

MA 3DCA Module Guide:
3D Computer Animation:
Code: M7X00658
Module value 30 credits

(Revised 03-10-2017)



A six legged mudpod from the TV Series “Extraterrestrial” for C4.

From Programme Document:**Content:**

To provide students with a systematic knowledge and understanding of computer generated animation.

Aims:

This module is designed to provide students with a systematic knowledge and understanding of computer generated animation styles and formats some of which are at the forefront of contemporary knowledge.

Module Intended Learning Outcomes:

Upon the successful completion of the module the student will be able to:

- 1 Demonstrate originality and expertise in the ability to calculate and optimise levels of animation control to create professional quality animated representations of persona, expressions and simulations.
- 2 Demonstrate advanced contemporary knowledge and mastery of the development tools necessary for the creation of 3D models, rigs, environments,

Module Tuition Information:**Semester 1:**

Tuesday 2.00pm to 5.00pm then 7.00pm to 8.00pm
Room Number AD204

Part 1 of this module runs from the beginning of October through to the beginning of December when Part 1 is then assessed via a presentation of your animation work. The Part 1 assessment will contribute 60% of the marks to this module.

Semester 2:

Times to be confirmed.
Room Number AD204

Part 2 of this module runs from the beginning of January through to the beginning of May when Part 2 is then assessed via a presentation of your animation work. The Part 2 assessment will contribute 40% of the marks to this module.

Module Content of Part 1:

Whether you are an experienced animator or just beginning, there is plenty to learn in the 3D Computer Animation Module.

The module is designed to increased your understanding of motion, how it is controlled, how it is perceived and how it is used to generate animation.

When is Animation not Animation.

You should remember that the term “animation” is not the same as “motion”. Animation is the act of breathing life into a normally inanimate object by using movement or motion.

An object that moves therefor, does not necessarily live, and some of the exercises that you will do in this module are ones that only involve motion. Others, however, will involve breathing life into your subject by the use of motion which is the true definition of animation.

Animation is not just about movement.

Sometimes animation can be best described as a series of motion events spaced out along the time line with large pieces of stillness or inactivity in-between. These spaces of stillness are just as important as the motion. The distances or amounts of time, between each event, whether they are moving or still is crucial. Timing is just as important as the motion.

The bad old days:

Drawn animation is very difficult too learn because if you get a sequence wrong then you usually have to draw the whole sequence again. You too will be given several opportunities to draw some animation by hand.

3D computer animation, however, allows you to experiment with motion and you can methodically change parts to see if it improves and nothing is wasted.

What you will be learning.

We will start by examining the simple concepts of why animation works and how it can be executed in it's simplest form.

How to key frame and control motion using function curves and how to edit them.

The concept of pivot points and how they are managed.

The concept of a revolving or reciprocating cycles and the use of integers to mark time.

After looking at standard video resolutions, compression techniques and the concept and practicalities of the MAYA PROJECT, we put theory aside for the moment and look at how to make a complete film ready for your viewing audience or for your assessment presentation.

Get to grips with gravity and your very own bouncing ball. If you would like your ball to have a mind of its own then you can experiment with one or try bouncing balls of different weights or mass.

Pretend you are a mouse like creature, that is more likely to get eaten then eat. How would you respond to the harsh movement of ducks on springs. You have a nose but very little else.

Do you like watching people that do tricks? Do they amuse you or do you get bored? Your eyes tell the whole story.

You will move and animate something without any keyframes or function curves. Instead you will write a computer programme (MEL Expressions) that will control your animation.

You will have to learn to walk before you run. Walking the human figure.

Further and more complex challenges are for you to enjoy like casting spells or working in the Amazon Distribution Centre.

You can finish by doing some more walking.

Interpreting the assignment specification:

Be very careful when interpreting the assignment specification. You should read it carefully before embarking on your final submissions. If you are not sure, then you should ask your tutor to explain the specification carefully for you.

If it helps, make a list of what the assignment specification requires. If you think you should add something to your assignment submission video like music, sound effects, textures or backgrounds then check the assignment specification to see if it has asked for it. Unless the specification has

specified music, sound effects, textures or backgrounds, then it is not a good idea for you to waste time on these elements but instead, concentrate on improving your animation by way of motion and timing.

If you are not sure about what to include then look at the “Assessment & Feedback” section of the assignment specification which lists all the criteria that will be used to assess your mark.

Hints & Tips with Regard to Animation Part 1:

Adding colour or texture to the characters:

You can add a plain colour or texture to the rigged characters or scene elements in order to increase visibility and for the sake of clarity. This can add nominally to your “Presentation & Communication” mark but if the colour or texture damages visibility or clarity or is too dominant then it can subtract from your Presentation & Communication mark.

Using different camera angles or camera moves:

You can add camera moves or cuts from one view to another, in order to increase the clarity and add to the drama of your sequence. The camera is an animatable entity and so can add to your overall marks. You can lose marks however, if the camera is badly placed or moves or cuts in such a way that it obscures your character animation or, if the view is badly composed.

Using Image Backgrounds:

You can add an image background to your scene in order to increase visibility, for the sake of clarity or to help the mood of the action. This can add nominally to your “Presentation & Communication” mark but if the image background damages visibility or clarity or is too dominant then it can subtract from your Presentation & Communication mark.

If you do use an image background then try not to use other peoples (which are usually copyright) but prepare one yourself. Even a simple background prepared by yourself has more value than one you have borrowed.

Using Sound effects and Music as a background track:

There is no need to add sound effects and music to your animation unless you have composed and/or recorded them specially for your animation and synchronises precisely with the animation in your sequence.

Adding music which has a dominant rhythm can spoil the rhythm of your animation. Sound effects that are not appropriate or that are out of synchronisation with the action will also spoil your animation. The tutors normally view your animation with the sound turned off unless you expressly ask for the sound to be considered.

Front and Rear Holds:

You must include front and rear holds in sequences that have a start and an end in their motion. Take the bouncing Ball A exercise for instance. Hold the opening first frame before the ball enters into view for at least 2 seconds. This allows the audience to become familiar with the scene before the action begins. Add more seconds if you are including a dissolve from a title into the beginning of the sequence. This stops your opening action from being wasted by the overlap of a dissolve. Hold the last frame after the ball has come to a standstill for at least 3 seconds. This allows the audience to absorb the last part of the action before the sequence comes to an end.

Use holds for all your sequences that have a start and an end in their motion. You can add holds using After Effects by adding a still frame to the start and end of the sequence or remapping the time line to enable a front and end hold.

Supporting Web Material for Part 1:

Use this site link below for more information and detail about animating. This has been written specially for you, so take advantage.

<http://www.learninganimation.co.uk/animation/index.htm>

PART 1: Weekly Activities:

Week No:	Lecture / Tutorial	Practical Studio Work
	The lecturer demonstrates and explains the practical and creative aspects of the topics listed below,	This is where you work on your own in the studio on the activities listed below and the lecturer will help you if you need it.
Week 1:	Simple Computer Animation Techniques.	Experiment with Computer Animation. Try the Phenakistoscope.
Week 2:	How to make a complete film ready for assessment.	Experiment with completing a film ready for assessment.
Week 3:	Key framing natural forces which include gravity, inertia, elasticity & friction	Your Own Practical Studio time on bouncing balls.
Week 4:	Empathy and how the stand inside your Character	Your Own Practical Studio time on curious primitive.
Week 5:	Simple eye animation and facial/head control.	Your Own Practical Studio time on the three cups trick.
Week 6:	Animation without Keyframing. Procedural Animation using code.	Your Own Practical Studio time on the clockwork exercise.
Week 7:	The Walk cycle and how to re-use animation.	Your Own Practical Studio time on the walk cycle.
Week 8:	The remaining exercises explained.	Your Own Practical Studio time.
Week 9:	A Reminder of the finishing processes	Your Own Practical Studio time
Week 10:	Part 1 Assessment Presentations.	The Presentation of your Animation Exercises.
Week 11:	Introduction to building your head and face	Your Own Practical Studio time
BREAK	No lectures or Tutorials	Build your own head
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Week 12:	Introduction to the Narrative Exercise.	Experiment with Camera work
Week 13:	None	Preparation time for other Modules
Week 14:	None	Preparation time for other Modules

Hints & Tips when animating for Animation Part 1:

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Module Content of Part 2:

Now that you are more experienced you will try just two advanced exercises.

Lip Synchronisation: (Lip Sync)

The first will be a computer version of your head and face that will talk (or sing).

It will give you the chance of some advanced modelling of an organic structure which you will then texture and rig, ready to animate. You will record some speech of yourself or a colleague and synchronise your animation to this sound.

The Railway Station Narrative: (Cluedo)

You will be provided with four simple human type characters, some props (properties or objects that can be part of your story) and some pieces of set (environment). Using these simple computer objects you must make up and tell a story. By doing this you will be making a complete short film. Your main character will be the camera so you can try out different types of camera angles and film grammar. You can use close ups (CUs), wide shots, two shots, panning shots, tracking shots. There is no limit on how you use your camera. You will be editing your shots together to make a coherent and interesting narrative.

The bad news is that a music track is provided and you must edit your sequence to the rhythm and aesthetic content of the music track.

Supporting Web Material for Part 2:

This part of the animation module is non-prescriptive, which means there are no real rules apart from those laid out in the Assignment Specification. Therefore there is no online support for this part of the module.

PART 2: Weekly Activities:

Week No:	Lecture / Tutorial	Practical Studio Work
Week 1:	Technical Introduction to sound tracks in Maya. Introduction to Lip Synchronisation.	Your Own Practical Studio time. Modelling a Face.
Week 2:	Modelling and rigging working eyes.	Your Own Practical Studio time. Modelling and rigging working eyes Modelling a your own face.
Week 3:	Modelling and rigging a working mouth.	Modelling and rigging a working mouth.
Week 4:	Structuring the Narrative Project. Introduction to Music Analysis.	Modelling a your own face.
Week 5:	Camera and Editing Grammer	Music track analysis.
Week 6:	Preparation for surface attributes (UVs)	Your Own Practical Studio time.
Week 7:	Surface Attributes and Photoshop	Your Own Practical Studio time.
Week 8:	A health check on your progress	Your Own Practical Studio time.
Week 9:	Trouble shooting your scene files	Your Own Practical Studio time.
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Week 10:	A health check on your progress	Your Own Practical Studio time.
Week 11:	Trouble shooting your scene files	Your Own Practical Studio time.
Week 12:	Part 2 Assessment Presentations.	The Presentation of your Animation Exercises.

Reading Lists:

Essential Texts

Author	Date	Title	Publisher
Hooks, E.	2003	Acting for Animators	Greenwood Press
Ratner, P.	2004	Mastering 3D Animation (2nd Edition),	Allworth Press

Background Reading

Author	Date	Title	Publisher
Clark, B., Hood, J., Harkins, J	2002	3D Advanced Rigging and Deformations, (2nd Edition)	Thomson Press
Dempski, L., Viale, E.	2006	Advanced Lighting and Materials with Shaders	Wordware Publishing Inc
Hooks, E	2005	Acting In Animation	Greenwood Press
Kerlow, I.V.	2001	The Art of 3D Computer Animation and Effects (3rd Edition)	Oddworld Inhabitants Inc
Lanier, L.	2006	Advanced Maya Texturing and Lighting,	Wiley Publishing Inc
Park, J. E.	2005	Understanding 3D Animation Using Maya	Springer Science + Business Media, Inc
Whitaker, H, Halas J	2002	Timing for Animation	Focal Press
Williams, R	2002	The Animator's Survival Kit,	Faber & Faber

Finally:

Don't forget to ask your tutor if you are not sure about any issue or topic on this Module Guide or any issue arising from the Assignment Specification.

Can I ask a question at any time?

Yes, even during assessments.

I don't like asking questions because:-

I will look stupid in front of my Colleagues.

Your colleagues may want to ask the same question but are too shy to do so.

Although it is nice to demand the respect of your colleagues, it doesn't really matter what they think of you at this stage of the programme.

I don't like asking questions because:-

I will look stupid in front of my Tutor and he /she will not give me good marks.

Not true. If you ask questions it means that you are awake and are listening.