MONASH University
Information Technology

**FIT3001
Advanced 3D**

Unit Guide

Semester 1, 2013

Last updated: 04 Mar 2013

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FIT3001 Advanced 3D - Semester 1, 2013

This unit builds upon the skills, techniques and theory introduced in FIT1033 Foundations of 3D towards an emphasis on 3D character design and modelling for animation. Students will be introduced to advanced techniques for character detailing (modelling and texturing) and character animation (rigging, binding and animation). The theoretical and practical considerations contributing to the conceptualisation, creation and preparation of 3D characters for animation sequences will constitute a key focus of this unit.

Mode of Delivery

Caulfield (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload requirements

For on-campus students, workload commitments are:

- two-hour lecture and
- two-hour tutorial (requiring advance preparation)
- a minimum of 2-3 hours of personal study per one hour of contact time in order to satisfy the research and assignment expectations.

Unit Relationships

Prohibitions

MMS3409

Prerequisites

FIT1033 or FIT2015

Chief Examiner

Mr Derrick Martin

Campus Lecturer

Caulfield

Derrick Martin

Consultation hours: Monday 10am - 12pm, Tuesday 10am - 12pm

Tutors

Caulfield

David Lewis

Academic Overview

Learning Outcomes

At the completion of this unit students will have:

- an understanding of the paradigms behind the development and application of computer generated 3D characters;
- an understanding of the principles of 3D animation theory and implementation, including character specific studies;
- a theoretical understanding of established and emerging procedures for 3D character modelling, detailing and preparation for animation;
- developed attitudes that enable them to appreciate the theories and practices adopted for complex 3D topology, modelling and animation techniques, including production pipelines;
- developed the ability to evaluate and implement suitable processes for 3D character creation and animation;
- developed the skills to design, model and texture original and geometrically efficient 3D characters;
- developed the skills to prepare (rig and bind) 3D characters for animation;
- developed the skills to animate and render 3D characters and objects.

Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Advanced Character Creation Review	
2	Character Creation, Modelling Review and Techniques	
3	Character Creation, Texturing Review and Techniques	
4	Advanced Character Texturing and Modelling Techniques	Tutorial Test 1: Character Modelling (10%)
5	Introduction to Character Rigging and Binding	Assignment 1 due Week 5 (20%)
6	Character Rigging: Constraints and Controllers	
7	Character Manipulation, Articulated vs Flexible Binding	
8	Advanced Character Rigging, Binding and Constraint Techniques	Tutorial Test 2: Character Rigging and Controllers (10%)
9	Introduction to 3D Character Animation Process and Theory	Assignment 2 due Week 9 (20%)
10	Creating 3D Character Walk Cycle and Gestures	
11	Animation Blocking, Timing and Secondary Motion	
12	Animation Finalisation and Rendering	Tutorial Test 3: Character Animation (10%)
	SWOT VAC	No formal assessment is undertaken in SWOT VAC. Assignment 3 due Week 14 (30%)
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

*Unit Schedule details will be maintained and communicated to you via your learning system.

Assessment Summary

In-semester assessment: 100%

Assessment Task	Value	Due Date
Tutorial Test 1: Basic Character Modelling, Component Assemblage and Texturing	10%	Week 4 Tutorial
Assignment 1: Modelling and Texturing your Character	20%	Week 5
Tutorial Test 2: Character Rigging and Controllers	10%	Week 8 Tutorial
Assignment 2: Rigging, Binding and Preparing your Character for Animation	20%	Week 9
Tutorial Test 3: Character Animation	10%	

		Week 12 Tutorial
Assignment 3: Animating your Character and Rendering a 20 second Animation	30%	Week 14

Teaching Approach

Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles
(http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hu

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at
http://lib.monash.edu/tutorials/citing/

Assessment Tasks

Participation

- **Assessment task 1**

   Title:
   Tutorial Test 1: Basic Character Modelling, Component Assemblage and Texturing
   Description:
   This test reviews the basics of assembling a character out of constituent parts.
   Weighting:
   10%
   Criteria for assessment:

   - ♦ Modelling technique
   - ♦ Assembly of geometry
   - ♦ Basic texturing

   Due date:
   Week 4 Tutorial

- **Assessment task 2**

   Title:
   Assignment 1: Modelling and Texturing your Character
   Description:
   In Foundations of 3D, the final assignment involved the creation and basic texturing of an original game character. In the first assignment of Advanced 3D, we will be revisiting 3D character creation, though this time the emphasis is on the creation of a sophisticated, textured character model which will later be rigged (in Assignment 2) and animated (in Assignment 3).

   Character modelling, rigging and animation in this unit will focus upon articulated characters, that is, characters that are made up of movable parts rather than soft, flexible or fluid assemblages. Examples of articulated characters include, but are not limited to, robots, armoured figures, insects and crustaceans.
   Weighting:
   20%
   Criteria for assessment:

   - ♦ Modelling technique and geometry
   - ♦ UV texturing technique and detailing
   - ♦ Finished renders of your model

♦ Visual and written documentation

Due date:
> Week 5

• Assessment task 3

Title:
> Tutorial Test 2: Character Rigging and Controllers

Description:
> Your tutor will provide you with a sample articulated character. Your task is to rig this character (add an internal skeleton) and create animation controllers so that your character can be manipulated for animation.

Weighting:
> 10%

Criteria for assessment:

♦ Rigging procedures and execution
♦ Controller creation

Due date:
> Week 8 Tutorial

• Assessment task 4

Title:
> Assignment 2: Rigging, Binding and Preparing your Character for Animation

Description:
> Using the character you have created in Assignment 1, this assignment requires you to implement a functional rig (internal skeleton) together with binding and controllers so that you can manipulate and animate your character.

Weighting:
> 20%

Criteria for assessment:

♦ Rigging
♦ IK Chains
♦ Controllers
♦ Visual and written documentation

Due date:
> Week 9

• Assessment task 5

Title:
> Tutorial Test 3: Character Animation

Description:
> In this test, your tutor will provide you with a sample rigged character with controllers. You are required to manipulate this character and create keyframes to produce an animated timeline of 5-10 seconds.

Weighting:
> 10%

Criteria for assessment:

♦ Character manipulation and keyframing
♦ Animation timing, weighting, gestures and actions

Due date:
Week 12 Tutorial

- **Assessment task 6**

Title:
Assignment 3: Animating your Character and Rendering a 20 second Animation
Description:
This final assignment requires the animation of your character in a 20 second sequence. What will your character do in this 20 seconds? This is entirely up to you, but the animation you plan and assemble should attempt to express the personality of your character and demonstrate the graphic and technical detailing you have invested in it through the course of the previous assignments.
Weighting:
30%
Criteria for assessment:

- ♦ Animation technique
- ♦ Animation narrative
- ♦ Three key renders from your animation
- ♦ Visual and written documentation

Due date:
Week 14

Learning resources

Reading list

Textbooks for Autodesk Maya will be available in the library and the Caulfield campus bookstore:

Todd Palamar, Eric Keller "Mastering Autodesk Maya 2012", Wiley Publishing Inc ISBN: 978-0-470-91977-4

See also:

Dariush Derakhshani *"Introducing Autodesk Maya 2012"* Wiley Publishing Inc ISBN:978-0-470-90021-5

Although Autodesk Maya updates its software annually, the principles of character creation, texturing, rigging and animation remain the same in earlier versions stretching back some years. As such, textbooks on Maya published for earlier versions of Maya, especially in the last 4-5 years, will still be valid for the subjects which we are studying in this unit, and a number of earlier publications are listed here.

Maraffi, Chris, "Maya Character Creation", Pearson, 2004, ISBN: 0-7357-1344-8

Wilkins, Mark, "Mel Scripting for Maya Animators", Elsevier, 2005, ISBN: 0-12-088793-2

Petitot, Luc, "Maya Ultimate Workshop", Editions Eyrolles, 2003, ISBN: 0-07-142169-6

Ratner, Peter, "Mastering 3D Animation", 2nd Edition, Allworth Press, 2004, ISBN: 1-58115-345-7

Ratner, Peter, "3D Human Modeling and Animation", Wiley, 2003, ISBN: 0-471-21548-1

Monash Library Unit Reading List
http://readinglists.lib.monash.edu/index.html

Feedback to you

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Interviews
- Test results and feedback

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process:
http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html.

Returning assignments

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

Assignment submission

It is a University requirement (http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at http://www.infotech.monash.edu.au/resources/student/forms/. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an online quiz).

Online submission

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

Required Resources

Please check with your lecturer before purchasing any Required Resources. Limited copies of prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

Autodesk® Maya® 2013 software will be provided on campus lab computers, and students are encouraged to register with the Autodesk Education Community for their own educational trial version of Autodesk® Maya® 2013 and related Autodesk software under the company's terms and conditions.

 Please see: **http://students.autodesk.com/**

Recommended text(s)

Todd Palamar, Eric Keller . (2012). *Mastering Autodesk Maya 2012*. () Wiley (ISBN: 978-0-470-91977-4).

Additional subject costs

Wooden articulated artist models, costing anywhere between $7 and $25 (depending on their size), are available at the Caulfield campus bookstore are at most art supply shops. These may be benefiical for students as animation and rigging references.

Other Information

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash's Education Policies at:
www.policy.monash.edu.au/policy-bank/academic/education/index.html

Key educational policies include:

- Plagiarism;
  http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html
- Assessment in Coursework Programs;
  http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-po
- Special Consideration;
  http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.ht
- Grading Scale;
  http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html
- Discipline: Student Policy;
  http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html
- Academic Calendar and Semesters; http://www.monash.edu.au/students/dates/
- Orientation and Transition; http://intranet.monash.edu.au/infotech/resources/students/orientation/
- Academic and Administrative Complaints and Grievances Policy;
  http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.h
- Code of Practice for Teaching and Learning;
  http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-teac

Graduate Attributes Policy

http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.ht

Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at http://www.monash.edu.au/students. For Sunway see http://www.monash.edu.my/Student-services, and for South Africa see http://www.monash.ac.za/current/.

Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to www.lib.monash.edu.au or the library tab in my.monash portal for more information. At Sunway, visit the Library and Learning Commons at http://www.lib.monash.edu.my/. At South Africa visit http://www.lib.monash.ac.za/.

Disability Liaison Unit

Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis.

Website: http://www.monash.edu/equity-diversity/disability/index.htmlTelephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Commuity Services at 03 55146018 at SunwayEmail: dlu@monash.eduDrop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus

Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through the Student Evaluation of Teaching and Units (SETU) survey. The University's student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash's educational strategy, see:

www.monash.edu.au/about/monash-directions and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

Based on previous student feedback this unit is well structured. The only change being made this semester is the inclusion of tutorial tests (three tests of 10% each) preceding each of the three major assignments.

If you wish to view how previous students rated this unit, please go to
https://emuapps.monash.edu.au/unitevaluations/index.jsp

Other

Tutorials will begin in Week 1 and end in Week 12.

Arrangements will be made for the lecture and tutorials that fall on Anzac Day on Wednesday 25th April.