



# COMP2160

## Game Development

Session 2, In person-scheduled-weekday, North Ryde 2024

*School of Computing*

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## General Information

### Unit convenor and teaching staff

Convenor/Lecturer

Cameron Edmond

[cameron.edmond@mq.edu.au](mailto:cameron.edmond@mq.edu.au)

By appointment only

Lecturer

Malcolm Ryan

[malcolm.ryan@mq.edu.au](mailto:malcolm.ryan@mq.edu.au)

By appointment only

Practical Demonstrator

Kayson Whitehouse

[kayson.whitehouse@mq.edu.au](mailto:kayson.whitehouse@mq.edu.au)

Marker

Sandra Trinh

[sandra.trinh@mq.edu.au](mailto:sandra.trinh@mq.edu.au)

Credit points

10

Prerequisites

(COMP1150 or COMP111 or MMCC1011 or MAS111) and (COMP1010 or COMP125)

Corequisites

Co-badged status

Unit description

This unit covers the production processes involved in the development of videogames. Students will learn how to apply software engineering principles to develop a game in a 3D game engine, focusing on specific programming problems that arise in the context of game development. Practical exercises emphasise agile team-based production process for project management.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

**ULO1:** Identify, articulate and adapt the key methodologies, theories and practices involved in game development.

**ULO2:** Demonstrate knowledge of project management within the context of game development.

**ULO3:** Apply software engineering principles to develop a game in a 3D game engine.

**ULO4:** Apply good programming practices in the context of game development.

**ULO5:** Identify and reflect upon the ethical issues that arise in the development of games.

## General Assessment Information

### Requirements To Pass This Unit

To pass this unit, you must:

- Achieve a total mark equal to or greater than 50

In order to achieve this criteria, it is recommended that students attempt all assessment tasks including Game Development Task 1, Game Development Task 2, the Ethics Essay, all Weekly Quizzes, and all Weekly practical exercises.

### Late Assessment Submission Penalty

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is 11:55 pm. A 1-hour grace period will be provided to students who experience a technical concern. For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for Special Consideration.

### Special Consideration

The Special Consideration Policy aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment. If you experience circumstances or events that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request through [ask.mq.edu.au](https://ask.mq.edu.au).

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Weekly Quizzes</a>	10%	No	Weekly
<a href="#">Game Development Task 1</a>	25%	No	Week 6: Sunday 1st September 11:55pm
<a href="#">User experience research activity</a>	5%	No	Week 15: Sunday 17th November 11:55pm
<a href="#">Ethics Essay</a>	20%	No	Mid-Session Break: Sunday 29th September 11:55pm
<a href="#">Weekly practical exercises</a>	10%	No	Weekly
<a href="#">Game Development Task 2</a>	30%	No	Week 13: Sunday 3rd November 11:55pm

### Weekly Quizzes

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 5 hours

Due: **Weekly**

Weighting: **10%**

Weekly quizzes based on lecture material.

On successful completion you will be able to:

- Identify, articulate and adapt the key methodologies, theories and practices involved in game development.
- Demonstrate knowledge of project management within the context of game development.
- Apply software engineering principles to develop a game in a 3D game engine.
- Apply good programming practices in the context of game development.
- Identify and reflect upon the ethical issues that arise in the development of games.

## Game Development Task 1

Assessment Type <sup>1</sup>: Programming Task

Indicative Time on Task <sup>2</sup>: 20 hours

Due: **Week 6: Sunday 1st September 11:55pm**

Weighting: **25%**

You will develop a videogame to meet a specified design, and report on the software architecture employed and the performance of the game in terms of time and memory usage.

On successful completion you will be able to:

- Identify, articulate and adapt the key methodologies, theories and practices involved in game development.
- Apply software engineering principles to develop a game in a 3D game engine.
- Apply good programming practices in the context of game development.

## User experience research activity

Assessment Type <sup>1</sup>: Reflective Writing

Indicative Time on Task <sup>2</sup>: 2 hours

Due: **Week 15: Sunday 17th November 11:55pm**

Weighting: **5%**

You will take part in a user testing experience for another game or research project, and write a short reflection on the experience.

On successful completion you will be able to:

- Identify, articulate and adapt the key methodologies, theories and practices involved in game development.

## Ethics Essay

Assessment Type <sup>1</sup>: Essay

Indicative Time on Task <sup>2</sup>: 20 hours

Due: **Mid-Session Break: Sunday 29th September 11:55pm**

Weighting: **20%**

A short essay exploring one of the key ethical issues that arise in game development practice.

On successful completion you will be able to:

- Identify and reflect upon the ethical issues that arise in the development of games.

## Weekly practical exercises

Assessment Type <sup>1</sup>: Practice-based task

Indicative Time on Task <sup>2</sup>: 0 hours

Due: **Weekly**

Weighting: **10%**

Weekly game programming exercises

On successful completion you will be able to:

- Identify, articulate and adapt the key methodologies, theories and practices involved in game development.
- Apply software engineering principles to develop a game in a 3D game engine.
- Apply good programming practices in the context of game development.

## Game Development Task 2

Assessment Type <sup>1</sup>: Programming Task

Indicative Time on Task <sup>2</sup>: 25 hours

Due: **Week 13: Sunday 3rd November 11:55pm**

Weighting: **30%**

You will work in groups to develop a videogame to meet a specified design. Emphasis will be placed on good project management following an agile methodology. You will report of the software architecture employed in the game, and the QA testing you performed.

On successful completion you will be able to:

- Identify, articulate and adapt the key methodologies, theories and practices involved in game development.
- Demonstrate knowledge of project management within the context of game development.
- Apply software engineering principles to develop a game in a 3D game engine.

- Apply good programming practices in the context of game development.
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<sup>1</sup> If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

<sup>2</sup> Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

## Delivery and Resources

### Software Used

This unit uses the Unity3D game engine, which is available on lab PCs. The software can also be downloaded and used at home from <https://unity.com/>. See iLearn for the Unity version currently installed in the labs.

It is students' responsibility to ensure their device can run Unity before attempting their assignments on their home computers.

Assignments and practical tasks are distributed through Github Classroom. Although Github Desktop is used as an example Git client, students are able to use whatever tool they wish, but must understand technical support cannot be provided for all tools.

Students are expected to attempt practical tasks before coming to class. If students are unable to work on practicals and assignments on their own devices and require additional access to University computers, they can request special lab access. See iLearn for details.

### Use of Generative AI

The use of Generative AI including LLMs and image generators is permitted in this unit where this use does not undermine the Learning Outcomes of the unit and specific assessment tasks. All use of Generative AI must be appropriately acknowledged, evidenced and referenced.

The particularities and affordances of Generative AI usage will vary between assessments. Please consult the assessment specifications of each task for details. Use of Generative AI that does not adhere to assessment-specific details may result in a breach of Academic Integrity.

For more information on the use of Generative AI in your studies, please see the FSE Gen AI module: [https://ishare.mq.edu.au/prod/file/c6b0caa4-23dd-4372-b07d-5a03379fc3e8/1/FSE\\_Gen\\_AI-module.zip/content/index.html#/](https://ishare.mq.edu.au/prod/file/c6b0caa4-23dd-4372-b07d-5a03379fc3e8/1/FSE_Gen_AI-module.zip/content/index.html#/)

### Unit Schedule

This schedule is subject to change. Please see iLearn for the most up-to-date version of the schedule.

Week	Lecture topics
1	<ul style="list-style-type: none"> <li>• Programming: Intro to C#</li> <li>• Programming: Event-based &amp; Behaviour-based programming</li> <li>• Programming: 2D &amp; 3D geometry: Vectors and Quaternions</li> </ul>
2	<ul style="list-style-type: none"> <li>• Programming: Transformations</li> <li>• Programming: Input</li> <li>• Production: Ethical Game Dev Overview</li> </ul>
3	<ul style="list-style-type: none"> <li>• Programming: Prefabs, Instantiation &amp; Destruction</li> <li>• Programming: Finite state machines</li> <li>• Production: Sustainability</li> </ul>
4	<ul style="list-style-type: none"> <li>• Programming &amp; Production: Code Architecture</li> <li>• Programming: Trigger-based collisions, rigidbodies and raycasting</li> <li>• Production: Diversity and Inclusion</li> </ul>
5	<ul style="list-style-type: none"> <li>• Programming: UI implementation</li> <li>• Programming: Scene Management Production: Accessibility</li> </ul>
6	<ul style="list-style-type: none"> <li>• Testing: Quality Assurance</li> <li>• Testing: Game Analytics</li> <li>• Production: Cybersecurity &amp; Data Privacy</li> </ul>
7	<ul style="list-style-type: none"> <li>• Testing: Profiling</li> <li>• Production: IP, Ownership &amp; Generative AI</li> </ul>
8	<ul style="list-style-type: none"> <li>• Production: Version control for teams</li> </ul>
9	<ul style="list-style-type: none"> <li>• Programming: Game Physics</li> <li>• Programming: Collision handling</li> </ul>
10	<ul style="list-style-type: none"> <li>• Programming: Physics pt. 2</li> </ul>
11	<ul style="list-style-type: none"> <li>• Programming: Cameras and visuals</li> <li>• Programming: Coroutines</li> </ul>
12	<ul style="list-style-type: none"> <li>• Programming: Cameras pt. 2</li> </ul>

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:



- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies](https://students.mq.edu.au/support/study/policies) (<https://students.mq.edu.au/support/study/policies>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central](https://policies.mq.edu.au) (<https://policies.mq.edu.au>) and use the [search tool](#).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)

- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

## Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

## Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Changes from Previous Offering

- General updates and refinements to practical and lecture content.

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Unit information based on version 2024.03 of the [Handbook](#)