COMP2160

Game Development

Session 2, Special circumstances 2021

School of Computing

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Session 2 Learning and Teaching Update

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of units with mandatory on-campus classes/teaching activities.

Visit the MQ COVID-19 information page for more detail.

General Information

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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

Late Submission

No extensions will be granted except in cases of special consideration. Students who have not submitted any work for the task prior to the deadline will be awarded a mark of 0 for the task, except for special consideration cases. Plan to submit early.

The weekly practical exercises can be marked in subsequent weeks, but with a limit of two exercises marked per week.

Assessment Tasks

Name	Weighting	Hurdle	Due
Game Development Task 1	30%	No	Week 7
Ethics Essay	20%	No	Week 9
Game Development Task 2	30%	No	Week 13
Weekly practical exercises	10%	No	Weekly
Weekly Quizzes	10%	No	Weekly

Game Development Task 1

Assessment Type [1]: Programming Task
Indicative Time on Task [2]: 30 hours
Due: **Week 7**
Weighting: **30%**

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.

Ethics Essay

Assessment Type [1]: Essay
Indicative Time on Task [2]: 20 hours
Due: **Week 9**
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.

Game Development Task 2

Assessment Type [1]: Programming Task
Indicative Time on Task [2]: 30 hours
Due: **Week 13**
Weighting: **30%**

You will work in pairs 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.

Weekly practical exercises

Assessment Type [1]: Participatory task
Indicative Time on Task [2]: 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.

Weekly Quizzes

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 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.

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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

COMP2160 is taught mainly through online notes and video presentations with a one-hour live demonstration lecture/Q&A. Each week a number of video presentations will be made available on iLearn, you should watch these and follow up on the topics covered before the lecture. The live lecture session will recap some of the video content and provide a forum for discussion of the topics of the week. The weekly quizzes will test your comprehension of the lecture content.

You will also have a two hour workshop each week in the games lab. This will be used as a combined tutorial and practical class, with tasks each week to engage you in the topics we are discussing. The workshops give you a chance to talk over any problems with your tutor. There will be a checkpoint task each week for you to complete in the workshop, you must do this in the workshop and show your tutor the result.

Since your tutor will be keeping track of your marks, you should attend the workshop that you enrol in. If you do need to change classes, make sure your tutor and the tutor in the new class agree.

REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

Prescribed Textbooks

There is no prescribed textbook for this unit. However, we recommend:

- **Game Programming Patterns**, by R. Nystrom, Genever Benning, ISBN-13: 978-0990582908
- **The Game Production Toolbox**, by H. M. Chandler, CRC Press, ISBN-13: 978-1-138-34170-8

UNIT WEBPAGE AND TECHNOLOGY USED AND REQUIRED

Online Resources

The official location for unit information is: http://ilearn.mq.edu.au

Once enrolled in the unit you will gain access to COMP2160 website. We will be using the University's Online Learning at MQ website (iLearn). Students should check this site for regular updates.

Technology Used and Required

Unity 3D. The free version of this can be downloaded at https://store.unity.com/#plans-individual

Unit Schedule

Please refer to iLearn for the precise weekly schedule, but topics covered include:

- C# Programming
- Event-based Programming
- Behaviour-based Programming & Modularity
- 2D & 3D geometry: Vectors and Quaternions
- The Transform Hierarchy / Scene Graph
- Handling Input
- Prefabs, Instantiation & Destruction
- Singletons and Factories
- Object Pooling & Garbage Collection
- Profiling
- Finite State Machines
- Code Architecture
- Trigger Colliders & Kinematic Rigidbodies
- Raycasting
- UI Implementation
- Scene Management
- Quality Assurance
- Game Analytics / Game User Research
- Code Review
- Games Industry Structures and Roles
- Games Industry Ethics
- Team Collaboration and Games Production
- Version Control for Teams
- Artists as Game Developers
- Technical Artists
- User and Control Interfaces
- Physics and Collision
- Procedural Content Generation
- Camera Control
- Path Planning

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policie

s.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
- Grade Appeal Policy
- Complaint Management 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

Student Support

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

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- 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

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

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

No major changes from previous offerings.