



# COMP3180

## Virtual Reality and Advanced Game Development

Session 2, In person-scheduled-weekday, North Ryde 2022

*School of Computing*

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#### Disclaimer

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## General Information

Unit convenor and teaching staff

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Credit points

10

Prerequisites

COMP2150 and COMP2160

Corequisites

Co-badged status

Unit description

This unit covers advanced game development topics, with a focus on design and development for virtual reality (VR) platforms. Topics include: extended reality (XR - consisting of virtual, augmented and mixed reality) platforms, natural control interfaces, games user research, procedural generation, artificial intelligence, network programming and tools development.

## 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:** Demonstrate knowledge of advanced game design and development topics.

**ULO2:** Apply software engineering techniques to collaboratively develop complex game architectures for emerging platforms.

**ULO3:** Independently research and critically analyse game development techniques for emerging platforms.

**ULO4:** Practice user-centred design to evaluate and optimise game development approaches.

**ULO5:** Effectively communicate complex ideas across a range of media.

## General Assessment Information

### Late Assessment Submission Penalty

**From 1 July 2022, Students enrolled in Session based units with written assessments will have the following late penalty applied. Please see <https://students.mq.edu.au/study/assessment-exams/assessments> for more information.**

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark) will be applied each day a written assessment is not submitted, up until the 7<sup>th</sup> day (including weekends). After the 7<sup>th</sup> day, a grade of '0' will be awarded even if the assessment is submitted. Submission time for all written assessments is set at **11:55 pm**. A 1-hour grace period is 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, students need to submit an application for [Special Consideration](#).

### Assessments where Late Submissions will be accepted

In this unit, late submissions will be accepted as follows:

- Practical Participation - NO, unless Special Consideration is granted
- Research Report - YES, Standard Late Penalty applies
- Project Proposal Presentation - NO, unless Special Consideration is granted
- Final Project - YES, Standard Late Penalty applies

## Assessment Tasks

| Name  | Weighting | Hurdle | Due        |
|---|-----------|--------|------------|
| <a href="#">Practical Participation</a>       | 10%       | No     | Weeks 1-13 |
| <a href="#">Research Report</a>               | 25%       | No     | Week 5     |
| <a href="#">Project Proposal Presentation</a> | 15%       | No     | Weeks 6-7  |
| <a href="#">Final Project</a>                 | 50%       | No     | Week 13    |

### Practical Participation

Assessment Type <sup>1</sup>: Participatory task

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

Due: **Weeks 1-13**

Weighting: **10%**

Participation in the scheduled weekly practical activities.

On successful completion you will be able to:

- Demonstrate knowledge of advanced game design and development topics.
- Apply software engineering techniques to collaboratively develop complex game architectures for emerging platforms.
- Practice user-centred design to evaluate and optimise game development approaches.
- Effectively communicate complex ideas across a range of media.

## Research Report

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

Indicative Time on Task <sup>2</sup>: 30 hours

Due: **Week 5**

Weighting: **25%**

A literature review or technical report on an advanced game development topic, evaluating its applicability to XR platforms and identifying relevant recommendations for game design and development processes.

On successful completion you will be able to:

- Demonstrate knowledge of advanced game design and development topics.
- Independently research and critically analyse game development techniques for emerging platforms.
- Practice user-centred design to evaluate and optimise game development approaches.
- Effectively communicate complex ideas across a range of media.

## Project Proposal Presentation

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

Indicative Time on Task <sup>2</sup>: 10 hours

Due: **Weeks 6-7**

Weighting: **15%**

A presentation to the class detailing the findings of your research and a related collaborative game development proposal.

On successful completion you will be able to:

- Demonstrate knowledge of advanced game design and development topics.
- Independently research and critically analyse game development techniques for emerging platforms.
- Effectively communicate complex ideas across a range of media.

## Final Project

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

Indicative Time on Task <sup>2</sup>: 45 hours

Due: **Week 13**

Weighting: **50%**

A collaborative game development project demonstrating advanced techniques in one of the chosen topic areas for an extended reality (XR) platform. An included report will detail the aims of the project, results from relevant playtesting/evaluation and its contribution to advancing game design and development approaches.

On successful completion you will be able to:

- Demonstrate knowledge of advanced game design and development topics.
- Apply software engineering techniques to collaboratively develop complex game architectures for emerging platforms.
- Practice user-centred design to evaluate and optimise game development approaches.
- Effectively communicate complex ideas across a range of media.

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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

### Classes

This primary scheduled learning activities are practical classes, which focus on studio-based project research and development, guided by a tutor. Students will have the option to complete this work individually or in small groups. All practical classes are on campus.

Occasional full-class online Q&A/lecture learning activities will also be scheduled as required. Some lectures and additional learning activities may also be provided online via iLearn and Echo 360.

## Required and Recommended Texts

There is no prescribed text for this unit.

## Unit Website

Please login to iLearn at <http://ilearn.mq.edu.au/>

## Technologies Used and Required

The technologies used will depend on the needs of your chosen/assigned advanced game development topic area. You will have access to the games lab computers and the software on them, which will feature the Unity game development engine and other creative tools. See iLearn for the version of Unity used on the lab computers. Extra required software may be added to these computers if a good case can be made for it. You will also have access to necessary hardware in the games lab, such as VR equipment and controllers.

Although dependent on the needs and scope of your chosen/assigned advanced game development topic area, there will likely be a need for the use of personal computing devices and software to support development (for example, when the lab is not open/available). Sourcing and compatibility with the provided lab resources will be students' responsibility.

## Unit Schedule

| Week | Content  |
|------|--|
| W1   | -Unit Introduction and Advanced Game Development Topics      |
| W2   | -Advanced Game Development Topic R&D                         |
| W3   | -Advanced Game Development Topic R&D                         |
| W4   | -Advanced Game Development Topic R&D                         |
| W5   | -Advanced Game Development Topic R&D and Report Finalisation |
| W6   | -Project Proposal Presentations 1                            |
| W7   | -Project Proposal Presentations 2                            |
| W8   | -Advanced Game Development Implementation                    |
| W9   | -Advanced Game Development Implementation                    |

| Week | Content   |
|------|---|
| W10  | -Advanced Game Development Implementation       |
| W11  | -Advanced Game Development Implementation       |
| W12  | -Advanced Game Development Implementation       |
| W13  | -Advanced Game Development Project Finalisation |

## 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](https://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 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

This is the first offering of the unit.