

SM3122: COMPUTER PROGRAMMING FOR ANIMATORS

Effective Term

Semester A 2025/26

Part I Course Overview

Course Title

Computer Programming for Animators

Subject Code

SM - School of Creative Media

Course Number

3122

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

Nil

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

This course aims to introduce the basic programming knowledge for computer graphics and computer animation. At the end of the course, students are able to understand the advantages of using programming to facilitate the needs of a production, and be able to develop their own toolsets. The course will focus on developing tools and plug-ins for a selected commercial animation software.

The second purpose of this course is introducing the required mathematics and physics knowledge which is heavily used in modern computer animation. The topics include a basic of physics properties of light and color, the simulation of air/fluid motion, and the physical simulation of locomotion of computer controlled characters.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Apply the basic programming skills to any programming language tools	20	x	x	x
2	Write program/scripts for a selected commercial animation software to create different animation effects, which is difficult to create without using programming.	25	x	x	
3	Develop unique toolsets to facilitate the production need of individual or team-works, in order to reduce the production cost.	25	x	x	
4	Associate, combine and integrate knowledge from different disciplines (e.g. mathematics, sciences, literature etc.) into course assignments Integrate the knowledge of mathematics and physics into computer animation.	30	x	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	Programming workshops	workshops will be conducted to help students applying the fundamental principle and techniques of programming.	1	1 hr/week

2	Lectures	the theory behind how to use programming to create different animation effects will be covered in lectures.	2, 4	3hrs/week
3	Programming workshops	workshops will be conducted to help students to create their own animation effects through programming.	2, 4	1 hr/week
4	Programming workshops (in group works)	workshops will be conducted to help students to create customized toolsets to facilitate the animation production process.	3, 4	2hrs/week for 2 weeks

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("- for nil entry)	Allow Use of GenAI?
1	Short assignments on programming: students are required to finish several short programming assignments, which may not be animation-related, but demonstrate their ability to handle basic programming techniques.	1	20	-	Yes
2	Programming assignments on animation: students are required to finish several individual assignments, which demonstrate their ability to create different animation effects using programming.	2, 4	40	-	Yes

3	Group project on customized tools: students are required to finish a group project, which demonstrate their ability to create customize tools to facilitate the animation production process.	3, 4	40	-	Yes
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Continuous Assessment (%)

100

Examination (%)

0

Minimum Continuous Assessment Passing Requirement (%)

0

Minimum Examination Passing Requirement (%)

0

Assessment Rubrics (AR)**Assessment Task**

1. Programming Project/ Technical Project/ Portfolio

Criterion

Students should demonstrate ability to utilize primary and secondary sources, execute creative ideas and projects. The threshold of ‘discovery’ lies in a student’s proactively turning theory into praxis, to transform course material into self-owned authorship.

Excellent (A+, A, A-)

- Work has strong affective quality and the articulation of personal styles and signature
- Excellent appreciation, exploration and/or application of the aesthetic and expressive qualities of the medium
- Work raises questions and instill insights about the process of conception, creative strategization and production
- Innovative exploration by combining knowledge from different disciplines (e.g. mathematics, psychology, physics, anthropology, etc.) to create an inter-disciplinary project
- Efficient adjustment of plans and strategies in response to resources (time, space, equipment, etc) available with constructive adjustment

Good (B+, B, B-)

- Strong appreciation, exploration and/or application of the aesthetic and expressive qualities of the medium
- Ability to create project/ work that demonstrate the processes of thinking and creative exploration
- Proper adjustment of plans and strategies in response to resources (time, space, equipment, etc) available and constructive feedback/ suggestions

Fair (C+, C, C-)

- Basic appreciation and/or application of the aesthetic and expressive qualities of the medium
- Limited ability to create project/ work that demonstrate the processes of thinking and creative exploration
- Adjustment of plans and strategies in response to resources (time, space, equipment, etc) available

Marginal (D)

- Marginal appreciation of the aesthetic and expressive qualities of the medium
- Marginal ability to create project/ work that demonstrate the processes of thinking and creative exploration
- Limited adjustment of plans and strategies in response to resources (time, space, equipment, etc) available

Failure (F)

- No appreciation of the aesthetics and expressive qualities of the medium
- Fail to create project/ work that demonstrate the processes of thinking and creative exploration
- Minimal adjustment of plans and strategies in response to resources (time, space, equipment, etc) available

Assessment Task

2. Class Participation

Criterion

This assessment task reviews students' participation and performance in discussions, debates and peer critique during the tutorial sessions. The evidence of 'negotiation', the sign of discovery, lies in students' pre-class preparation and interpersonal sensitivity to his/her peer members.

Excellent (A+, A, A-)

- Active in-class participation, positive listening, strong ability to stimulate class discussion and comment on other points
- In-depth pre-class preparation and familiarity with peer reports and other materials
- Interpret others' views with an open mind and ready to negotiate
- Readiness to share personal insight via analysis and synthesis with informed views
- Constructively critical, thus facilitating the discovery of new issues

Good (B+, B, B-)

- Active in-class participation, positive listening, ability to initiate class discussion and comment on other points
- Adequate pre-class preparation and familiarity with peer reports and other materials
- Interpret opinions effectively

Fair (C+, C, C-)

- Attentive in in-class participation, listening with comprehension, but only infrequently contributing
- Adequate pre-class preparation but little familiarity with peer reports and other materials
- Fair ability in interpreting opinions

Marginal (D)

- Unmotivated to participate in class discussion or comment on other people's views
- Little pre-class preparation and familiarity with peer reports and other materials
- Poor ability in interpreting opinions

Failure (F)

- Unwilling to participate in class discussion and comment on other points, even when requested by the teacher
- No pre-class preparation and familiarity with peer reports and other materials
- Minimal ability in interpreting opinions

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

Computer programming and scripts, Maya MEL scripts, plug-ins development, customized toolsets

Reading List

Compulsory Readings

Title	
1	MEL Scripting for Maya Animation Wilkins, Mark R. Morgan Kaufmann, 2005.

Additional Readings

Title	
1	The Illusion of Life: Disney Animation Ollie Johnston, Frank Thomas 1995