MULTIMEDIA UNIVERSITY

SUMMARY OF INFORMATION ON EACH COURSE/MODULE

1.	Name of Course/Module/Subject	3D Game Programming
2.	Course /Subject Code	TGD3251
3.	Status of Subject	Specialization Core for BCS (GD)
4.	MQF Level/Stage Note : *Certificate – MQF Level 3* *Diploma – MQF Level 4* *Bachelor – MQF Level 6* *Masters – MQF Level 7* *Doctoral – MQF Level 8*	*Bachelor – MQF Level 6*
5.	Version (state the date of the last Senate approval)	June 2014
6.	Pre-Requisite/Requirement for Registration	TGD2151 Computer Graphics Fundamental
7.	Name(s) of academic/teaching staff	Ku Day Chyi Wong Ya Ping
8.	Semester and Year offered	Trimester 1 (delta)
9.	Objective of the course/module/subject in the programme : To equip students with 3D game programming and development within the PC/Windows environment.	
10.	Justification for including the subject in the program : To provide student with the skills and techniques to develop 3D games using appropriate tools.	

11.	Subject Learning Outcomes :	Domain	Level
	LO1: Describe the 3D games pipeline and technologies.	Cognitive	2
	LO2: Employ games programming principles and algorithms using industrial-strength software development kit.	Cognitive	3
	LO3: Perform the integration of major games components.	Cognitive	3
	LO4: Design framework and architecture for specialized games.	Cognitive	6

12. Mapping of Learning Outcomes to Programme Outcomes :

Learning Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
LO1							X		
LO2							X	X	X
LO3							X	X	X
LO4							X	X	X

13. Assessment Methods and Types :

	Method and Type	Description/Details	Percentage
	Quizzes	Based on theoretical knowledge	10%
	Assignments	Assignment 1 - 3D Graphics Programming. Assignment 2 - Game Interactivity and Games Audio Programming	40%
	Project	Development of a complete 3D game	50%

14. Details of Subject

Topics	Mode of Delivery (eg : Lecture, Tutorial, Workshop, Seminar, etc.) Indicate allocation of SLT (lecture, tutorial, lab) for each subtopic		
	Lecture (Hrs)	Lab (Hrs)	Tutorial (Hrs)
1. Windows Programming General Windows programming.Multithreading. Critical sessions. Modular programming.	2	-	-
2. Introduction to DirectX Architecture of DirectX. The rendering pipeline of DirectX. The coordinate systems and transformation matrices. Vertex formats and vertex buffers. Basic polygon rendering. Double buffering.	4	4	-
3. Fundamental Graphics Programming Techniques for Games Game architecture, real-time loops, world rendering, vertex color, material, alpha blending, fonts, sprites and billboarding. Multilayer-rendering. Clipping and culling. Occlusion testing. Rasterization.	4	4	-
4. 3D Graphics Programming Texturing: bump mapping, multitexture, mipmapping, filtering. 3D lighting and light maps. Materials for lighting. Depth sorting: Z-buffering. Generic particle systems: emitters, life-cycle, behavior and speed-up techniques. ROAM and LOD for terrain rendering, meshes and X files for player rendering. Camera styles and setup. Multiple viewports.	8	8	-
5. Interactive Games Using DirectInput with the keyboard and mouse. Implementing the player and blocks. Handling lost devices. Designing a UI screen. Implementing the level objects.	4	4	-
6. Games Audio Programming Sound basics, sound buffers, streaming, 3D audio, WAV data, capturing waveforms.	2	2	-

	7. Performance Tuning General optimization techniques. Games Profiling. Games logic. High-level Shader Language.	4	4	-
		28	26	-

15.	Total Student Learning Time (SLT)	Face to Face	Independent Learning
	Lecture	28	28
	Laboratory	26	26
	Quizzes	-	4
	Presentation	1	3
	Assignments		24
	Project		20
	Final Exam		
	Sub Total	55	105
	Total SLT	160	
16.	Credit Value	4 (160 / 40 = 4)	
17.	Reading Materials :		

Textbook	Reference Materials
	Beginning DirectX 9 (Game Development Series), Wendy Jones, Course Technology PTR, 2004. Beginning 3D Game Programming, Tom Miller, Sams, 2004 Core Techniques and Algorithms in Game Programming, Daniel Sanchez-Crespo Dalmau, New Riders Games, 2003 Patterns in Game Design (Game Development Series), Staffan Bjork, Jussi Holopainen, Charles River Media, 2004

18. Appendix (to be compiled when submitting the complete syllabus for the programme) :

1. Mission and Vision of the University and Faculty
2. Programme Objectives or Programme Educational Objectives
3. Programme Outcomes (POs)
4. Mapping of POs to the 8 MQF domain
5. Mapping of Los to the POs
6. Summary of the Bloom's Taxonomy's Domain Coverage in all the Los in the format below :

Subject	Learning Outcomes (please state the learning Outcomes)	Bloom's Taxonomy Domain		
		Affective	Cognitive	Psychomotor

7. Summary of LO to PO measurement
8. Measurement and Tabulation of result for LO achievement
9. Measurement Tabulation of result for PO achievement

Mapping Learning Outcome to Assessment

No.	Assessment	LO1	LO2	LO3	LO4
A1	Quizzes (10%)	X			
A2	Assignments (40%)		X	X	X
A3	Project (50%)		X	X	X