



COMP260

Game Design

S1 Evening 2014

Computing

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General Information

Unit convenor and teaching staff

Unit Convenor

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E6A 338

Credit points

3

Prerequisites

COMP115 and (COMP111 or INFO111 or MAS111)

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 game functionality/designs

Be able to use the principles of game design to analyse and critique 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
<u>Game Design Quiz</u>	5%	Week 4
<u>Game Engine Quiz</u>	5%	Week 4
<u>Assignment 1</u>	20%	Week 7
<u>Assignment 2</u>	20%	Week 10
<u>Assignment 3</u>	30%	Week 13
<u>Tutorials</u>	10%	Weeks 2 to 13
<u>Practicals</u>	10%	Weeks 2 to 13

Game Design Quiz

Due: **Week 4**

Weighting: **5%**

A short quiz in the tutorials testing student's progress in game design and critique. It will consist of a number of short answer questions.

Done and submitted in class.

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 use the principles of game design to analyse and critique the design of existing games

Game Engine Quiz

Due: **Week 4**

Weighting: **5%**

A short in class quiz on the student's knowledge of the game engine used. In 2013 the engine

will be Unity 3d. The quiz will consist of a number of short questions and small practical exercises.

Done and submitted 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 game functionality/designs

Assignment 1

Due: **Week 7**

Weighting: **20%**

Design, create and document a static game level using a commercial game engine. For this year Unity 3D will be used. Students are expected to demonstrate an understanding of the principles of challenge, reward, progress and spatial and temporal arrangements 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 game functionality/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 2

Due: **Week 10**

Weighting: **20%**

Critique the design of a commercial game in terms of the design principles covered in the unit. Particular attention will be paid to interface and story design, but will cover other aspects such as challenge, reward, progression, character development, level design, etc.

Length will be 2500-3000 words

Submission will be via ilearn

On successful completion you will be able to:

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

Assignment 3

Due: **Week 13**

Weighting: **30%**

Design, implement and document a complete simple game or portion of a level of a more complex design in a commercial game engine. For this year the Unity engine will be used.

Particular attention should be paid to complete, error-free, implementation.

As well as the game itself the students will 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 game functionality/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

Tutorials

Due: **Weeks 2 to 13**

Weighting: **10%**

Game critique exercises and paper game design exercises.

These are weekly exercises in the tutorial classes. Some will be paper design exercises to cover the basics of game design. Paper game design is widely employed in the industry as a first stage to test the concept before proceeding to more expensive implementation.

Game critique exercises will focus on particular area, including interface, story, character, reward, challenge, progression, spatial and temporal arrangement. Examination of commercial

games will illuminate how design principles are applied in the industry.

Submission will be either in class or 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 use the principles of game design to analyse and critique 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 game functionality/designs

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:

- Novak, J., Game Development essentials, 2012, 3rd edition, Delmar Cengage Learning
- 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**

- Menard, M., Game Development with Unity, 2012, Cengage Learning
- Bowman, D., Kruijf, E., LaViola, J.J., and Poupyrev, I., 2005: 3D User Interfaces, Addison Wesley, Boston, ISBN 0201758679
- Alan Watt, Fabio Policarpo, 2001: 3D Computer Games Technology, Volume I: Real-time Rendering Software, Addison Wesley, Sydney.
- Andrew Rollings, Dave Morris, 2000: Game Architecture and Design, Coriolis, USA.
- Richard Rouse, 2001: Game Design Theory and Practice, Wordware Publishing, Texas.
- Isaac Victor Kerlow, 2000: The Art of 3-D Computer Animation and Imaging, John Wiley & Sons, New York.
- Clark Dodsworth Jr., 1998: Digital Illusion, 2nd Edition, Addison Wesley, Sydney.
- Marc Saltzman (Ed.), 2000: Game Design, Macmillan Publishing, Indianapolis, USA.
- Chris Crawford, 1982: The Art of Computer Game Design, <http://www.amazon.com/dp/B0052QA5W>

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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 Introduction to Unity Design and documentation principles	Goldstone Chapter 1	
2.	The use of paper design Design exercise	Goldstone chapter 3	
3.	Level design basics Sources of Inspiration Structure, pace and flow	Novak chapter 7	
4.	Design implementation - from paper to computer Textures		Tutorial and Practical Quiz
5.	Design and Design exercise		
6.	Level details - structures, terrain, etc The use of lighting and sound in level design	Novak chapter 9	
7.	Character and story - what works, premise, conflict, goals Story vs. plot Conveying the story, consequences, emotions	Novak Chapter 5	Assignment 1 Due
8.	Character types, depiction and character arcs		
9.	Game interface design: player empowerment and feedback	Novak chapter 8	
10.	Gameplay mechanics camera systems, control systems, inventory systems, combat systems	Novak chapter 6	Assignment 2 Due
11.	Gameplay presentation Emergent gameplay Progression, difficulty, repetition		
12.	Game quality assurance and testing Design of mobile games		
13	Guest Lecture		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

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

Disruption to Studies Policy 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/

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

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 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

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

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 game functionality/designs
- Be able to use the principles of game design to analyse and critique 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

- Game Design Quiz
- Game Engine Quiz
- Assignment 1
- Assignment 2
- Assignment 3
- Tutorials
- 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 game functionality/designs
- Be able to use the principles of game design to analyse and critique 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

- Game Design Quiz
- Assignment 2
- Tutorials

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 task

- Assignment 2

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

Assessment tasks

- Assignment 1
- Assignment 3
- Tutorials

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 outcomes

- Be able to use the principles of game design to analyse and critique the design of existing games
- Be able to produce appropriate documents accompanying and explaining the design of a game in a commercial game engine

Assessment tasks

- Assignment 1
- Assignment 2
- Assignment 3
- Tutorials

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