COURSE CONTENT

Course Code	DT2001
Course Title	3D Production
Pre-requisites	NIL
No of AUs	3
Contact Hours	39 Contact Hours

Course Aims

This introductory level course will provide you with the fundamental skills required for 3D computer modelling and animation. You will be introduced to industry standard digital tools and gain a creative and technical competency with modelling, character design, movement, environment and rendering. These skills will provide a base from which you can expand your skills in further study.

Intended Learning Outcomes (ILO)

By the end of the course, you should be able to:

1. Demonstrate competency with specialist software to produce 3D models and animations.
2. Employ production processes to create a 3D character model that is suitable for animated movement and expression.
3. Apply computer animation technique to create an original animated short sequence.
4. Present and demonstrate competency with the essential processes of modelling, UV mapping, rigging, keyframing and staging to enable a character performance.
5. Constructively discuss, critique, and contribute to problem solving of fundamental 3D modelling and animation techniques employed by peers

Course Content

This course will introduce you to computer 3D modelling and animation. Emphasis is placed on learning techniques, principles and strategies to enable on-going independent learning of the specialist 3D software used. A wide variety of processes will be reviewed in order to provide an overall awareness of the complete 3D animation production process. Technical processes introduced include modelling, texturing, simple rigging, keyframe animation, lighting and rendering.

Once you have gained enough familiarity with essential processes, you will produce a short animation that demonstrates your culminated learning.

Most class sessions will contain demonstrations of a particular process by the instructor, reinforced with exercises and tasks for you to perform. 3D Production is comprised of many essential processes that once understood, offer a powerful digital toolset for creative expression and further refinement.

Assessment (includes both continuous and summative assessment)

Component	ILO Tested	Programme LO	Weighting	Team/Individual
Continuous Assessment Studio-based exercises and projects Mid semester portfolio review	1,2,3, 4	--	40	Individual
Final Project: Portfolio of all exercises and class projects	1,2,3,4	--	40	Individual
Continuous Assessment: Participation	5	--	20	Individual
Total			100%	

Reading and References

1. Autodesk *Maya Learning Channel* < https://www.youtube.com/mayahowtos> 2018
2. Gilbert, Wayne. Simplified drawing for planning animation. Anamie Entertainment Limited, 2013.
3. Johnson, Ollie, and Frank Thomas. "The illusion of life: Disney animation." New York: Little, Brown and Company (1981).
4. Lynda.com Maya 2018 *Essential Training (via NTU Learn)* < http://bit.ly/2p8gYPe> 2018
5. Wellins, Mike. Storytelling Through Animation (Graphics). Charles River Media, Inc., 2005
6. Williams, Richard. *The animator's survival kit: a manual of methods, principles and formulas for classical, computer, games, stop motion and internet animators.* Macmillan, 2012.
7. Whitaker, Harold, and John Halas. *Timing for animation.* CRC Press, 2013.

Course Policies and Student Responsibilities

(1) General

You are expected to complete all assigned readings, activities, assignments, attend all classes punctually and complete all scheduled assignments by due dates. You are expected to take responsibility to follow up with assignments and course related announcements. You are expected to participate in all project critiques, class discussions and activities.

(2) Punctuality

You are expected to be punctual for all classes. If you are more than 30 minutes late, you will be deemed as absent and will not be able to sign on the attendance register.

(3) Absenteeism

In-class activities make up a significant portion of your course grade. Absence from class without a valid reason will affect your participation grade. Valid reasons include falling sick supported by a

medical certificate and participation in NTU's approved activities supported by an excuse letter from the relevant bodies. There will be no make-up opportunities for in-class activities.

Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Planned Weekly Schedule*

*Subjected to adjustment by instructor according to your progress, public holidays and unforeseeable circumstances.

Week	Topic	Course LO	Readings/ Activities
1	Introduction to 3D Production	1	**Introductory Lecture** Overview of software. Navigation and simple manipulation.
2-3	3D Modelling	1	Exercises and tasks to establish a base-level competency with basic modelling, tools and using an image plane.
4	UV Mapping and Texturing	1,2	UV Mapping & Texturing. Unwrapping, exporting maps, texturing in Photoshop - Major Assignment Brief
5	Animation	1,2	Understanding keyframe animation with simple objects. Working with animation curves in the Graph Editor. Using playblast to preview animation
6	Lighting and Rendering	1,2	Setting up your camera. Basic lighting setup. Applying materials. Using the batch render

7	3D Character Creation	1,2,4,5	Model & Texture a simple bipedal character **Mid semester review.** **Presentation of concept for Major Assignment**
8	Rigging	1,2	**Creating a basic skeleton** Placement of joints. Understanding hierarchy. IK/FK setup. Creating character controls. Comparison with HumanIK system. Discussion on rigging systems.
9	Skinning	1, 2	Bind skin and paint weights for the bipedal character. Discussion of character design considerations for rigging.
10	Facial expressions with blendshapes	1,2,3	Creating blendshapes. Adding facial controls.
11	Lighting, rendering and compositing.	1,2,3	**Lighting and Rendering (II)** Understanding material types. Advanced lighting setups. Rendering your scene. Simple compositing. Exporting your video
12	Production Review	1,2,3,4,5	**Review of Major Assignment work in progress** Tips & Tricks. Ways to speed up your workflow. Utilizing scripts and plugins. Problem solving.
13	Final Presentation	1,2,3,4,5	**In-class presentation of final project** **Handin of all material.**