

Module Title 3D Graphics Development Keywords 3D Graphics, OpenGL	Reference CM3030 SCQF Level SCQF 9 SCQF Points 15 ECTS Points 7.5 Created March 2006 Approved May 2006 Amended September 2012 Version No. 3
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This Version is No Longer Current

The latest version of this module is available [here](#)

Prerequisites for Module

None.

Using OpenGL to create interactive 3D models.

Corequisite Modules

The student should be familiar with the fundamentals of C++ through attendance at module CM3037 or equivalent.

Indicative Student Workload

<i>Contact Hours</i>	Full Time
Assessment	13
Laboratories	12
Lectures/tutorials	11

Precluded Modules

None.

Directed Study

Coursework	25
Preparation	
Directed study	39

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.

To provide the student with the ability to build interactive 3D graphics applications using OpenGL.

Private Study

Private study	50
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Mode of Delivery

Key concepts are introduced and illustrated through lectures. The understanding of students is tested and further enhanced through interactive tutorials. In the

Learning Outcomes for Module

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

1. Evaluate and assess algorithms for the rasterisation of 2D graphics primitives.
2. Describe and evaluate techniques for modelling and transforming objects.
3. Describe and evaluate techniques for shading, texturing and global illumination.
4. Design and implement an interactive C++/OpenGL program modelling and transforming 2D and 3D objects in a 3D world.
5. Design and implement C++/OpenGL methods for lighting and texturing objects.

Indicative Module Content

Rasterisation.
3D modelling: surface and solid modelling, geometric transformations, perspective and orthographic projections, scene graphs.

Shading and local illumination models.

Global illumination and ray tracing.

laboratories the students will progress through a sequence of exercises to develop sufficient knowledge of OpenGL to enable them to complete the design and implementation of a 3D world.

Assessment Plan

	Learning Outcomes Assessed
Component 1	1,2,3
Component 2	4,5

Component 1 - This is a closed book examination

Component 2 - Coursework

Indicative Bibliography

1. HUGHES, JF., et al., 2013. Computer Graphics: Principles and Practice. Addison Wesley. 3rd ed.
2. SHREINER, D., 2009. OpenGL Programming Guide: The Official Guide to Learning OpenGL, Versions 3.0 and 3.1. Addison Wesley. 7th edition.

