

MODULE DESCRIPTOR

Module Title

Graphics Development

Reference	CM3116	Version	1
Created	April 2017	SCQF Level	SCQF 9
Approved	August 2017	SCQF Points	15
Amended		ECTS Points	7.5

Aims of Module

To provide the student with the ability to evaluate and apply the principles and techniques of modelling and rendering used in 3D graphics.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Explain and analyse techniques used for designing and managing computer graphic scenes.
- 2 Evaluate and assess algorithms underlying principles of 3D graphics.
- 3 Design and implement interactive programs for modelling and transforming 2D and 3D objects in 3D Space.
- 4 Describe and evaluate techniques for modelling and transforming objects in 2D and 3D space.
- 5 Describe and evaluate techniques for shading, texturing and global illumination.

Indicative Module Content

The module will focus on developing competence in Graphics Applications and Environments. Underlying graphics theory and principles will be covered in-depth. These include 3D geometry, rendering pipeline, 3D transformations, shading, illumination, lighting, materials and interaction. Students will develop practical experience with graphics applications using appropriate programming and scripting tools.

Module Delivery

Key concepts are introduced and illustrated through lectures. The understanding of students is tested and further enhanced through interactive in lab tutorials. In the laboratories the students will progress through a sequence of exercises to develop sufficient knowledge of 3D Graphics to enable them to complete the design and implementation of a 3D world.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	48	N/A
Non-Contact Hours	102	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4, 5
Description:	Graphics development assignment assessing the modules learning outcomes.				

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

Graphics development assignment assessing the modules learning outcomes. The minimum grade required to pass the module is D.

Module Grade	Minimum Requirements to achieve Module Grade:
A	The student needs to achieve an A in C1.
B	The student needs to achieve a B in C1.
C	The student needs to achieve a C in C1.
D	The student needs to achieve a D in C1.
E	The student needs to achieve an E in C1.
F	The student needs to achieve an F in C1.
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	CM3115 C++ Graphics or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 OpenGL SuperBible: Comprehensive Tutorial and Reference 7th Edition, by Graham Sellers, Richard S. Wright, Jr, Nicholas Haemel; July 2015.
- 2 OpenGL Programming Guide: The Official Guide to Learning OpenGL, Eighth Edition, Version 4.3, by Dave Shreiner, Graham Sellers, John Kessenich, Bill Licea-kane; May 2013.
- 3 Computer Graphics Through OpenGL: From Theory to Experiments, Second Edition Hardcover - 28 July 2014, by Sumanta Guha (Author).
- 4 Advanced Methods in Computer Graphics - with examples in OpenGL, by Ramakrishnan Mukundan. Springer; April 2014.
- 5 Fundamentals of Computer Graphics, by Peter Shirley, Steve Marschner; December 2015.
- 6 Digital Representations of the Real World - How to capture, model and render visual reality. By Marcus A. Magnor etc. CRC Press; May 2015.
- 7 Principles of Computer Graphics: Theory and Practice Using OpenGL and Maya? Hardcover - 15 June 2005, by Shalini Govil-Pai.