Yes (extension)
Development of a game as a group on one of the two libraries introduced Unity or Unreal. Students will individually work on the individual subsystems and be marked on those parts as well as the integration of them.			

Reassessment component is the same

## Feedback on assessment

Written feedback.

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## Availability

### Pre-requisites

To take this module, you must have passed:

- All of
  - [WM9M2-15 Computer Graphics](#)
  - [WM9M4-15 Games Engineering](#)

## Courses

This module is Core for:

- MSc in Games Engineering