

2119GFS

CGI 1 Modelling

Semester 2 2009

Academic Organisation:	Griffith Film School
Faculty:	Queensland College of Art
Credit point value:	10
Student Contribution Band:	Band 1
Course level:	Undergraduate
Campus/Location/Learning Mode:	South Bank / On Campus / In Person
Convenor/s:	Ms Louise Harvey (South Bank)
Enrolment Restrictions:	Restricted: Approval from Head of School
This document was last updated:	18 June 2009

BRIEF COURSE DESCRIPTION

This course introduces students to a 3D software program and 3D modelling techniques. Students will develop skills in the creation of 3D polygon meshes with a view to building a character of their own design. This will be followed by instruction in rigging and skinning a 3D character.

Please note: Tuition for 2008 is in Autodesk Maya 2008 software.

Restriction: Student must be enrolled in a QCA or GFS Program

SECTION A – TEACHING, LEARNING AND ASSESSMENT

COURSE AIMS

This course provides the foundation for further CG animation studies in 2122GFS CGI 2 Animation. In order to create CG characters that are appealing and which animate effectively, it is important that the modeller and rigger of these characters possesses both technical and creative skill. This course aims to address this assertion by providing students with training in both the CG software and the concepts which inform the modelling and rigging process.

This course aims to provide the opportunity for students to work effectively as members of a team by contributing to the completion of a group modelling project. The intention is for teams to unite in their purpose but also to encourage students to identify and to contribute to a specific area within the project which may be of special interest to them.

The course also aims to encourage students to undertake continued self-directed learning in this field, which is a vital component of successful CG studies due to the constant advances in technology and software. It provides an opportunity for students to develop and employ problem solving strategies in the production of their work by researching additional resources to trouble-shoot technical problems.

LEARNING OUTCOMES

Upon completion of this course, students will be able to:

1. Design, build, and texture 3D characters and environments suitable for use in a first-person computer game;
2. Design, build, and rig a 3D character suitable for animating in a television or film production;
3. Understand the limitations and potentials of the 3D workspace as a tool for the creation of an animatable character and environmental imagery;
4. Analyse technical issues that arise during the creation and rigging of CG models and develop strategies to overcome them. This can mean locating information through additional resources such as books, journal articles, web sites and internet forums or by experimenting with different tools within the software to determine a better method to achieve the required result;
5. Contribute effectively as a member of a team to realise the aims of a group project;
6. Meet deadlines and adhere to briefs that are analogous to the needs of the animation industry;
7. Consider the social context of their work with respect to adhering to a sense of civic responsibility, equity and social justice, and creating work which respects social and international diversity.

CONTENT, ORGANISATION AND TEACHING STRATEGIES

This course will be presented as a series of weekly tutorial sessions, short lectures and practical exercises. The lecturer will demonstrate software tools and procedures, discuss appropriate strategies for achieving students' artistic vision within the 3D workspace, and guide students in the completion of a number of practical exercises designed to reinforce the tools and ideas presented. Classes will include time for students to ask for problem-solving assistance from the lecturer.

In order to achieve the course objectives, it is recommended that students attend each weekly class. It is expected that students will need access to computers (which have appropriate software installed on them) outside of scheduled class times so that they can complete their assessments. Students should expect to spend 15 hours per week practicing the software and working on assessments. Access to the software is also necessary so that students may undertake additional research into the software; an aspect of the course content which is not mandatory, but certainly highly encouraged.

Students are expected to work in groups as well as alone. The group project represents an important part of the course in terms of encouraging and guiding students to contribute ideas, make decisions and to cooperate and communicate effectively with other team members. Additionally, the group project provides an opportunity for students to specialise in an area of CG modelling of particular interest to them.

The students will be issued with a number of files and handouts that provide support for the tools and ideas presented in class. While attendance at each weekly class is highly recommended in order to obtain sufficient understanding of the concepts and tools presented, it is not mandatory. However, participation in the group projects is compulsory in order that students meet the outcomes of the related assessment.

The visual diary is included in the assessment content in order to encourage the development of creativity and technical skill, and to act as a communication tool to clarify and focus students' intentions with their projects.

CONTENT SUMMARY

Topic	Lecture Content	Tutorial/Laboratory Content	Readings
1.	Course Introduction Modelling Part 1: Introduction	Course and assessment outline Introduction to geometry types and modelling methods Exercise in polygon modelling	
2.	Modelling Part 2: Creating Characters	Exercise in polygon modelling a detailed character head Working in teams – roles and duties for a group modelling project	Introduce Assessment 1 – Modelling Tools Research & Exam Assessment 1A – Research is due 11:59pm Sunday 9/8/08 - Week 2
3.	Modelling Part 3: Characters for Games	Introduction to building a polygonal character mesh for games, design concepts, polygon budgets Exercise in polygon modelling a basic game character	Assessment 1B – Exam (1hr) Introduce Assessment 2 – Game Modelling Group Project
4.	Modelling Part 4: Game Environments and Assets Teacher/student consultation	Exercise in polygon modelling environments and assets The lecturer will consult with student groups re Ass2 progress	Presentation of student groups' game concepts
5.	Materials and Textures part 1	Introduction to the Hypershade editor Exercise in the creation and application of materials and textures to polygonal meshes	
6.	Materials and Textures part 2	Introduction to UV Texture editor Unwrapping a character texture map	
7.	Introduction to Lighting and Cameras Teacher/student consultation	Guidelines for lighting and cameras in games and film The lecturer will consult with student groups re Ass2	

Topic	Lecture Content	Tutorial/Laboratory Content	Readings
		progress	
8.	Designing a Character Model and Rig for Animation	<p>Introduction to building a polygonal character mesh and deformation rig for animation, design concepts, polygon count guidelines</p> <p>Introduction to a fully rigged character</p> <p>Analysing the human bone structure and skin/muscle movement (with life drawing model – 1hr)</p>	<p>Assessment 2 - Game Modelling Group Project is due 9:00am Tuesday 15/9/08 - Week 8</p> <p>Presentation of group game projects</p> <p>Introduce Assessment 3 – Character Model and Rig</p> <p>Life drawing model required (male, toned, clear muscle definition, hair free)</p>
9.	Rigging Part 1: Bones	Placing bones in a character mesh	Presentation of students' character concept drawings
10.	Rigging Part 2: Skinning	Weighting the geometry to the bones	
11.	Rigging Part 3: Control Rigs Teacher/student consultation	<p>Making animating characters easier with the addition of control rig such as IK, Pole Vector constraints, Set Driven Key and custom attributes</p> <p>Students consult with lecturer on progress of modelling their characters for assessment 3</p>	
12.	Facial Animation	Creation of blend shapes for lip-sync and expression animation	
13.	Teacher/student consultation	Students are to continue work on the modelling and rigging of their character	*Assessment 3 - Character Model & Rig is due 4:00pm Tuesday 3/11/08 - Week 14

ASSESSMENT

Summary of Assessment

Item	Assessment Task	Length	Weighting	Total Marks	Relevant Learning Outcomes	Due Day and Time
1.	Modelling Tools Research & Exam	NA	20%		3, 4, 6	<p>Part A – Research: 11:59pm Sunday 9/8/08 - Week 2</p> <p>Part B - Exam: During class 9:00am Tuesday 11/8/08 - Week 3</p>
2.	Game Modelling Group Project	NA	40%		1, 3, 4, 5, 6,7	9:00am Tuesday 15/9/08 - Week 8

3.	Character Model and Rig	NA	40%		2, 3, 4, 6, 7	4:00pm Tuesday 3/11/08 - Week 14

Assessment Details

Assessment is according to the criteria specific to each item. All student work is to be submitted for assessment on or before the due date.

All assessments are to be submitted digitally only on a single CD-R or DVD±R and/or to the digital drop box (as instructed in the assessment outline). This includes all drawings, concept sketches and model sheets which should be scanned and submitted as part of the visual diary or journal. **NO PAPER BASED SUBMISSION WILL BE ASSESSED.**

The submission CD-R or DVD±R and all files must be clearly labelled with your name, student number & description (ie. John_Smith_s1234567_Character.mb)

Students will be provided with assessment outline documents specifying the details of the course's assessment items during the semester. Any further information regarding the assessments that may need to be provided to the students during the course will be posted to Learning@Griffith and students advised by email that the information has been posted. Students are required to submit all assessment items to qualify for a passing grade. Extensions will only be granted on the provision of a medical certificate or a letter from the student counsellor.

Late submissions:

All assessment items will incur a penalty of 15% per week off the total result for that item not turned in on due date. Unless otherwise stated in the individual assessment criteria, assessment items must be submitted to the provided drop box on the due date so that files can be assessed.

Assessment Item 1: Modelling Tools Research & Exam - 20% of total marks.

Students must research an allocated software tool(s) or menu command(s). This research is to be posted by the student to a Discussion Board forum on Learning@Griffith, with the intention that this forum becomes the resource from which students obtain the answers to the in-class test in Week 3. This information must be thoroughly investigated and explained with practical examples in a 'how to' format written in 'simple' English and include screen snapshots or rendered (minimum 10).

The topics will be provided by the lecturer in class, Week 2, and allocated to individual students randomly (drawn from the proverbial hat).

Assessment Criteria:

Topic analysis and scope of enquiry: 50%

Students must demonstrate that they have made a thorough investigation of the topic, so that a number of questions on that topic are explained.

Search and retrieval skills: 50%

Students complete an in-class open-book exam, researching their answers from the forum. The number of questions and question format will be devised by the lecturer according to the information that has been posted to the forum for Assessment 1 Part A.

Assessment Item 2: Game Modelling Group Project - 40% of total marks.

Students will be divided into groups (by the lecturer) of 4 to 5 people to construct and texture an environment, character and at least 4 other major assets suitable for use in a 'first-person' computer game. The environment can be either outdoor or indoor, and should include at least 4 other 'assets' which might include some items of furniture, weapons, vehicles, or trees and other plants. The items to be submitted include the 3D scene file, plus all related texture files which the scene accesses. Concept sketches and written notes describing the aesthetic intentions of the project **MUST** be provided – these form part of the visual diary component of the assessment. The polygon count and textures of the scene must come within the specified budget as set out in the assessment outline.

In this project, students assume roles such as art director, texture artist, concept artist, character modeller, level builder etc. The separate tasks involved in the project's production will be distributed among the students but all students must contribute examples of modelling and texturing.

Each student group will submit a single CD-R or DVD±R containing a single Maya scene in a Maya project (containing all and only the related files), an edited render of finished sequence (under 100MB) and a single visual diary.

Each group will do a 5min presentation of their results to the class in Week 8.

Assessment Criteria:

Concept design realisation group project: 30%

Group mark for the realization of the project in terms of aesthetics, innovation, design choices, polygon count, and the way the team members' work supports and harmonises with the overall aims of the project.

Individual contribution: 40%

The student's individual contribution to the project in terms of realisation of assigned tasks, ability to adhere to the project aims, sufficient understanding of appropriate software, and self-directed research.

In order for this section of the assessment to be marked effectively it is imperative that each student clearly outlining their contributions in their individual section of the team's visual diary.

Visual Diary and Presentation: 30%

The team's visual diary must be submitted in electronic form (MS Word .doc or .PDF) containing concept sketches, reference materials, scene renders, a bibliography, planning notes, roles / tasks assigned and written documentation of the project's intentions and outcomes. This section 200-300 words.

Each member must also write their individual section of 200-300 words clearly outlining their contributions; their assessment of the team dynamic; and their critique of the team's finished product.

Each group will do a 5 minute presentation of their results to the class in Week 8.

Assessment Item 3: Character Model and Rig (Individual Project) - 40% of total marks.

Students will design, model and rig a two-legged, humanoid character suitable for character animation. It is intended that the character created in this assessment to be used by students intending to enrol in CGI VFX (3117GFS) for the application of dynamic hair and cloths.

Students will present (and submit) concept designs and/or model sheets of their character in Week 9.

The guidelines and minimum requirements for the model, skeleton and rig controls will be detailed in the assessment outline.

Effective production planning, concept development, research and documentation, in the form of a Learning Journal is an essential part of this assessment. The journal should be self-reflective, reviewing the process and discovery and self-evaluation of the technical and creative aspects of the project. This may take the form of an online blog as part of the group forum. The journal must be submitted in electronic form (Word .doc, .PDF, etc).

Assessment Criteria:

Mesh Construction: 30%

Ability to construct a clean and economical polygonal mesh which allows for smooth deformation at all joints consistent with the design and style indicated in the concept designs.

Bones, IK and Control Rig: 30%

The rigging will be assessed on its ability to control and direct movement of the character, and on its adherence to the minimum requirements.

Skin Weighting: 20%

The Skin weighting will be assessed on its ability to deform the mesh adequately and smoothly

Facial Animation: 20%

The character's face will be deformed with blend shapes animatable to a provided audio clip.

Return of Assessment Items

Students will receive their marked assessments and feedback either via email, or during class.

Notification of Availability of Feedback on Assessment

Assessment feedback will be received by students within two weeks of submission of their work.

GRADUATE SKILLS

Graduate Skills	Taught	Practised	Assessed
Effective communication (written)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Effective communication (oral)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Effective communication (interpersonal)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Information literacy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Problem solving	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Critical evaluation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Work autonomously	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Work in teams	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Creativity and innovation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ethical behaviour in social / professional / work environments	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Responsible, effective citizenship	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

TEACHING TEAM

Course Convenor

Convenor Details	South Bank
Campus Convenor	Dr Louise Harvey
Email	l.harvey@griffith.edu.au
Office Location	5.13
Phone	0438886981
Fax	
Consultation times	Consultation appointments can be made with Course Convenor through GFS Administration or via email / mobile / text.

Additional teaching team members

Lecturer Details	South Bank
lecturer	Darren Thomas
Email	D.Thomas@griffith.edu.au
Office Location	NA
Phone	0400 311 499 (emergency use only)
Fax	
Consultation times	Consultation appointments can be made with lecturer via email / mobile / text. Note that lecturer may only be available on specific days at specific times – please check with lecturer for details.

COURSE COMMUNICATIONS

Students may contact the course convenor via the email address and phone numbers supplied above. The course convenor is available for face-to-face consultation times as noted in the Course Convenor details in the table above. While students are welcome to communicate to the convenor via email, technical problems are usually more effectively dealt with in class time where the problem can be viewed in the software. The course lecturer will only be available on specific days and times when he is contracted to be present. Please consult with lecturer for details.

Using Learning@Griffith: Students are encouraged to check once per week for notices posted to this course at Learning@Griffith. This is so that students can be advised of important information regarding submission of assessments, and to obtain information regarding the location of resources etc. Students must also ensure that they regularly check their student email for important announcements and information sent by the lecturer and convenor regarding this course.

TEXTS AND SUPPORTING MATERIALS

Recommended Texts:

Learning Autodesk Maya 2009: Foundation, Autodesk Maya Press, San Rafael

Learning Autodesk Maya 2009: The Modeling & Animation Handbook, Autodesk Maya Press, San Rafael

Additional texts:

Ford, M. & Lehman, A. 2002, **Inspired 3D Character Setup**, Premier Press, Cincinnati

Capizzi, T. 2002, **Inspired 3D Modeling & Texture Mapping**, Premier Press, Cincinnati

Clark, B. Hood, J. & Harkins J. 2005, **Inspired 3D Advanced Rigging and Deformations**, Premier Press, Cincinnati

Robinson, M. & Stein, N. 2007, **Maya 8 for Windows and Macintosh: Visual Quickstart Guide**, Peachpit Press

Books and Journals (available at QCA library):

Brooker, D. 2003, **Essential CG Lighting Techniques**, Focal Press, Oxford

De Leeuw, B. 1997, **Digital Cinematography**, Academic Press, London

Kerlow, I. 2003, **The Art of 3D Computer Animation and Effects**, John Wiley & Sons, Hoboken New Jersey

Maestri, G. 1996, **Digital Character Animation**, New Riders, Indianapolis

Maestri, G. 2002, **[Digital] Character Animation 2**, New Riders, Indianapolis

Pictoplasma 2; Contemporary Character Design (+DVD), Die gestalten verlag dgv

3D World Magazine – monthly magazine

Web sites:

These sites have resources for 3D modellers – tutes, articles, textures, and other helpful links. Some also have Forums and FAQs where you may find solutions to Maya technical problems.

<http://www.the3dstudio.com/default.aspx>

<http://www.comet-cartoons.com/>

some great tutorials here on modelling and animation

<http://www.3dtotal.com/>

free tutes, especially on texturing, and some free textures

<http://www.3dlinks.com/>

<http://www.highend3d.com>

<http://www.gamasutra.com>

great resource for those interested in the games industry

<http://www.thegnomonworkshop.com/>

<http://www.learning-maya.com/>

<http://www.digital-tutors.com>

<http://www.cgw.com>

Computer Graphics World magazine.

<http://www.dlf.org.au>

Digital Labourer's Federation; a non-profit Aus organisation

<http://cgchar.toonstruck.com/forum/index.php>

<http://www.lynda.com>

Lynda Weinman's massive site with libraries of tutorials

Software:

Throughout this course, Autodesk Maya version 2009 is to be used. This software is installed on the computers in the Animation computer lab room 5.31. The free Personal Learning Edition (PLE) is available for download from www.autodesk.com but it is only suitable for practice.

DO NOT DO ANY ASSESSMENT WORK ON A PLE VERSION OF MAYA OR A VERSION OF MAYA PRIOR TO VERSION 2009. Files from these versions of Maya can not be opened in the teaching labs and therefore can not be assessed.

Adobe Photoshop is also used to create textures for mapping onto the models. This is also installed on the computers in 5.31.

SECTION B – ADDITIONAL COURSE INFORMATION

For further information on this course, students should refer to the Learning@Griffith web site. Click on the "Current Students" link on the Learning@Griffith welcome page to access information regarding enrolment, assessment guidelines, grading classifications etc.

SECTION C – KEY UNIVERSITY INFORMATION

ACADEMIC MISCONDUCT

Students must conduct their studies at the University honestly, ethically and in accordance with accepted standards of academic conduct. Any form of academic conduct that is contrary to these standards is academic misconduct and is unacceptable.

Some students engage deliberately in academic misconduct, with intent to deceive. This conscious, pre-mediated form of cheating is one of the worst forms of fraudulent academic behaviour, for which the

University has zero tolerance and for which penalties, including exclusion from the University, will be applied.

However the University recognises many students commit academic misconduct without intent to deceive. These students may be required to undertake additional educational activities to remediate their behaviour.

Specifically it is academic misconduct for a student to:

- **Cheat in examinations and tests** by communicating, or attempting to communicate, with a fellow individual who is neither an invigilator or member of staff; by copying, or attempting to copy from a fellow candidate; attempting to introduce or consult during the examination, any unauthorised printed or written material, or electronic calculating or information storage device; or mobile phones or other communication device, or impersonates another.
- **Fabricate results** by claiming to have carried out tests, experiments or observations that have not taken place or by presenting results not supported by the evidence with the object of obtaining an unfair advantage.
- **Misrepresent themselves** by presenting an untrue statement or not disclosing where there is a duty to disclose in order to create a false appearance or identity.
- **Plagiarise** by representing the work of another as their own original work, without appropriate acknowledgement of the author or the source. This category of cheating includes the following:
 1. collusion, where a piece of work prepared by a group is represented as if it were the student's own;
 2. acquiring or commissioning a piece of work, which is not his/her own and representing it as if it were, by
 - purchasing a paper from a commercial service, including internet sites, whether pre-written or specially prepared for the student concerned
 - submitting a paper written by another person, either by a fellow student or a person who is not a member of the University;
 3. duplication of the same or almost identical work for more than one assessment item;
 4. copying ideas, concepts, research data, images, sounds or text;
 5. paraphrasing a paper from a source text, whether in manuscript, printed or electronic form, without appropriate acknowledgement;
 6. cutting or pasting statements from multiple sources or piecing together work of others and representing them as original work;
 7. submitting, as one own work, all or part of another student's work, even with the student's knowledge or consent.

A student who willingly assists another student to plagiarise (for example by willingly giving them their own work to copy from) is also breaching academic integrity, and may be subject to disciplinary action.

Visit the following web sites for further details:

[Institutional Framework for Promoting Academic Integrity among Students](#)
[Academic integrity for students](#)

PLAGIARISM DETECTION SOFTWARE

The University uses plagiarism detection software. Students should be aware that your Course Convenor may use this software to check submitted assignments. If this is the case your Course Convenor will provide more detailed information about how the detection software will be used for individual assessment items.

HEALTH AND SAFETY

Griffith University is committed to providing a safe work and study environment, however all students, staff and visitors have an obligation to ensure the safety of themselves and those whose safety may be affected by their actions. Staff in control of learning activities will ensure as far as reasonably practical, that those activities are safe and that all safety obligations are being met. Students are required to comply with all safety instructions and are requested to report safety concerns to the University.

General health and safety information can be obtained from
http://www.griffith.edu.au/hrm/health_and_safety/

Information about Laboratory safety can be obtained from
http://www.griffith.edu.au/ots/secure/health/content_labsafety.html

KEY STUDENT-RELATED POLICIES

All University policy documents are accessible to students via the University's Policy Library website at: www.griffith.edu.au/policylibrary. Links to key policy documents are included below for easy reference:

[Academic Calendar](#)

[Academic Standing, Progression and Exclusion Policy](#)

[Assessment Policy](#)

[Examinations Timetabling Policy and Procedures](#)

[Guideline on Student E-Mail](#)

[Health and Safety Policy](#)

[Institutional Framework for Promoting Academic Integrity Among Students](#)

[Policy on Student Grievances and Appeals](#)

[Student Administration Policy](#)

[Student Charter](#)

UNIVERSITY SUPPORT RESOURCES

The University provides many facilities and support services to assist students in their studies. Links to information about University support resources available to students are included below for easy reference:

[Learning Centres](#) - the University provides access to common use computing facilities for educational purposes. For details visit www.griffith.edu.au/cuse

[Learning@Griffith](#) - there is a dedicated website for this course via the Learning@Griffith student portal.

[Student Services](#) facilitate student access to and success at their academic studies. Student Services includes: Careers and Employment Service; Chaplaincy; Counselling Service; Health Service; Student Equity Services (incorporating the Disabilities Service); and the Welfare Office.

[Learning Services](#) within the Division of Information Services provides learning support in three skill areas: computing skills; library skills; and academic skills. The study skills resources on the website include self-help tasks focusing on critical thinking, exam skills, note taking, preparing presentations, referencing, writing, proof reading, and time management.