### COURSE DETAILS

**Course Code:** F21GA  
**Full Course Title:** 3D Graphics and Animation  
**SCQF Level:** 11  
**SCAF Credits:** 15  
**Available as Elective:** No

### DELIVERY LEVEL

<table>
<thead>
<tr>
<th>Undergraduate:</th>
<th>No</th>
<th>Postgraduate Taught:</th>
<th>Yes</th>
<th>Postgraduate Research:</th>
<th>No</th>
</tr>
</thead>
</table>

**Additional Information:**

### COURSE AIMS

Investigate Computer Graphics theory and develop programming skills in 2D/3D Graphics and Animation.

### LEARNING OUTCOMES – SUBJECT MASTERY

- Ability to critically compare and contrast core 3D elements and structures.  
- Critical interpretation of scene graphs, hierarchical models, and spaces.  
- Critical evaluation of transformations, modelling, and projection concepts.  
- Critique different material, lighting and shadowing models.  
- Interpret and implement animation concepts and systems.  
- Ability to design, implement and justify a small-scale rendering and animation system.

### LEARNING OUTCOMES – PERSONAL ABILITIES

- Ability to think, plan, and construct in three dimensions.  
- Ability to plan, design and implement a rendering and animation system.  
- Skills integrating graphics and animation in various industries.

- Representation of, planning for, and solution of problems

### SYLLABUS

- Vertices, triangles, meshes, display lists and models.  
- Hierarchical modelling and scene graphs understanding and representation.  
- 2D and 3D transformations, homogeneous co-ordinates, matrices multiplication.  
- Model, world, camera, scene and projection spaces.  
- Instancing and tessellation.  
- Materials, texture mapping and shading.  
- Lighting and global illumination models.  
- Shadows, occlusions and reflections.
F21GA 3D Graphics and Animation

- Real-time and offline rendering pipelines.
- Basics of procedural and physical animations.
- Animation systems and concepts.
- Animation skeletons, poses, clips, skinning and blending.
- Tools, environments, coding practices and industrial applications.
- Course summary and review.

COURSE RELATIONSHIPS

N/A

LOCATION AND ASSESSMENT METHODS

<table>
<thead>
<tr>
<th>Edi</th>
<th>SBC</th>
<th>Ork</th>
<th>Dub</th>
<th>Malay</th>
<th>IDL</th>
<th>COLL</th>
<th>ALP</th>
<th>OTH</th>
<th>Method</th>
<th>Weight</th>
<th>Exam Mins</th>
<th>Type</th>
<th>Diet</th>
<th>Synoptic Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Coursework</td>
<td>100</td>
<td>Assessment</td>
<td>Semester 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Part of the coursework-based assessment of the course is a class-test on the fundamental concepts of 3D Graphics and Animation, this class-test contributes 40% to the overall mark.

| Y   | Y   |     |     |       |     |      |     |     | Coursework | 100    | Reassessment | Semester 3   |       |                 |