

**City University of Hong Kong  
Course Syllabus**

**offered by School of Creative Media  
with effect from Semester A 2017 /18**

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**Part I Course Overview**

**Course Title:** 2D Game Production

**Course Code:** SM2603

**Course Duration:** One semester

**Credit Units:** 3

**Level:** B2

**Proposed Area:**  
*(for GE courses only)*

Arts and Humanities  
 Study of Societies, Social and Business Organisations  
 Science and Technology

**Medium of Instruction:** English

**Medium of Assessment:** English

**Prerequisites:**  
*(Course Code and Title)* Nil

**Precursors:**  
*(Course Code and Title)* Nil

**Equivalent Courses:**  
*(Course Code and Title)* Nil

**Exclusive Courses:**  
*(Course Code and Title)* Nil

## Part II Course Details

### 1. Abstract

(A 150-word description about the course)

This course aims to help students acquire skills for design and development of interactive and multimedia entertainment (mainly focus on game); broaden their experience and knowledge on the concepts and technologies on interactive and multimedia technologies; provided students with hands-on experience on developing programs for interactive and multimedia entertainment.

### 2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs <sup>#</sup>	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Acquire object oriented programming knowledge for game development			✓	
2.	Acquire general knowledge of 2D game program development			✓	
3.	Design a simple 2D game		✓	✓	
4.	Implement and play-test a 2D game using C++		✓	✓	✓
5. <sup>^</sup>	Assign or link up extra self-initiated tasks on top of an assignment / coursework for further exploration of the subject		✓	✓	✓
6. <sup>^</sup>	Associate, combine and integrate knowledge from different disciplines (e.g. mathematics, sciences, physics etc.) into course assignments		✓	✓	✓
		100%			

\* If weighting is assigned to CILOs, they should add up to 100%.

<sup>#</sup> Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

<sup>^</sup> Negotiated Learning Outcome (NLO) explicitly articulating the elements of Discovery oriented learning.

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 self-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.

**3. Teaching and Learning Activities (TLAs)**  
*(TLAs designed to facilitate students' achievement of the CILOs.)*

TLA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4	5	6	
Lecture	Lecture with interactivity	✓						
Lecture / Tutorial / Assignment	Lecture with interactivity Tutorial with case study, laboratory exercises and assignments		✓			✓	✓	
Assignment / Project	Design a simple 2D game; write a simple game design document.			✓	✓	✓	✓	
Assignment / Project	2D games case study; Implement and play-test a 2D game using C++				✓	✓	✓	

**4. Assessment Tasks/Activities (ATs)**  
*(ATs are designed to assess how well the students achieve the CILOs.)*

Assessment Tasks/Activities	CILO No.						Weighting*	Remarks
	1	2	3	4	5	6		
Continuous Assessment: 100%								
Coursework / Programming Assignment	✓	✓					20%	
Project	✓	✓	✓	✓	✓	✓	60%	
Test	✓	✓					20%	
Examination: 0% (duration: _____, if applicable)								
							100%	

\* The weightings should add up to 100%.

## 5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Coursework, Project	Students should demonstrate ability to utilize primary and secondary sources, build up argument and analysis. The threshold of 'discovery' lied in a student's self initiatives to conduct additional research and to personalize theories for her/his personal daily experience.	<ul style="list-style-type: none"> <li>- Excellent grasp of research material, able to explain key concepts, assumptions and debates</li> <li>- Rigorous organization, coherent structure, distinct thesis, properly argued with strong narrative</li> <li>- Insightful interpretation of the subject matter with distinct themes and thesis</li> <li>- Critical analysis with insightful</li> </ul>	<ul style="list-style-type: none"> <li>- Firm grasp of materials, able to explain key concepts and assumptions</li> <li>- Reasonable organization, balanced structure, adequate content, sufficient ability to integrate various resources based on demand</li> <li>- Clear ideas which keep to the point, clear-cut subject, ability to interpret opinions</li> </ul>	<ul style="list-style-type: none"> <li>- Comprehensive grasp of materials, able to explain key concepts</li> <li>- Fair organization, weak structure, adequate content, fair ability to integrate various resources based on demand</li> <li>- Relevant points to the subject matter, fair ability to interpret opinions</li> <li>- Unorganized bibliography which can be utilized in accordance with the topic</li> </ul>	<ul style="list-style-type: none"> <li>- Loose grasp of materials, cannot explain key concepts</li> <li>- Poor organization and structure, weak content, limited use of resources</li> <li>- Relevant points to the subject matter, marginal ability to interpret opinions</li> <li>- Insufficient and/or unorganized bibliography</li> </ul>	<ul style="list-style-type: none"> <li>- Poor grasp of materials</li> <li>- No organization and structure, inadequate content, no/irrelevant use of resources</li> <li>- Irrelevant points to the subject matter, minimal ability to interpret opinions</li> <li>- Irrelevant bibliography</li> </ul>

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
		<ul style="list-style-type: none"> <li>comments</li> <li>opening up new issues, or suggesting the ability to theorize</li> <li>– Ability to approach a text or a theme using a variety of theories and analytical tools</li> <li>– Strong bibliography suggesting breadth and depth of coverage and informed insights</li> </ul>	<ul style="list-style-type: none"> <li>independently</li> <li>– Organized bibliography which can be utilized in accordance with the topic</li> </ul>			
2. Computer Programming Assignments	Students should demonstrate ability to design and code a program according to instructions.	<ul style="list-style-type: none"> <li>• The program runs and completes all required tasks; handles special cases accordingly; executes without</li> </ul>	<ul style="list-style-type: none"> <li>• The program runs and completes most tasks appropriately; fails to work for special</li> </ul>	<ul style="list-style-type: none"> <li>• The program runs and completes a few tasks; fails to work for special cases; gives incorrect</li> </ul>	<ul style="list-style-type: none"> <li>• The program fails to execute due to errors</li> <li>• Lack most input and output descriptions</li> <li>• Poor use of variable /</li> </ul>	<ul style="list-style-type: none"> <li>• The program fails to execute due to errors</li> <li>• Lack all input and output descriptions</li> <li>• Poor use of variable</li> </ul>

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
		<p>errors</p> <ul style="list-style-type: none"> <li>• Includes all appropriate input prompts and explains/ describes all output values</li> <li>• Variables and methods are named appropriately and used efficiently</li> <li>• Appropriate tabbing; good use of white space</li> <li>• Well-organized and easy to follow</li> <li>• Excellent inline code comments and documentation</li> </ul>	<p>cases; executes with a few errors</p> <ul style="list-style-type: none"> <li>• Some input or output prompts / descriptions are inappropriate</li> <li>• Variables and methods are named and used appropriately</li> <li>• Appropriate tabbing; use of white space</li> <li>• Fairly organized but easy to follow</li> <li>• Contains required heading with program description; effective use of comments</li> </ul>	<p>results for most input</p> <ul style="list-style-type: none"> <li>• Some input or output prompts / descriptions are missing</li> <li>• The use of some variables and method names are inappropriate / over-used / under-used and some methods are used inefficiently</li> <li>• Inappropriate use of tabbing / white space</li> <li>• Poorly organized but still readable</li> <li>• Contains required heading; appropriate use of</li> </ul>	<p>method name; variables / methods are used inappropriately</p> <ul style="list-style-type: none"> <li>• Inappropriate use of tabbing and white space</li> <li>• Poorly organized; difficult to read</li> <li>• Appropriate heading; ineffective use of comments</li> </ul>	<p>and method name; variables and methods are used inappropriately</p> <ul style="list-style-type: none"> <li>• Poor use of tabbing and white space</li> <li>• Not organized; not readable</li> <li>• Missing heading; no comment included</li> </ul>

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
				comments		

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

### Part III Other Information (more details can be provided separately in the teaching plan)

#### 1. Keyword Syllabus

(An indication of the key topics of the course.)

*Interactive Multimedia Industry; Essentials of Software Development; Graphics Programming Using SDL; User Interaction Control Using SDL; Embedding Audio Using SDL Audio; Physics Simulation and Artificial Intelligence; Collision Detection / Resoluton.*

#### 2. Reading List

##### 2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	葉勁峰, 張承廣, 吳家維, <i>DirectX9 遊戲開發實務</i> , 旗標出版社, 2003.
2.	Andrew Rollings, Dave Morris, <i>Game Architecture and Design: A New Edition</i> , New Riders Publishing, 2003.
3.	Ernest Pazera, <i>Focus on SDL</i> , Premier Press, 2003.
4.	Jonathan S. Harbour, <i>Advanced 2D Game Development</i> . Course Technology PTR, 2008.
5.	Ian Millington, <i>Game Physics Engine Development: How to build a robust commercial-grade physics engine for your game</i> . Morgan Kaufmann, 2010.
6.	Brandon Trebitowski, Christopher Allen, Shannon Appelcline, <i>iPhone and iPad in action: introduction to SDK development</i> . Manning Publications, 2010.
7.	Fletcher Dunn and Ian Parberry, <i>3D Math Primer for graphics and game development</i> . A K Peters / CRC Press, 2011.
8.	Michelle Menard, <i>Game Development with Unity</i> . Course Technology PTR, 2011.
9.	Mircosoft DirectX Developer Center: <a href="http://msdn.microsoft.com/directx/">http://msdn.microsoft.com/directx/</a>
10.	Simple DirectMedia Layer: <a href="http://www.libsdl.org/index.php">http://www.libsdl.org/index.php</a>
11.	Pygame: <a href="http://www.pygame.org">http://www.pygame.org</a>
12.	Unity Game Engine: <a href="http://unity3d.com">http://unity3d.com</a>

##### 2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	Jazon Yamamoto, <i>The Black Art of Multiplatform Game Programming</i> . Cengage Learning PTR, 2015.
2.	Robert Nystrom, <i>Game Programming Patterns</i> . Genever Benning, 2014.
3.	Shaun Mitchell, <i>SDL Game Development</i> . PACKT Publishing, 2013.