SM3605: 3D CONTENTS PRODUCTION IN MAYA

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
3D Contents Production in Maya

Subject Code
SM - School of Creative Media
Course Number
3605

Academic Unit
School of Creative Media (SM)

College/School
School of Creative Media (SM)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
SM2714 Fundamentals of Animation / SM2713 2D Animation I - Basic
(Waiver may be granted on a case-by-case basis to students who have undertaken fundamental of animation training or Equivalent)

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

3D computer generated contents and animation is one of the stimulating and important aspects of the digital content creation industry especially for the production of animated feature films, video, TV, digital visual effects, video games, motion graphic, 4D projection mapping, virtual & augmented reality and even 3D printing. This subject teaches both the "know-why" and the "know-how" of designing and choreographing animated contents using Maya 3D computer animation technology. Students will learn how to use appropriate techniques and principles to design for movement, gesture, weight, action, reaction, behaviour and characteristics important to 3D computer animated contents. This course provides a solid foundation for future studies in advanced level Maya training like character animation; digital lighting and texturing, advanced modelling and other time-based and interactive media such as digital composition, video games, and digital visual effects.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Recognize the principles of animation, 3D computer animation concepts and the production process			x	
2	Use the technical know-how for 3D computer animation production			x	x
3	Synthesise and communicate ideas visually and aurally in the form of 3D computer animation		x	x	x
4	Demonstrate problem-solving skill, resource management skills and project management skills		x	x	x
5	Critically evaluate and appreciate the form and aesthetic of movement		x		
6	Self-exploration and self-reflection of the subject matter		x	x	

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	- Case study - Demonstration - Practices - Discussion	Regular lecture, screening and discussion of 3D computer animation and the production process	1	

2	- Case study - Demonstration - Practices - Discussion	Regular workshop and practices of 3D computer animation and the production process	2	
3	- Case study - Presentation - Critique - Discussion	Individual 3D animation project pre-production, pre-visualization and production; Progress review, presentation, discussion, critique and consultation.	3	
4	- Case study - Presentation - Critique - Discussion	Individual 3D animation project execution and management	4	
5	- Case study - Critique - Discussion	Individual 3D animation practices, exercises and project execution; Progress review, presentation, discussion, critique and consultation.	5	
6	- Self-exploration - Self-reflection	Weekly self-exploration of 3D computer animation and final reflection report	6	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Assignment 1: Self-Exploration & Self-Reflection	6	20	
2	Assignment 2: Pre-production & Pre-Visualization - Presentation and Critique	3, 4	20	Continuous Assessment
3	Assignment 3: Outcomes of Maya 3D Animation Workshop	1, 2	25	
4	Assignment 4: Individual Maya 3D Animation Production Project and Final Outcomes Presentation and Critique	1, 2, 3, 4, 5	35	Continuous Assessment

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)

Assessment Task
Assignment 1: Self-Exploration & Self-Reflection

Criterion
This assessment will be graded on rationality, clarity and fluency of argument and comment. The threshold of 'discovery' lies in a student's ability to negotiate a position that is informed, defendable, and standing on personal insight.

Excellent (A+, A, A-)
· Rich content, excellent ability to interpret and integrate various resources
· Rigorous organization, coherent structure, systematic composition
· Precision in argument, well defined and reasoned points of view grounded in insightful interpretation of existing literature
· Readiness to respond to peer opinion and other views initiated in class discussion
· Discussion shed light on new dimensions of the issue

Good (B+, B, B-)
· Adequate content, sufficient ability to integrate various resources based on demand
· Reasonable organization with balanced structure and composition
· Clear elaboration of ideas that sticks to the point, with clearly differentiated issues, ability to interpret opinions independently
· Sufficient responses to peer comments to sustain a discussion

Fair (C+, C, C-)
· Adequate content, fair ability to integrate various resources based on demand
· Fair organization with adequate structure and composition
· Relevant points made to the subject matter in question
· Ability to respond to other statements and engage in class discussion

Marginal (D)
· Weak content, limited use of resources
· Poor organization, structure and composition
· Relevant points to the subject matter, marginal ability to interpret opinions
· Ability to respond to other comments in simple terms

Failure (F)
· Inadequate content, no/ irrelevant use of resources
· No organization, structure or/and composition
· Irrelevant points to the subject matter, no ability to interpret opinions
· Fail to respond to other comments

Assessment Task
Assignment 2: Pre-production & Pre-Visualization
- Presentation and Critique

Assignment 3: Outcomes of Maya 3D Animation Workshop

Assignment 4: Individual Maya 3D Animation Production Project and Final Outcomes Presentation and Critique

Criterion
These assessments will be graded on:

· Ability to understand and demonstrate a critical awareness of the concept, workflow, application, and tool set.

· Learning by doing. Reflection of Tool Proficiency / Tool Manipulation / Application of Art and Aesthetic/ Technology / Technological Theory

· Ability to plan, execute and evaluate a project. Reflection of Innovation / Originality / Imagination / Lateral Thinking / Production Management / Learning Attitude / Ethics / Presentation Skills

Excellent (A+, A, A-)
· Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.
· Furthering knowledge through analysis and interpretation of issues discussed using information from a range of source
· Exhibited courage to leave comfort zones and test existing boundaries, conventions and rules for unknown possibilities
· Project was highly original, involved significant logistical challenges and required frequent problem-solving and re-assessment of project methods and goals throughout the duration of the project; student demonstrated exceptional and frequent initiative and self-direction in identifying and overcoming problems as they arouse.

Good (B+, B, B-)
· Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.
· Compare and contrasted information from various sources with own interpretation relating to issues discussed
· Demonstrated openness to experiment with new approaches and challenge conventions (comfort zone).
· Project was original, challenging and require consistent problem-solving and re-assessment of project methods and goals throughout the duration of the project; student demonstrated consistent initiative and self-direction in identifying and overcoming problems as they arose.

Fair (C+, C, C-)
· Student who is profiting from the university experience; understanding of the subject; ability to develop solutions to simple problems in the material.
· Some discussion of issue raised in class, drawing on few sources of information
· Experimented with a number of different approaches, techniques & materials to solve problems but did not go beyond conventions (comfort zone).
· Project was challenging, require minor problem-solving and re-assessment of project methods and goals throughout the duration of the project; student demonstrated some initiative and self-direction in identifying and overcoming problems as they arose.

Marginal (D)
· Sufficient familiarity with the subject matter to enable the student to progress without repeating the course.
· Only little discussion of issues raised in class, drawing on few sources of information.
· Some attempts to experiment, but the approaches, techniques & materials used are limited and lacked diversity.
· Project was simplistic and required little problem-solving; student demonstrate little initiative and self-direction in identifying and overcoming problems as they arose.

Failure (F)
· Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.
· No or little discussion of issues raised in class
· No or little evidence of attempted experiment
· Project was simplistic and required no problem-solving; student failed to demonstrate initiative and self-direction in identifying and overcoming problems as they arose.

Additional Information for AR
All A+/A/A- grade assignment should comply with the highest performance of Discovery-oriented learning.

Part III Other Information

Keyword Syllabus

3D Computer Generated Contents, 3D Computer Animated Contents, 3D Animation, Principles of Animation, Maya, Time-based Media, Maya Key Concept, Creative Research, Visual Structure, 3D Animation Production Process, Animation Pre-production, Animation Pre-Visualization, Thumbnail Sketching, Storyboarding, Layouts, Staging, Bar Chart, Keyframe, In-between, Overlapping, Animatic, Story-reel, Work-reel, 3D Modelling, Geometry Types, Animation Curves, Constraints, Rigid Body Simulation, Particle Simulation, Shading Materials, Texturing, Surfacing, Lighting, Rendering, Composition, Apple QuickTime Movie, Photo JPEG, H.264, Programme Package.

Reading List

Compulsory Readings

	Title
1	Palamar, Todd. (2015). Introducing Autodesk Maya 2016: Autodesk Official Press. Hoboken, NJ: Sybex
2	Autodesk Maya Press. (2007). The Art of Maya: An Introduction to 3D Computer (Edition 4). Autodesk Official Press. Hoboken, NJ: Sybex
3	Williames, Richard. (1940). The Animator's Survival Kit: A Manual of Methods, Principles, and Formulas for Classical, Computer, Games, Stop Motion, and Internet Animators. London, United Kingdom: Faber and Faber Ltd.
4	Whitaker, Harold and Halas John (2002). Timing for Animation. New Ed edition. St. Louis, USA: Focal Press, Inc.

Additional Readings

	Title
1	Palamar, Todd. (2015). Mastering Autodesk Maya 2016: Autodesk Official Press. Hoboken, NJ: Sybex
2	Johnston, Ollie and Thomas, Frank. (1995). The Illusion of Life: Disney Animation. (Rev Sub edition). CA, USA: Disney Editions
3	White, Tony. (2006). Animation from Pencils to Pixels: Classical Techniques for the Digital Animator. St. Louis, USA: Focal Press, Inc.
4	White, Tony. (2009). How to Make Animated Films: Tony White's Complete Masterclass on the Traditional Principals of Animation. St. Louis, USA: Focal Press, Inc.
5	AREA by Autodesk / The Autodesk CG Community on the Web. Autodesk, Inc. (2015). Home: Product Communities: Autodesk Maya https://area.autodesk.com/products/view/maya (Accessed October 21 2015)
6	Creative Crash (2015). Home: Tutorials: Maya: All Tutorials http://www.creativecrash.com/maya/tutorials (Accessed October 21 2015)
7	Lauria, Larry. Larry's Toon Institute. (1999) http://www.awn.com/tooninstitute/lessonplan/lesson.htm#top
8	ASIFA-Hollywood: The International Animated Film Society. (2015) http://www.asifa-hollywood.org/ (Accessed October 21 2015)
9	Animation Magazine Inc. (2012) http://www.animationmagazine.net/ (Accessed October, 21 2015)
10	Tokuma Memorial Cultural Foundation for Animation. (2001-2015) http://www.ghibli-museum.jp (Accessed October 21 2015)
11	Lasseter, John. (1987). Tricks to Animating Characters with a Computer. http://www.siggraph.org/education/materials/HyperGraph/animation/character_animation/principles/lasseter_s94.htm (Accessed October 21 2015)
12	Owen, G. Scott (2000). Computer Animation http://www.siggraph.org/education/materials/HyperGraph/animation/anim0.htm (Accessed October 21 2015)