<table>
<thead>
<tr>
<th><strong>Module Code</strong></th>
<th>CS7GV6</th>
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<tbody>
<tr>
<td><strong>Module Name</strong></td>
<td>Computer Graphics</td>
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<tr>
<td><strong>ECTS weighting</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Term</strong></td>
<td>MT</td>
</tr>
<tr>
<td><strong>Contact Hours</strong></td>
<td>2 lecture hours per week</td>
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<tr>
<td><strong>Module Personnel</strong></td>
<td>Professor Carol O’Sullivan</td>
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**Learning Outcomes**

On successful completion of this module, students will be able to:

- GV6LO1 write graphical programs, using OpenGL or a similar graphics API, of moderate complexity;
- GV6LO2 select an object or scene representation, create a model using modelling software, and export this model for use in an interactive application;
- GV6LO3 discriminate between the different rendering choices for displaying objects, such as global or local illumination algorithms, and select the correct solution for the application area;
- GV6LO4 derive and solve the mathematical formulations that underpin the practical aspects of creating, animating and rendering objects and scenes;
- GV6LO5 critically appraise current computer graphics topics.

**Module Learning Aims**

The objective of this module is to equip students with the fundamental understanding of the major elements of Computer Graphics and explore related areas including geometric modelling, rendering and animation.

**Module Content**

Specific topics addressed in this module include:

- An introduction to computer graphics; problem domain and applications;
- Modelling - data sources and acquisition; modelling software; representation schemes;
- Linear algebra - two and three dimensional transforms; geometric operations; hierarchical 3D transformations;
- The computer graphics pipeline and the OpenGL API for 3D computer graphics;
- Projection and viewing; window to viewport transformation;
- Illumination models and rendering algorithms; colour, shading algorithms (Gouraud and Phong), local and global illumination;

**Recommended Reading List**


Student are also encouraged to use appropriate texts and reference documentation such as


**Assessment Details**

Coursework: 20%
Exam: 80%

Coursework consists of individual exercises developing a real-time, interactive application that involves navigating and manipulating a 3D environment.