F21GA 3D Graphics and Animation

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

DELIVERY LEVEL
Undergraduate: No
Postgraduate Taught: Yes
Postgraduate Research: No

Additional Information:

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

LEARNING OUTCOMES – SUBJECT MASTERY
• Critical evaluation of Computer Graphics concepts.
• 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.

### LOCATION AND ASSESSMENT METHODS

<table>
<thead>
<tr>
<th>Edl</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></td>
<td>Assessment</td>
<td></td>
<td>Semester 1</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       |