

City University of Hong Kong

**Information on a Course
offered by School of Creative Media
with effect from Semester A in 2012 / 2013**

Part I

Course Title: Procedural Animation

Course Code: SM5320

Course Duration: One semester (13 weeks)

No. of Credit Units: 3 units

Level: P5

Medium of Instruction: English

Prerequisites: NIL

Precursors: NIL

Equivalent Courses: NIL

Exclusive Courses: NIL

Part II

1. Course Aims:

This course aims to introduce the idea of procedural animation. Procedural Animation focuses on simulation methods of animating. Natural phenomena like clouds, waves, crowd behavior, trees blowing in the wind, and the physics of moving masses in space are nearly impossible to animate unless you use computing power in a bottom up procedural approach. Students will practice the theory by using some selected programming tools or software package.

2. Course Intended Learning Outcomes (CILOs)

Upon successful completion of this course, students should be able to:

No.	CILOs	Weighting (if applicable)
1.	Analyze existing procedural animations, and identify the mathematics and theory behind those works	40%
2.	Identify the potentials and limitations of procedural animation	20%
3.	Create different procedural animation effects through selected software tools with personal style and signature.	20%
*4	Associate, combine and integrate knowledge from different disciplines (e.g. mathematics, sciences, literature etc.) into course assignments Integrate the knowledge of mathematics (Turtle Geometry, L-System, Cellular Automate) and knowledge of physics (Rigid Body Dynamics) into creating computation-driven animation with good aesthetic result.	20%

*Negotiated Learning Outcome (NLO) explicitly articulating the elements of Discovery oriented learning.

3. Teaching and Learning Activities (TLAs)

(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)

ILO No	TLAs
CILO 1,4	Lectures: the theory, and some mathematics behind procedural animation, will be covered during the lectures. In-class discussions will be conducted to allow students to have hands-on practice in analyzing.
CILO 2,4	Tutorials: on some selected weeks, tutorials will be given to show the students the potentials and limitations of procedural animation. Case-studies approach will mainly be employed. Students will have hands-on practice in selected procedural animation software.
CILO 3,4	Workshops: workshops will be given every week to help the students to create procedural animation using selected tools.

4. Assessment Tasks/Activities

(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

Type of assessment tasks/activities	Weighting (if applicable)	ILO No	Remarks
Short assignments: short assignments will be given to test the students' ability in analyzing and identifying the theory of procedural animation.	40%	CILO 1	
In-class discussion: during the tutorials, students are required to present their understanding on the potentials and limitations of procedural animation.	20%	CILO 2,4	
Assignments: students are required to work on	40%	CILO 3,4	

several individual assignments, which can demonstrate their ability to create procedural animation using selected tools.			
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5. Grading of Student Achievement:

Refer to Grading of Courses in the Academic Regulations for Taught Postgraduate Degrees.

100% coursework and in-class participation

Grading pattern: Standard (A+AA-...F)

Grading is based on performance in assessment tasks / activities.

1. Animation Assignment

Students should demonstrate ability to utilize primary and secondary sources, execute creative ideas and projects.

Letter Grade	Grade Point	Grade Definitions	Description
A+ A A-	4.3 4.0 3.7	Excellent	<ul style="list-style-type: none"> – 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
B+ B B-	3.3 3.0 2.7	Good	<ul style="list-style-type: none"> – 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
C+ C	2.3 2.0	Adequate	<ul style="list-style-type: none"> – Basic appreciation and/or application of the aesthetic and expressive qualities of the medium

C-	1.7		<ul style="list-style-type: none"> – 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
D	1.0	Marginal	<ul style="list-style-type: none"> – 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
F	0.0	Failure	<ul style="list-style-type: none"> – 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

Note: All A+/A/A- grade assignment should comply with the highest performance of Discovery-oriented learning.

1. In-Class Discussion

Students' participation and performance in discussions, debates and other class activities and tutorials... Students have to show their pre-class preparation.

Letter Grade	Grade Point	Grade Definitions	Description
A+	4.3	Excellent	<ul style="list-style-type: none"> – 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
A	4.0		
A-	3.7		

B+	3.3	Good	<ul style="list-style-type: none"> – 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
B	3.0		
B-	2.7		
C+	2.3	Adequate	<ul style="list-style-type: none"> – 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
C	2.0		
C-	1.7		
D	1.0	Marginal	<ul style="list-style-type: none"> – 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
F	0.0	Failure	<ul style="list-style-type: none"> – 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

Note: All A+/A/A- grade assignment should comply with the highest performance of Discovery-oriented learning.

Part III

Keyword Syllabus:

Key-framed animation and procedural animation, randomness, recursive and iteration, audio-driven animation, fractals images and geometry, noise, L-system, particles, rigid body dynamics, cellular automata, wave and oceans, behavioral animation, flocking and virtual crowds

Recommended Reading:

Text(s):

Cunningham, W. "The Magic of Houdini", Thomson Course Technology Press, 2005.
Abelson and diSessa, "Turtle Geometry", MIT Press, 1980.

Online Resources:

[http:// www.sidefx.com](http://www.sidefx.com)