COMP3180

Virtual Reality and Advanced Game Development

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

School of Computing

Contents

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General Information

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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

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 on the due date. 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.

Late Submission acceptance criteria:

- Practical Participation - NOT ACCEPTED, unless Special Consideration is Granted
- Project Proposal Presentation - NOT ACCEPTED, unless Special Consideration is Granted
- Research Report - ACCEPTED, Standard Late Penalty applies
- Final Project - ACCEPTED, Standard Late Penalty applies

Assessment Tasks

Name	Weighting	Hurdle	Due
Project Proposal Presentation	15%	No	2024-08-18
Research Report	25%	No	2024-09-08
Final Project	50%	No	2024-11-03

Name	Weighting	Hurdle	Due
Practical Activities	10%	No	Weekly

Project Proposal Presentation

Assessment Type [1]: Presentation
Indicative Time on Task [2]: 10 hours
Due: **2024-08-18**
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:
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Research Report

Assessment Type [1]: Report
Indicative Time on Task [2]: 30 hours
Due: **2024-09-08**
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.

Final Project

Assessment Type [1]: Project
Indicative Time on Task [2]: 45 hours
Due: **2024-11-03**
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.

Practical Activities

Assessment Type [1]: Practice-based task
Indicative Time on Task [2]: 0 hours
Due: **Weekly**
Weighting: **10%**

Students will demonstrate their learning by engaging in 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.

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[1] 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.

[2] 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 teaching staff. Students will have the option to complete this work individually or in small groups. All practical classes are on campus.

Occassional 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.

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 and chosen project topics. Please consult the assessment specifications of each task for details, and discuss Generative AI use with the teaching staff during class.

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#/

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	-Project Proposal Presentations
W6	-Project Proposal Presentations
W7	-Advanced Game Development Topic R&D and Research Report Finalisation
W8	-Final Project Development/Implementation
Session Break W1	-Final Project Development/Implementation
Session Break W2	-Final Project Development/Implementation
W9	-Final Project Development/Implementation
W10	-Final Project Development/Implementation
W11	-Final Project Development/Implementation/Evaluation
W12	-Final Project Development/Implementation/Evaluation
W13	-Final Project Finalisation

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (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). 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) 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 or if you are a Global MBA student contact 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.

All use of Generative AI must be appropriately acknowledged, evidenced and referenced. Failure to do so will be considered a breach of academic integrity, and may result in serious penalties according to the Academic Integrity Breach Procedure.

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/.

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

- Addition of an explicit policy for the use of Generative AI tools
- Proposal Presentation due date moved to week 4 to ensure consistency for all students

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Unit information based on version 2024.02 of the Handbook