SM3605: 3D CONTENTS PRODUCTION IN MAYA

Effective Term
Semester A 2025/26

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 content and animation are the stimulating and vital aspects of the digital content creation industry, especially for visual storytelling, communication, digital marketing, pre-production, pre-visualisation, prototyping, 3D printing, and producing animated feature films, digital videography, TV and filmmaking, digital visual effects (DVFX), infographics, 4D projection mapping, video games, interactive media, Universal Scene Description (USD) for AI Application, VR/AR/MR/XR, UI/UX design, simulation, industrial design, interior and environmental design.

This subject teaches the "know-why" and the "know-how" of designing and choreographing animated content using Autodesk Maya 3D computer keyframe animation technologies. Students will learn to apply appropriate techniques and principles of animation to design for movement, gesture, weight, action, reaction, behaviour, and characteristics essential to 3D computer-animated content.

This course provides a solid foundation for future studies in advanced-level Autodesk Maya training, such as 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	Discuss the concepts and the application of the principles of animation with Autodesk Maya 3D computer-animation technologies. And the general production process in the industry.			x	
2	Apply the technical know-how of Autodesk Maya 3D computer-animation technologies for 3D computer keyframe animation production			x	x
3	Synthesise and communicate ideas visually, aurally, and emotionally in the form of 3D computer animation created using the Autodesk Maya platform through creative research, pre-visualisation, pre-production, documentation, visualisation, production, and post-production.		x	x	x
4	Demonstrate problem-solving, project management, and awareness of attitude and professionalism.		x	x	x
5	Critically evaluate and appreciate the form and aesthetic of movement, staging, and visual storytelling.		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.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	- Case study - Demonstration - Practices - Discussion	Students will engage in lectures, screening, and discussing 3D content production workflow and practices, including concept generation, pre-visualisation, pre-production, visualisation, production, and post-production.	1	
2	- Case study - Demonstration - Practices - Discussion	Students will engage in practical workshops on 3D content production and animation using the Autodesk Maya platform, integrating keyframe animation, rigid body simulation, pre-visualisation, rendering, and basic 3D modelling and surfacing.	1, 2	
3	- Case study - Presentation - Critique - Discussion - Project Management	Students will engage in an individual 3D computer animation project using Autodesk Maya 3D technologies to produce an animated music video, integrating concept generation, pre-visualisation, pre-production, visualisation, production, and post-production. Students will commit to continuous project review, discussion, critique, consultation, and project management.	2, 3, 4, 5	
4	- Self-exploration - Self-reflection	Students will engage in weekly self-exploration and review classes focused on 3D content production and animation using Autodesk Maya keyframe animation technologies and the application of principles of animation in 3D content. Write and present course-end self-reflection report.	6	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Assignment 1 – Pre-Production: Creative Research and Pre-Visualisation	3, 4, 5	25	The use of Generative AI (GenAI) in coursework, including text, visual, and moving image content, is prohibited in this course. In this course, the student can use GenAI to correct grammatical mistakes, improve writing, and generate sound effects and music to accompany the non-GenAI elements, such as frame-by-frame hand-made animation (e.g. hand-drawn animation, stop-motion animation), computer keyframe animation (e.g. Maya 3D keyframe animation), video, visual effects, and digital composition. With the approval by the course leader in black and white and with proper citation on the proposal, report, and end credits on the media, the student is allowed to use GenAI to generate visual references for ideation and inspirational purposes. However, the student must be aware of their ability to produce the same level of visual quality as the submitted references, concept	Yes

2	Assignment 2 – Pre-Visualisation, Production, Screening, Critique, Critique & Discussion	2, 3, 4, 5	40	Continuous Assessment	No
3	Assignment 3 - Maya 3D Animation In-Class Exercises - ICE Completed	1, 2, 5, 6	30	-	No
4	Assignment 4 – Self-Exploration and Self-Reflection	5, 6	5	Weekly self-exploration and review classes	No

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)

Assessment Task

Assignment 1 – Pre-Production: Creative Research and Pre-Visualization
Assignment 2 – Pre-Visualisation, Production, Screening, Critique, Critique & Discussion
Assignment 3 - Maya 3D Animation In-Class Exercises - ICE Completed

Criterion

· Ability to discuss 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 organisation, capacity to analyse and synthesise; 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
· The project was highly original, involved significant logistical challenges and required frequent problem-solving and re-assessment of project methods and goals throughout the project; the student demonstrated exceptional and frequent initiative and self-direction in identifying and overcoming problems as they arose.

Good (B+, B, B-)

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

Fair (C+, C, C-)

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

Marginal (D)

· Sufficient familiarity with the subject matter enables students to progress without repeating the course.
· Only a little discussion of issues raised in class, drawing on a few sources of information.
· There are some attempts to experiment, but the approaches, techniques, and materials used are limited and lack diversity.
· The project was simplistic and required little problem-solving. The student demonstrated 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
· The project was simplistic and required no problem-solving; the student failed to demonstrate initiative and self-direction in identifying and overcoming problems as they arose.

Assessment Task

Assignment 4: Self-Exploration and 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

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 Content Production, 3D Computer Animation, 3D Computer Generated Imagery, Autodesk Maya 3D Computer Animation, Principles of Animation, 3D Animation Production Process, Creative Research, Visual Structure, Sound Editing, Pre-production, Pre-visualisation, Thumbnail Sketching, Storyboarding, Layouts, Staging, Bar Chart, Animatic, Programm Package, Burn-in Overlayed Data, SMTP Timecode, Scene/Shot Numbering, Scene Description, Safe Display Region, Documentation, Production, 3D Modelling, Geometry Types, Polygon, NURBS, Sud-division Surface, Mesh, Invalid Polygon, Freeze Transformation, Delete History, UV Mapping, Texturing, Surfacing, Constraints, Rigid Body Simulation, Particle Simulation, Keyframe, In-between, Overlapping, Animation Curves and Tangent, Playblast, Work Reel, Lighting, Render Diagnostics, Rendering, Noise Reduction, Video Editing, Composition, Blackmagic DaVinci Resolve, Apple QuickTime Movie, H.264.

Reading List

Compulsory Readings

	Title
1	Murdock, K. (July 10, 2024). Autodesk Maya 2025 Basics Guide Paperback. Mission, Kansas, USA. SDC Publications
2	Autodesk, Inc. (2024). Autodesk Area https://area.autodesk.com/learn/courses/maya-intro/01-navigating-the-interfaceAutodesk Maya Press. (2007). The Art of Maya: An Introduction to 3D Computer (Edition 4). Autodesk Official Press. Hoboken, NJ: Sybex
3	Pluralsight LLC. (2024). Maya Rigging Fundamentals https://www.pluralsight.com/courses/maya-rigging-fundamentals
4	Williams, R. E. (July 18, 2023). The Animator's Survival Kit 4 Books Collection Set By Richard Williams (Walks, Flexibility and Weight, Dialogue Directing Acting and Animal Action & Runs Jumps and Skips) Paperback – July 18, 2023, London, United Kingdom: Faber and Faber Ltd.
5	Johnston, Ollie & Thomas, Frank. (1995). The Illusion of Life: Disney Animation. (Rev Sub edition). CA, USA: Disney Editions.
6	Whitaker, H. & Halas John (January 27, 2021). Timing for Animation, 40th Anniversary Edition 3rd Edition Boca Raton, FL, USA: CRC Press.

Additional Readings

	Title
1	Nil