



MONASH University
Information Technology

**FIT2015
Foundations of 3D**

Unit Guide

Semester 1, 2010

The information contained in this unit guide is correct at time of publication. The University has the right to change any of the elements contained in this document at any time.

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FIT2015 Foundations of 3D - Semester 1, 2010

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Introduction

,Welcome to FIT2015 IT Foundations of 3D, Semester 1 , 2010

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 visualisation, 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, modelling, texturing, lighting and simple animation techniques for 3D projects.

Learning outcomes

At the completion of this unit students 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.

Developed attitudes that enable them 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.

Developed 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.

Developed the teamwork skills necessary to:

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

Contact hours

1 hr lecture/wk, 2 hrs laboratories/wk

Workload

For on campus students, workload commitments are:

- one hour lecture time (followed by question time) and
- three 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

Completion of 12 points at level 1 from FIT

Prohibitions

MMS2405

Teaching and learning method

Teaching approach

The structure for this unit is based upon students working through a series of tutorial exercises to build up their knowledge and skills in digital 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.

Timetable information

For information on timetabling for on-campus classes please refer to MUTTS, <http://mutts.monash.edu.au/MUTTS/>

Tutorial allocation

On-campus students should register for tutorials/laboratories using the Allocate+ system: <http://allocate.its.monash.edu.au/>

Unit Schedule

Week	Date*	Topic	Study guide	References/Readings	Key dates
1	01/03/10	Introduction and 3D Theory	No tutorial	Reading List and Links -Week 1	No Tutorial
2	08/03/10	Introduction to Polygon Modelling	Tutorial Material Week 2	Reading List and Links -Week 2	
3	15/03/10	Polygon Deformations	Tutorial Material Week 3	Reading List and Links -Week 3	
4	22/03/10	Basic 3D Lighting Theory	Tutorial Material Week 4	Reading List and Links -Week 4	
5	29/03/10	Composition in 3D	Tutorial Material Week 5	Reading List and Links -Week 5	Assignment 1 due
Mid semester break					
6	12/04/10	Basic Texturing	Tutorial Material Week 6	Reading List and Links -Week 6	
7	19/04/10	Intermediate Texturing	Tutorial Material Week 7	Reading List and Links -Week 7	
8	26/04/10	Intermediate Lighting	Tutorial Material Week 8	Reading List and Links -Week 8	
9	03/05/10	Basic UV Texturing	Tutorial Material Week 9	Reading List and Links -Week 9	Assignment 2 due
10	10/05/10	Character Design/Character Modelling	Tutorial Material Week 10	Reading List and Links -Week 10	
11	17/05/10	Modelling Polygonal Characters	Tutorial Material Week 11	Reading List and Links -Week 11	
12	24/05/10				

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		Basic Character UV Texturing and Character Model Detailing	Tutorial Material Week 12	Reading List and Links -Week 12	
13	31/05/10	Review	Tutorial Material Week 13	Reading List and Links -Week 13	Assignment 3 due

*Please note that these dates may only apply to Australian campuses of Monash University. Off-shore students need to check the dates with their unit leader.

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

The following titles are available on reserve or through a short term loan through the Berwick library. Please note that though these are recommended general references there is also a considerable collection of books and DVD's available for specific 3D studies (characters, architecture, texturing animation and effects) in the library

Learning Autodesk Maya 2010: Foundation, AutoDesk Maya Press, 2009

The art of 3-D : Computer Animation and Imaging / Isaac Victor Kerlow (various editions)

The Art of 3D Computer Animation and Effect / Isaac Victor Kerlow (various editions)

Required software and/or hardware

Maya 2010, 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, reference lists, weekly tutorials, assignment specifications and supplementary material will be available.

Assessment

Overview

Practical Assignments: 100%

Faculty assessment policy

To pass a unit which includes an examination as part of the assessment a student must obtain:

- 40% or more in the unit's examination, and
- 40% or more in the unit's total non-examination assessment, and
- an overall unit mark of 50% or more.

If a student does not achieve 40% or more in the unit examination or the unit non-examination total assessment, and the total mark for the unit is greater than 50% then a mark of no greater than 49-N will be recorded for the unit.

- obtain a total result for the assignments of at least 50%
- attend a minimum of 80% of lectures and tutorials

Assignment tasks

Assignment coversheets

Assignment coversheets are available via "Student Forms" on the Faculty website:
<http://www.infotech.monash.edu.au/resources/student/forms/>

You MUST submit a completed coversheet with all assignments, ensuring that the plagiarism declaration section is signed.

Assignment submission and return procedures, and assessment criteria will be specified with each assignment.

- **Assignment task 1**

Title:

Assignment 1

Description:

Modelling an Everyday Object

Brief: 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 implement additional techniques that they have researched in their own time.

Ideally your object should be portable (ie small) so you can easily turn it around to study its geometry. If you were to choose a car, for example, you would be referencing your geometry from a plastic or metal model car (like one of the 'matchbox' series), not a full size vehicle. Students will need to negotiate their ideas/models with their tutors prior to submission.

Task: The final model should **not** be textured but should 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). These printed images should be accompanied by a CD/DVD containing your working files and a 2-3 page word document summary with annotated screenshots and reference images of your modelling process.

Weighting:

30%

Due date:

End of Week 5 (Friday 3pm)

• Assignment task 2

Title:

Assignment 2

Description:

Creating a 3D Interior or Exterior Architectural Environment

Brief: This assignment allows students to test their skills in creating an interior or exterior architectural environment which is modelled, coloured (textured) and lit with 3D lighting scheme before being rendered to print. An interior scene entails not only modelling and detailing an enclosed space but also considering the light from lamps/windows/candlelight and shadows within it. Choosing an exterior scene means considering not only sunlight or moonlight but also the environmental surroundings of your architectural visualisation.

Task: This scene should be referenced/derived from various photographs/renders/paintings/digital images that you collect of an existing environment from either the real (ie photography/paintings) or imaginary world (ie games/movies/animations etc). Importantly, remember your creation need not be merely a copy of a single image but could be an original creation resulting from the mixing of several sources. Your scene choice must be negotiated with your tutor at least a week prior to submission.

The format for the final submission is three separate printed renders, one large and two small, as in assignment 1. These printed images should be accompanied by a CD/DVD containing your working files and a 2-3 page word document detailing your modelling process with annotated screenshots and reference images

Weighting:

30%

Due date:

End of Week 9 (Friday 3pm)

• Assignment task 3

Title:

Assignment 3

Description:

3D Character Modelling for a Game Environment: Making a Monster

Brief: In this assignment you will be creating a monster. The monster you make could be any kind of character, from a scary science fiction fiend to a friendly beast from a children's game. As in assignment 2, you are encouraged to research your creation with a wide range of references; your monster must be an original one. You are NOT TO SIMPLY COPY a creature from an existing game, comic or movie.

Task: Students will create a character model from drawings or reference images which they have sourced independently. Your character/monster should include basic colouring and texturing; UV texturing is optional. Importantly, as this character is hypothetically targeted for a computer game environment, it has a limit of 10.000 polygons and needs to be modelled as a single mesh. This assignment is primarily about the creation and detailing of a character so no environment or background is required. 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. As in previous assignments; your printed submission should be accompanied by 2-3 pages of documentation detailing your modelling and texturing process. Finally, your documentation should include a 250 word brief that describes/explains how your monster would operate in the fictional gameworld for which it has been designed.

Weighting:

40%

Due date:

End of Week 13 (Friday 3pm)

Due dates and extensions

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 not regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Students requesting an extension for any assessment during semester (eg. Assignments, tests or presentations) are required to submit a Special Consideration application form (in-semester exam/assessment task), along with original copies of supporting documentation, directly to their lecturer within two working days before the assessment submission deadline. Lecturers will provide specific outcomes directly to students via email within 2 working days. The lecturer reserves the right to refuse late applications.

A copy of the email or other written communication of an extension must be attached to the assignment submission.

Refer to the Faculty Special consideration webpage or further details and to access application forms: <http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html>

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.

Appendix

Please visit the following URL: <http://www.infotech.monash.edu.au/units/appendix.html> for further information about:

- Continuous improvement
- Unit evaluations
- Communication, participation and feedback
- Library access
- Monash University Studies Online (MUSO)
- Plagiarism, cheating and collusion
- Register of counselling about plagiarism
- Non-discriminatory language
- Students with disability
- End of semester special consideration / deferred exams