<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>
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<tr>
<td><strong>Term</strong></td>
<td>MT</td>
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<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>Assistant Professor Rachel McDonnell</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 *Introduction to Computer Graphics*, Foley, Van Dam, Feiner, Hughes and Phillips

### 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.