



# COMP260

## Game Design

S1 Day 2015

*Dept of Computing*

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## General Information

Unit convenor and teaching staff

Unit Convenor

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Credit points

3

Prerequisites

(COMP115 and (COMP111 or INFO111 or MAS111)) or COMP125

Corequisites

Co-badged status

Unit description

This unit considers both the theory of game design and the actual construction of video games. Important principles in game design, such as game play, challenge, balance and the nature of players, will be examined. Students will be introduced to different aspects of game design and will develop their game design skills through the creation of their own game. Game design will also be explored by taking a critical approach to assessing the design decisions made in a game and by the communication of game design decisions through students presenting their designs in class.

## 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:

Be able to demonstrate understanding of the core functionalities of a game engine

Be able to apply the principles of game design to produce intermediate-level game designs

Be able to use a commercial game engine to implement static environments and intermediate-level gameplay prototypes.

Be able to use the principles of game design to analyse the design of existing games.

Be able to produce appropriate documents accompanying and explaining the design of a game in a commercial game engine

Be able to plan and carry out playtesting and use the results of playtesting to refine designs and implementations

## Assessment Tasks

Name	Weighting	Due
<a href="#">Assignment 1</a>	10%	Week 4
<a href="#">Assignment 2</a>	20%	Week 7
<a href="#">Assignment 3</a>	20%	Week 10
<a href="#">Assignment 4</a>	30%	Week 14
<a href="#">Tutorial Presentations</a>	10%	Weeks 2 to 13
<a href="#">Practicals</a>	10%	Weeks 2 to 13

### Assignment 1

Due: **Week 4**

Weighting: **10%**

A short guided game analysis task based on a specified game. It will consist of a number of short answer questions.

On successful completion you will be able to:

- Be able to use the principles of game design to analyse the design of existing games.

## Assignment 2

Due: **Week 7**

Weighting: **20%**

Design, create and document a static game level using a commercial game engine (Unity 3D). Students are expected to demonstrate an understanding of the principles of challenge, reward, progress and spatial and temporal arrangement amongst other design considerations.

As well as producing the level students will also be required to submit accompanying design documentation.

Submission will be via ilearn.

On successful completion you will be able to:

- Be able to demonstrate understanding of the core functionalities of a game engine
- Be able to apply the principles of game design to produce intermediate-level game designs
- Be able to use a commercial game engine to implement static environments and intermediate-level gameplay prototypes.
- Be able to produce appropriate documents accompanying and explaining the design of a game in a commercial game engine

## Assignment 3

Due: **Week 10**

Weighting: **20%**

Design and implement a multiplayer card/board game with a resource economy and inter-player dynamics. Students are expected to demonstrate an understanding of the principles of balancing a resource economy and creating strategic play.

Students will be required to submit full design documentation.

Students will be required to playtest their game and document the process and results of the test.

Students will work in groups of 3 or 4.

Submission will be via iLearn

On successful completion you will be able to:

- Be able to apply the principles of game design to produce intermediate-level game designs
- Be able to produce appropriate documents accompanying and explaining the design of a

game in a commercial game engine

- Be able to plan and carry out playtesting and use the results of playtesting to refine designs and implementations

## Assignment 4

Due: **Week 14**

Weighting: **30%**

Design and implement a prototype of an original videogame using the Unity game engine. Students are expected to demonstrate an understanding of the principles of challenge, pacing and game-feel.

Students will be required to submit full design documentation.

Students will be required to playtest their game and document the process and results of the test.

Students will be required to submit a reflective postmortem, critiquing their design and their development process.

Students will work in pairs.

Submission will be via iLearn

On successful completion you will be able to:

- Be able to demonstrate understanding of the core functionalities of a game engine
- Be able to apply the principles of game design to produce intermediate-level game designs
- Be able to use a commercial game engine to implement static environments and intermediate-level gameplay prototypes.
- Be able to produce appropriate documents accompanying and explaining the design of a game in a commercial game engine
- Be able to plan and carry out playtesting and use the results of playtesting to refine designs and implementations

## Tutorial Presentations

Due: **Weeks 2 to 13**

Weighting: **10%**

Students will analyse a game based on the design principles taught in lectures and present their analysis to their tutorial class in a 10 min presentation. Students are expected to be able to analysis a game according to the experience it conveys, and how that experience is rooted in the mechanics and dynamics of the game. Students will be assigned specific weeks in which to present (2 or 3 each week). The presentation will focus on the topic of previous week's lecture.

Students will work in pairs.

Submission will be in class.

On successful completion you will be able to:

- Be able to use the principles of game design to analyse the design of existing games.

## Practicals

Due: **Weeks 2 to 13**

Weighting: **10%**

Weekly practical exercises using a commercial game engine as used in assignments 1 & 3. For this year the engine will be Unity 3D.

These exercises will enable students to learn the functionality of the engine in preparation for the assignments.

Submission will be in class.

On successful completion you will be able to:

- Be able to demonstrate understanding of the core functionalities of a game engine
- Be able to use a commercial game engine to implement static environments and intermediate-level gameplay prototypes.

## Delivery and Resources

### CLASSES

Each week COMP260 has two hours of lectures, a two-hour tutorial and a two-hour practical. Please see the Timetable at <http://www.timetable.mq.edu.au>. for details

### REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

#### Prescribed Textbooks

The textbooks for this unit are as follows:

- Schell, J., The Art of Game Design: A Book of Lenses, 2nd edition, Morgan Kaufmann
- Goldstone, W., Unity 3.x Game Development Essentials, 2011, 2nd edition, Packt Publishing

#### Additional References

- Adams, E., 2010: Fundamentals of Game Design, 2nd. ed., New Riders, ISBN-10: 0321643372 | ISBN-13: 978-0321643377
- Totten, C.W. 2014, An Architectural Approach to Level Design, A K Peters/CRC Press

ISBN-10: 1466585412 | ISBN-13: 978-1466585416

- Adams, E., Dormans, J., 2012 Game Mechanics: Advanced Game Design, New Riders; ISBN-10: 0321820274 | ISBN-13: 978-0321820273
- Novak, J., Castillo, T. 2008 Game Development Essentials: Game Level Design, Cengage Learning, ISBN-10: 1401878644 | ISBN-13: 978-1401878641

These recommended texts are not compulsory for the subject, however, they do provide reliable and relevant resources to support the course material. These texts may be useful for later subjects that you will study as part of your degree. You are also encouraged to check for other sources, including alternative books and on-line material.

### Other Readings

Other reading(s) for this subject will be provided via on-line material on the Web. You should be familiar with accessing through links to on-line sources of information. It is important to realise that there will be additional costs to you which may not be present in traditional presentation of education materials. Such costs include connection, time charges and access to specific information on the Web. Your Internet provider can supply you with more details.

## UNIT WEBPAGE AND TECHNOLOGY USED AND REQUIRED

### Online Resources

The official location (URL) of unit information once you have loaded your WWW browser is: <http://ilearn.mq.edu.au>

Once you have enrolled in the unit, you must gain access to comp260 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 <http://unity3d.com/unity/download/>

Various commercial games will be referred to as examples in class.

## Unit Schedule

WEEK	LECTURE TOPIC	READINGS	ASSESSMENTS
1.	Unit Introduction Experience-driven design. The 8 Kinds of Fun, The relationship between Mechanics, Dynamics and Aesthetics		
2.	Iterative design. Prototyping and playtesting. Design documents.		
3.	Challenge, Discovery and Mastery. The Flow experience.		

4.	Drama - pacing, difficulty curves, uncertainty, rewards etc		Tutorial and Practical Quiz
5.	Level design - laying out challenges in space. Teaching the player. Maps and white-boxing.		
6.	Level design - architectural design.  Positive and negative space, sight lines, light and dark, spatial size, paths, landmarks.		
7.	Games as systems.  Toys, resource economies. Interesting choices.		Assignment 1 Due
8.	Multiplayer dynamics - competition / cooperation / trading / bluffing		
9.	Sources of inspiration. Designing for a target audience.  Playtesting		
10.	Sensation - art / sound / UI / game feel		Assignment 2 Due
11.	Fantasy - World building / storytelling / characters		
12.	Self expression - avatar customisation / construction / modding / role-playing		
13.	Guest Lecture*		
14.			Assignment 3 Due

\*Note we hope to have an industry guest lecture. It's currently scheduled for week 13. However it will depend on availability of an industry guest. It may be that we have to move the guest lecture forward and everything else back to fit their schedule.

## Policies and Procedures

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

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy [http://mq.edu.au/policy/docs/grievance\\_management/policy.html](http://mq.edu.au/policy/docs/grievance_management/policy.html)



Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## Results

Results shown in *iLearn*, 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).

You should also be sure to be familiar with the departments special consideration policy

[http://comp.mq.edu.au/undergrad/policies/special\\_consideration\\_policy.htm](http://comp.mq.edu.au/undergrad/policies/special_consideration_policy.htm)

## 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](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## 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](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use Policy](#). The policy

applies to all who connect to the MQ network including students.

## Graduate Capabilities

### Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

#### Learning outcomes

- Be able to apply the principles of game design to produce intermediate-level game designs
- Be able to use a commercial game engine to implement static environments and intermediate-level gameplay prototypes.

#### Assessment tasks

- Assignment 2
- Assignment 3
- Assignment 4

### Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

#### Learning outcomes

- Be able to demonstrate understanding of the core functionalities of a game engine
- Be able to apply the principles of game design to produce intermediate-level game designs
- Be able to use a commercial game engine to implement static environments and intermediate-level gameplay prototypes.
- Be able to use the principles of game design to analyse the design of existing games.
- Be able to produce appropriate documents accompanying and explaining the design of a game in a commercial game engine

- Be able to plan and carry out playtesting and use the results of playtesting to refine designs and implementations

## Assessment tasks

- Assignment 1
- Assignment 2
- Assignment 3
- Assignment 4
- Tutorial Presentations
- Practicals

## Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

## Learning outcomes

- Be able to use a commercial game engine to implement static environments and intermediate-level gameplay prototypes.
- Be able to use the principles of game design to analyse the design of existing games.
- Be able to plan and carry out playtesting and use the results of playtesting to refine designs and implementations

## Assessment tasks

- Assignment 1
- Tutorial Presentations

## Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

## Learning outcomes

- Be able to apply the principles of game design to produce intermediate-level game

designs

- Be able to plan and carry out playtesting and use the results of playtesting to refine designs and implementations

## Assessment tasks

- Assignment 3
- Assignment 4

## Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

## Learning outcome

- Be able to produce appropriate documents accompanying and explaining the design of a game in a commercial game engine

## Assessment tasks

- Assignment 2
- Assignment 3
- Assignment 4
- Tutorial Presentations

## Changes from Previous Offering

The course content has been extensively revised from previous offerings to provide a stronger emphasis on gameplay design.

## Extensions and Late Submission

If assessable work is not submitted by the due date then 10% will be subtracted from the mark awarded for that work for each working day that the submission is late, up to a maximum of five working days. Submissions after that date will be awarded a mark of 0.

Extensions of time may be awarded to avoid the above penalty. Students will need to submit a request for special consideration. They should also contact the unit convenor as soon as possible.

## Unit-level Standards

## Pass

Some ability to implement simple gameplay mechanics in a commercial game engine.

Able to create a basic level of documentation of game play mechanics and designs.

Produce designs that demonstrate:

- proficiency with basic game design concepts from previous study
- in part, good pacing and flow from appropriate spatial and temporal distribution of game elements
- in part, an ability to integrate characters and story into a game design, where appropriate
- in part, good use of lighting, sound, texture, etc

Produce limited implementations, in a commercial game engine, of their designs.

Demonstrate a limited ability to plan and carry out playtesting of designs and apply the results of the playtesting to improve designs.

Demonstrate noticeable evidence of being able to discuss and critique game designs and design elements in terms of the design concepts studied in the unit and from previous study.

## Credit

Able to implement simple gameplay mechanics in a commercial game engine.

Able to create thorough documentation of game play mechanics and designs.

Produce designs that demonstrate:

- proficiency with basic game design concepts from previous study
- substantial good pacing and flow from appropriate spatial and temporal distribution of game elements
- substantial ability to integrate characters and story into a game design, where appropriate
- substantial good use of lighting, sound, texture, etc
- at least some creativity and innovation

Produce implementations, in a commercial game engine, of their designs.

Demonstrate an ability to effectively plan and carry out playtesting of designs and apply the results of the playtesting to improve designs.

Demonstrate substantial evidence of being able to discuss and critique game designs and design elements in terms of the design concepts studied in the unit and from previous study.

## Distinction

Able to implement a range of gameplay mechanics in a commercial game engine.

Able to create thorough documentation of game play mechanics and designs.

Produce designs that demonstrate:

- proficiency with basic game design concepts from previous study
- sustained good pacing and flow from appropriate spatial and temporal distribution of game elements
- sustained ability to integrate characters and story into a game design, where appropriate
- sustained good use of lighting, sound, texture, etc
- significant creativity and innovation

Produce implementations in a commercial game engine of their designs.

Demonstrate a sustained ability to effectively plan and carry out playtesting of designs and apply the results of the playtesting to improve designs.

Demonstrate sustained evidence of being able to discuss and critique game designs and design elements in terms of the design concepts studied in the unit and from previous study, with noticeable originality and insight in evaluation and analysis.

## High Distinction

Able to implement a range of gameplay mechanics in a commercial game engine.

Able to create thorough documentation of game play mechanics and designs.

Produce designs that demonstrate

- proficiency with basic game design concepts from previous study
- sustained good pacing and flow from appropriate spatial and temporal distribution of game elements
- sustained ability to integrate characters and story into a game design, where appropriate
- sustained good use of lighting, sound, texture, etc
- sustained, high-level, creativity and innovation

Produce implementations, in a commercial game engine, of their designs.

Demonstrate a sustained ability to effectively plan and carry out playtesting of designs and apply the results of the playtesting to improve designs.

Demonstrate sustained evidence of being able to discuss and critique game designs and design elements in terms of the design concepts studied in the unit and from previous study, with substantial originality and insight in evaluation and analysis.

## What Has Changed

Since the last offering of this unit we have

- reordered and revised the lecture content
- reduced the amount of lectures and extended the tutorials