Module Code | CS7GV6
---|---
Module Name | Computer Graphics
ECTS Weighting | 5 ECTS
Semester taught | Semester 1
Module Coordinator/s | Assistant Professor Michael Manzke

**Module Learning Outcomes**

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

- **LO1.** write graphical programs, using OpenGL or a similar graphics API, of moderate complexity; Second learning outcome
- **LO2.** select an object or scene representation, create a model using modelling software, and export this model for use in an interactive application;
- **LO3.** 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;
- **LO4.** derive and solve the mathematical formulations that underpin the practical aspects of creating, animating and rendering objects and scenes;
- **LO5.** critically appraise current computer graphics topics.

**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
- Linear algebra - two and three dimensional transforms; geometric operations transformations;
- The computer graphics pipeline and the OpenGL API for 3D computer graph
- Projection and viewing; window to viewport transformation;
- Illumination models and rendering algorithms; colour, shading algorithms (Gouraud and Phong), local and global illumination;

**Teaching and Learning Methods**

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.

**Assessment Details**

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Brief Description</th>
<th>Learning Outcomes Addressed</th>
<th>% of total</th>
<th>Week set</th>
<th>Week due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coursework</td>
<td>Labs</td>
<td>LO1, LO2, LO3, LO4, LO5</td>
<td>40%</td>
<td>1</td>
<td>6</td>
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<tr>
<td>Coursework</td>
<td>Project</td>
<td>LO1, LO2, LO3, LO4, LO5</td>
<td>20%</td>
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<td>8</td>
</tr>
</tbody>
</table>

1. [TEP Glossary](#)
2. [TEP Guidelines on Workload and Assessment](#)
### Contact Hours and Indicative Student Workload

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Hours (scheduled hours per student over full module), broken down by:</td>
<td></td>
</tr>
<tr>
<td>lecture</td>
<td>11</td>
</tr>
<tr>
<td>laboratory</td>
<td>11</td>
</tr>
<tr>
<td>tutorial or seminar</td>
<td>0</td>
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<tr>
<td>other</td>
<td>0</td>
</tr>
<tr>
<td>Independent study (outside scheduled contact hours), broken down by:</td>
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</tr>
<tr>
<td>preparation for classes and review of material (including preparation for examination, if applicable)</td>
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<tr>
<td>completion of assessments (including examination, if applicable)</td>
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<tr>
<td>Total Hours</td>
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</table>

### 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
  
  

### Module Pre-requisites

- C++

### Module Website

- Blackboard

### Last Update

- DD/MM/YYYY by Your Name