MONASH University

FIT2015
Foundations of 3D

Unit guide

Semester 1, 2009

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FIT2015 Foundations of 3D - Semester 1, 2009

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- Tom Chandler

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Berwick

- Tom Chandler
- Michael Morgan
- Michael Lim

Introduction

Welcome to FIT2015 IT Foundations of 3D - Semester 1 , 2009

Unit synopsis

This unit is an introduction to the techniques, frameworks and conceptual processes comprising 3D design and production. 3D design is an area requiring significant expertise in the Multimedia Industry and there is currently an increasing demand for 3D artists and animators in advertising, film, television, information visualization, education and the burgeoning games industry. Students will progress through the essential development processes required to produce 3D projects resulting in a professional end product and develop skills in conceptual development, storyboards, modeling, texturing, lighting and simple animation techniques for 3D projects.

Learning outcomes

At the completion of this unit you will have a theoretical and conceptual understanding of:

- the hardware environment in which 3D design programs operate;
- the specific issues and requirements related to the field of 3D development;
- the different uses of 3D design over a variety of media;
- the commercial imperatives of the 3D working environment;
- the 3D spatial environment and the taxonomy of 3D.

You will have developed attitudes that enable you to:

- demonstrate an acceptance of the time requirements for the 3D development process and the different 3D techniques;
- demonstrate an appreciation of 3D as a unique medium in the context of multimedia;

- demonstrate an appreciation of the relationship of 3D aesthetics to traditional art composition;
- demonstrate flexibility and a willingness to integrate new techniques into their skill set.

The skills to:

- design and create 3D objects, models, scenes and simple animations for specific output media;
- evaluate and assess techniques used in the creation of 3D products;
- manage workloads for efficient production of 3D products;
- map the physical 2D to the virtual 3D environment.

and the teamwork skills needed to:

- improve their skills in communicating with other members of a development team;
- recognise the social and cultural mores of 3D.

Workload

For on campus students, workload commitments are:

- two-hour lecture and
- two-hour tutorial (or laboratory) (requiring advance preparation)
- a minimum of 2-3 hours of personal study per one hour of contact time in order to satisfy the reading and assignment expectations.
- You will need to allocate up to 5 hours per week in some weeks, for use of a computer, including time for newsgroups/discussion groups.

To be eligible for a passing grade **you must attend at least 80% of your lectures and tutorials**. If you are absent for more than two lectures and/or two tutorials you must supply a medical certificate or other documentation - otherwise you will be excluded from the marking. If you encounter problems with this requirement during semester then ensure that you speak with your unit advisor as early on as possible.

The structure for this unit is based upon students working through a series of tutorial exercises to build up their knowledge and skills of Digital 3D creation. There are three assignments which make up the final grade for the unit. Again, you should be up to date with each week's reading and exercises and be spending extra time advancing your skills.

Unit relationships

Prerequisites

Before attempting this unit you must have satisfactorily completed 12 points of first year FIT study , or equivalent.

Relationships

FIT2015 is a core unit in the Multimedia Application Major of the Bachelor of Information Technology. The unit is also offered to Bachelor of Multimedia Systems students as a second year elective. It is a prerequisite for FIT3001 Animation and Effects

Continuous improvement

Monash is committed to 'Excellence in education' (Monash Directions 2025 - http://www.monash.edu.au/about/monash-directions/directions.html) and strives for the highest possible quality in teaching and learning.

To monitor how successful we are in providing quality teaching and learning Monash regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through Unit Evaluation Surveys. The University's Unit Evaluation policy (http://www.policy.monash.edu/policy-bank/academic/education/quality/unit-evaluation-policy.html) requires that every unit offered is evaluated each year. Students are strongly encouraged to complete the surveys as they are an important avenue for students to "have their say". The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

Faculties have the option of administering the Unit Evaluation survey online through the my.monash portal or in class. Lecturers will inform students of the method being used for this unit towards the end of the semester.

Student Evaluations

If you wish to view how previous students rated this unit, please go to http://www.monash.edu.au/unit-evaluation-reports/

Unit staff - contact details

Unit leader

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Teaching and learning method

The structure for this unit is based upon students working through a series of tutorial exercises to build up their knowledge and skills in dgital 3D creation. Three assignments make up the final grade for the unit and students should be up to date with each week's reading and exercises as well as allocating extra time to advancing their software skills.

Tutorial allocation

On-campus students should register for laboratories using Allocate+.

Communication, participation and feedback

Monash aims to provide a learning environment in which students receive a range of ongoing feedback throughout their studies. You will receive feedback on your work and progress in this unit. This may take the form of group feedback, individual feedback, peer feedback, self-comparison, verbal and written feedback, discussions (on line and in class) as well as more formal feedback related to assignment marks and grades. You are encouraged to draw on a variety of feedback to enhance your learning.

It is essential that you take action immediately if you realise that you have a problem that is affecting your study. Semesters are short, so we can help you best if you let us know as soon as problems arise. Regardless of whether the problem is related directly to your progress in the unit, if it is likely to interfere with your progress you should discuss it with your lecturer or a Community Service counsellor as soon as possible.

Unit Schedule

Week	Topic	Key dates
1	Introduction and 3D Theory	
2	Polygon modelling	
3	Deformations	
4	Basic Lighting theory	
5	Composition in 3D	Assignment 1 due
6	Basic texturing	
Mid semester break		
7	Advanced Texturing	
8	Advanced Lighting	
9	UV Unwrapping	Assignment 2 due
10	Character Design/Character Modelling	
11	Modelling Characters for Games and Animation	

12	Basic NURBS	
13	Review	Assignment 3 due

Unit Resources

Prescribed text(s) and readings

There is no prescribed text for this unit, though several are recommended below. Students should note however that a wide range of 3D/Maya books are available at the Berwick Library and the collections are regularly updated.

Recommended text(s) and readings

Marc-Andre Guindon , Learning Autodesk Maya 2008. Foundation, Autodesk, 2007, ISBN: 9781897177426

Digital-Tutors/PL Studios, Urban environment creation in Maya, 2 CD-ROMs, 006.696 M467 DIG 2006

Marc-Andre Guindon, Learning Autodesk Maya 2008 : the modeling & animation handbook, ISBN: 1897177380

Required software and/or hardware

Maya 2008, Autodesk

Software will be available for student use in assigned laboratory rooms.

Software may be:

- purchased at academic price at good software retailers

Equipment and consumables required or provided

Students may use the facilities available in the computing labs. Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook. You will need to allocate up to **8** hours per week for use of a computer, including time for newsgroups/discussion groups.

Study resources

Study resources we will provide for your study are:

The FIT2015 web site on MOODLE, where lecture slides, weekly tutorials, assignment specifications and supplementary material will be available.

Library access

The Monash University Library site contains details about borrowing rights and catalogue searching. To learn more about the library and the various resources available, please go to http://www.lib.monash.edu.au.

The Educational Library and Media Resources (LMR) is also a very resourceful place to visit at http://www.education.monash.edu.au/library/

Monash University Studies Online (MUSO)

All unit and lecture materials are available through MUSO (Monash University Studies Online). Blackboard is the primary application used to deliver your unit resources. Some units will be piloted in Moodle. If your unit is piloted in Moodle, you will see a link from your Blackboard unit to Moodle (http://moodle.monash.edu.au) and can bookmark this link to access directly. In Moodle, from the Faculty of Information Technology category, click on the link for your unit.

You can access MUSO and Blackboard via the portal: http://my.monash.edu.au

Click on the Study and enrolment tab, then Blackboard under the MUSO learning systems.

In order for your Blackboard unit(s) to function correctly, your computer needs to be correctly configured.

For example:

- Blackboard supported browser
- Supported Java runtime environment

For more information, please visit: http://www.monash.edu.au/muso/support/students/downloadables-student.html

You can contact the MUSO Support by phone : (+61 3) 9903 1268

For further contact information including operational hours, please visit:
http://www.monash.edu.au/muso/support/students/contact.html

Further information can be obtained from the MUSO support site:
http://www.monash.edu.au/muso/support/index.html

Assessment

Unit assessment policy

- obtain a total result for the assignments of at least 50%

- attend a minimum of 80% of lectures and tutorials

Assignment tasks

- ### Assignment Task

  Title : Assignment 1

  Description :

  Modelling an Everyday Object

  Students are to choose a ‘real object' which they will recreate in digital 3D space. The modelling technique(s) used are based upon those learnt during the tutorials, though students are welcome to combine additional techniques that they may have researched in their own time. Students will need to negotiate their ideas/models with their tutors prior to submission.

The final model should **not** to be textured in any detail but it can have basic surface properties and colours. The final scene must be lit effectively and include unique cameras (i.e. not the perspective or orthogonal cameras) that are used to generate three separate renders (1 full page render and 2 renders at half page size).

This assignment should be accompanied by working files and a brief 2-3 page summary of annotated screenshots and reference images which documents the modelling process.

Weighting : 30%

Criteria for assessment :

Modelling effectiveness and efficient geometry

Basic lighting and colouring of subject/objects

Presentation, composition and overall visual impact of the printed scene

Accompanying documentation, working files and reference images

Due date : End of Week 5 (Friday 3pm)

- **Assignment Task**

Title : Assignment 2

Description :

To digitally model, texture, light and render an interior or exterior architectural environment.

This scene should be referenced/derived from photographs/renders/paintings of an existing environment or from a range of image references sourced from detailed research.

Your scene choice must be negotiated with your tutor prior to submission.

This assignment should be accompanied by annotated screenshots and reference images documenting the modelling process (2-3 pages) and working files. The format for the final submission is three separate renders, one large and two small, as in assignment 1.

Weighting : 30%

Criteria for assessment :

Modeling technique and quality of geometry

Lighting and texturing techniques

The presentation and visual impact of your printed scene

Documentation; working files, reference images and annotated screenshots of progress which document the modelling process (2-3 pages).

Due date : End of Week 9 (Friday 3pm)

- **Assignment Task**

  Title : Assignment 3

  Description :

  Modelling of a 3D Character.

  Students should create a character model from drawings or reference images which they have sourced independently and/or which expand upon from material provided during tutorials. Your character should include basic colouring and texturing, though UV texturing is optional. As no environment is required here the character should be rendered on white, grey or black background with basic lighting. The format for the final submission is three separate renders, one large and two small, as in previous assignments.

  Your choice of character should be negotiated with your tutor prior to submission and, as in previous assignments, your submission should be accompanied by 2-3 pages of documentation detailing your modelling and texturing process. Additionally, your documentation should include a 250 word brief that describes/explains how your character would operate in the fictional gameworld which it has been designed for, in other words, a summary of the 'character' of your character.

  Weighting : 40%

  Criteria for assessment :

  Modelling technique and quality of geometry

  Texturing techniques and character colouring (UV texturing is optional)

  The presentation and visual impact of your character in a printed submission

  The 250 word brief that explains your character, together with accompanying documentation; working files, annotations, renders of progress and reference images (as in previous assignments)

  Due date : End of Week 13 (Friday 3pm)

Assignment submission

Assignments will be submitted by CD-ROM submission to the assignment dropboxes, **or the letterbox of your tutor, in building 903, level 1**, with the appropriate cover sheet correctly filled out and attached. Do not email submissions. The due date is the date by which the submission must be received.

University and Faculty policy on assessment

Due dates and extensions

The due dates for the submission of assignments are given in the previous section. Please make every effort to submit work by the due dates. It is your responsibility to structure your study program around assignment deadlines, family, work and other commitments. Factors such as normal work pressures, vacations, etc. are seldom regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Requests for extensions must be made to the unit lecturer at your campus at least two days before the due date. You will be asked to forward original medical certificates in cases of illness, and may be asked to provide other forms of documentation where necessary. A copy of the email or other written communication of an extension must be

attached to the assignment submission.

Late assignment

Assignments received after the due date will be subject to a penalty of **10% per day late.**

Return dates

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

Assessment for the unit as a whole is in accordance with the provisions of the Monash University Education Policy at http://www.policy.monash.edu/policy-bank/academic/education/assessment/

We will aim to have assignment results made available to you within two weeks after assignment receipt.

Plagiarism, cheating and collusion

Plagiarism and cheating are regarded as very serious offences. In cases where cheating has been confirmed, students have been severely penalised, from losing all marks for an assignment, to facing disciplinary action at the Faculty level. While we would wish that all our students adhere to sound ethical conduct and honesty, I will ask you to acquaint yourself with Student Rights and Responsibilities (http://www.infotech.monash.edu.au/about/committees-groups/facboard/policies/studrights.html) and the Faculty regulations that apply to students detected cheating as these will be applied in all detected cases.

In this University, cheating means seeking to obtain an unfair advantage in any examination or any other written or practical work to be submitted or completed by a student for assessment. It includes the use, or attempted use, of any means to gain an unfair advantage for any assessable work in the unit, where the means is contrary to the instructions for such work.

When you submit an individual assessment item, such as a program, a report, an essay, assignment or other piece of work, under your name you are understood to be stating that this is your own work. If a submission is identical with, or similar to, someone else's work, an assumption of cheating may arise. If you are planning on working with another student, it is acceptable to undertake research together, and discuss problems, but it is not acceptable to jointly develop or share solutions unless this is specified by your lecturer.

Intentionally providing students with your solutions to assignments is classified as "assisting to cheat" and students who do this may be subject to disciplinary action. You should take reasonable care that your solution is not accidentally or deliberately obtained by other students. For example, do not leave copies of your work in progress on the hard drives of shared computers, and do not show your work to other students. If you believe this may have happened, please be sure to contact your lecturer as soon as possible.

Cheating also includes taking into an examination any material contrary to the regulations, including any bilingual dictionary, whether or not with the intention of using it to obtain an advantage.

Plagiarism involves the false representation of another person's ideas, or findings, as your own by either copying material or paraphrasing without citing sources. It is both professional and ethical to reference clearly the ideas and information that you have used from another writer. If the source is not identified, then you have plagiarised work of the other author. Plagiarism is a form of dishonesty that is insulting to the reader and grossly unfair to your student colleagues.

Register of counselling about plagiarism

The university requires faculties to keep a simple and confidential register to record counselling to students about plagiarism (e.g. warnings). The register is accessible to Associate Deans Teaching (or nominees) and, where requested, students concerned have access to their own details in the register. The register is to serve as a record of counselling about the nature of plagiarism, not as a record of allegations; and no provision of appeals in relation to the register is necessary or applicable.

Non-discriminatory language

The Faculty of Information Technology is committed to the use of non-discriminatory language in all forms of communication. Discriminatory language is that which refers in abusive terms to gender, race, age, sexual orientation, citizenship or nationality, ethnic or language background, physical or mental ability, or political or religious views, or which stereotypes groups in an adverse manner. This is not meant to preclude or inhibit legitimate academic debate on any issue; however, the language used in such debate should be non-discriminatory and sensitive to these matters. It is important to avoid the use of discriminatory language in your communications and written work. The most common form of discriminatory language in academic work tends to be in the area of gender inclusiveness. You are, therefore, requested to check for this and to ensure your work and communications are non-discriminatory in all respects.

Students with disabilities

Students with disabilities that may disadvantage them in assessment should seek advice from one of the following before completing assessment tasks and examinations:

- Faculty of Information Technology Student Service staff, and / or
- your Unit Coordinator, or
- Disabilities Liaison Unit

Deferred assessment and special consideration

Deferred assessment (not to be confused with an extension for submission of an assignment) may be granted in cases of extenuating personal circumstances such as serious personal illness or bereavement. Information and forms for Special Consideration and deferred assessment applications are available at http://www.monash.edu.au/exams/special-consideration.html. Contact the Faculty's Student Services staff at your campus for further information and advice.