

Graphics Visualisation Techniques (PG) - 7108

Unit Outline 2009

Faculty of Information Sciences & Engineering

University of Canberra

*Australian Government Higher Education (CRICOS)
Registered Provider number: #00212K*

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This Unit Outline must be read in conjunction with:

- a) *Studying at the University of Canberra: A Guide to Policies and Procedures*, which sets out University-wide policies and procedures, including information on matters such as plagiarism, grade descriptors, moderation, feedback and deferred exams, and is available at <http://www.canberra.edu.au/student-services>
- b) *Guide to Student Services at the University of Canberra*, and is available at <http://www.canberra.edu.au/student-services>
- c) Any additional information specified in section 6f.

1: General Information

1a Unit title: Graphics Visualisation Techniques (PG)

1b Unit number: 7108

1c Semester and year offered – S2 2009

1d Credit point value 3

1e Unit level P

1f Name of Unit Convener and contact details

Robert Cox: 6201 5230 Robert.Cox@canberra.edu.au

Unit Moderator:

Dr Ian Lisle: 6201-2389 Ian.Lisle@canberra.edu.au

1g Administrative contact details (including name, location, telephone and email)

School of ISE Office, 11B14, ph 6201 2153 or 6201 2417, ise@canberra.edu.au

2: Academic Content

2a Unit description and learning outcomes

This unit introduces students to the principles and application of real time 3D computer graphics, covering a selection of the following topics: OpenGL Programming, display processor architectures (3D accelerators), 3D data structures, Rendering algorithms, industry standards, graphics libraries, geometry of solid models, viewing transformations, simple animation and colour theory. Assignment work emphasises the implementation of many of the techniques.

On successful completion of this unit students will possess: analysis and programming skills for real time 3D graphics, the ability to identify and use appropriate software for implementing a 3D graphics application, and will be able to describe and discuss the required 3D hardware, perceptual and human factors involved in graphical application development and animation techniques in 3D.

2b Prerequisites and/or co-requisites

Computers and Programming G and Computing Mathematics G.

3: Delivery of Unit and Timetable

3a Delivery mode

Traditional mode; that is, on-campus in standard semesters with weekly lectures and tutorials.

3b Schedule of topics/lectures/tutorials/practicals/field classes by week

Week	Activity
1	Introduction to subject, Introduction to 3D
2	C++/C
3	Basics of 3D
4	Lighting and materials
5	Textures, and alpha blending
6	Meshes and height fields
7	Scenes and cameras
8	Lecture free period
9	Lecture free period
10	Movement and collisions
11	Content TBA – Depends on class progress
12	Shaders
13	Shaders
14	Shaders
15	Exam Revision

NOTE: the exact content of lectures in any week may change dependent on class progress. Students should regularly check the web site for changes to the above schedule.

4: Unit Resources

4a Lists of required texts/readings

There are no 'Mandatory Textbooks' for this subject; the required material is available on the subject web site or on one of the sites pointed to by the links section of the subject web site.

4b Materials and equipment

We strongly advise students to have a suitable flash drive with around 400Mb of space allocated for this subject.

4c Unit website

<http://learnonline.canberra.edu.au/>

5: Assessment

5a Assessment overview

Students will receive two separate marks for this subject, an assignment mark and an exam mark. Their final grade is determined by the lower of the two marks.

Assessment Item (including exams held in the exam period)	Due Date of Assignments	Weighting (total to equal 100%)
Marked Tutorial 1	Week 5	5% of assignment mark
Marked Tutorial 2	Week 6	10% of assignment mark
Marked Tutorial 3	Week 14	15% of assignment mark
Major Work (Assignment)	Week 14	70% of assignment mark
Exam	In the exam period	100% of Exam mark

To be sure of passing the unit the student must achieve a score of 50% or more in the exam and a score of 50% or more of the total assignments mark.

The following table shows the marks a student must obtain for the corresponding grade.

Grade	Assignments %	Exam %
Fail (NX)	Less than 50	Any
Fail (NX)	Any	Less than 50
Pass (P)	50+	50+
Credit (CR)	65+	65+
Distinction (DI)	75+	75+
High Distinction (HD) There are additional criteria for an HD: See note 1 below.	85+	85+

NOTE1: In order to achieve a grade of HD, a student's major work must also be: "Work of outstanding quality". This grade may also be given to recognise particular originality or creativity.

NOTE2: The lecturer/moderator reserves the right to increase a student's grade for academic merit. This is done rarely but can be done for: consistency, elegance or creativity (both technical and artistic).

5b Details of each assessment item

The marked tutorials are short assignments allowing students to build knowledge incrementally. A marked tutorial has no written component and is to be demonstrated to your tutor (the demonstration takes about 5 minutes). They will usually take between 1 and 4 hours of work to complete. The marked tutorials are optional but they are a major part of the learning experience. (Note: if a student does not demonstrate a marked tutorial they will receive a 0 for that assessment item)

The major work assignment is designed to allow students to demonstrate what they have learned and is a game or 3D scene with all the key learning areas demonstrated. It includes a written submission and code submission.

The exam mark is determined from a 3 hour exam, at least 50% of which will be based on the 3D coding techniques used in the assignment.

5c Special assessment requirements

Students must demonstrate the marked tutorials and the major work in person; email submission is not acceptable. Students can attend any tutorial for this purpose.

5d Supplementary assessment

To be eligible to undertake supplementary assessment in a unit, a student must:

- be enrolled in their final semester of study;
- have failed a single unit, with a final mark between 45-49% in the unit;
- have passed all other units undertaken in that semester.

This unit must be the final unit required to complete the academic requirements of their course.

5e Text-matching software

Will not be used in this subject.

6: Student Responsibility

6a Workload

The amount of time you will need to spend on study in this Unit will depend on a number of factors including your prior knowledge, learning skill level and learning style. Nevertheless, in planning your time commitments you should note that for a 3cp Unit the total notional workload over the fifteen week semester is assumed to be 150

hours or an average of 10 hours per week. These hours include time spent in classes. The total workload for Units of different credit point value should vary proportionally. For example, for a 6cp Unit the total notional workload over a fifteen week semester is assumed to be 300 hours or an average of 20 hours per week.

6b Special needs

Students who need assistance in undertaking the unit because of disability or other circumstances should inform their Unit Convener or the Disabilities Office as soon as possible so the necessary arrangements can be made.

6c Attendance requirements

Students need to attend tutorials in order to demonstrate the marked tutorials and major work assignments.

6d Required IT skills

Students are assumed to be:

- Generally computer literate;
- Comfortable compiling and executing a program in a 3rd generation object oriented language such as java, c++ or c#.

6e Costs

No additional costs will be incurred by students undertaking this unit apart from:

- The cost of a flash drive as outlined in part 4b of this outline; and

6f Additional information

Announcements made at lectures or posted to the unit website are deemed to be made to the whole group.

7: Student Feedback

All students enrolled in this Unit will have an opportunity to provide anonymous feedback on the Unit at the end of the Semester via the Unit Satisfaction Survey which will be presented to you on OSIS. Your lecturer or tutor may also invite you to provide more detailed feedback through an anonymous questionnaire administered through the University's Teaching and Learning Centre (TLC).

8: Authority of this Unit Outline
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Any change to the information contained in Section 2 (Academic content), Section 3 (Delivery of Unit and timetable) and Section 5 (Assessment) of this document, will only be made by the Unit Convener if the written agreement of staff and a majority of students has been obtained; and if written advice of the change is then forwarded to each student enrolled in the Unit at their registered term address. Any individual student who believes him/herself to be disadvantaged by a change is encouraged to discuss the matter with the Unit Convener.