**Unit 66/67/68 Assignment – Displaying 3D polygon animations**

**Learning Outcomes for Unit 66/67/68:**

**P1** Summarise accurately theory and applications of 3D with some appropriate use of subject terminology.

**M1** Explain theory and applications of 3D with reference to detailed illustrative examples and with generally correct use of subject terminology.

**D1** Comprehensively explain theory and applications of 3D with elucidated examples and consistently using subject terminology correctly.

**ASSIGNMENT DEADLINE: 29thnd Oct 2018**

**Student Name:**

**Checklist (Compulsory)**

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| **Date** | **Criteria check list** | **Outcome achieved**  **Yes/ No** | **Any actions to be carried forward** | **Learner & Staff**  **initial** |
|  | Discuss **Applications of 3D** including: models, environments, product design, animations, TV, film, web, games, education, architectural walk-through |  |  |  |
|  | Use real world examples in your discussion of **Applications of 3D** |  |  |  |
|  | Discuss **Displaying 3D polygon animations.** See my PowerPoint on this topic for further guidance.  **API:** Application Programming Interface, eg Direct3D, OpenGL;  **Graphics pipeline** – The steps used to create a 2D raster(Vector to Pixels) representation of a 3D scene.  **Rendering techniques** (radiosity for games, ray tracing for still images, film & TV);  **Rendering engines**; e.g V-Ray, Arnold. What’s the differences/benefits?  **Distributed**(parallel) rendering techniques; Concurrency. Benefits?  **Also consider:** textures & shaders; lighting(Local & Global); fogging(Also known as distance fog – Fogging is an old 90’s/00’s technique of using a fog effect for distant objects so it reduces the strain on hardware.) ; shadows (shadow mapping); level of detail |  |  |  |
|  | Discuss **Geometric theory** including: vertices; lines; curves; edge; polygons; element; face; primitives; meshes, eg wireframe; coordinate geometry (two-dimensional, three-dimensional); surfaces |  |  |  |
|  | Use examples and pictures in your discussion of **Geometric theory** |  |  |  |
|  | **Mesh construction**: box modelling; extrusion modelling; using common primitives, eg cubes, pyramids, cylinders, spheres. |  |  |  |
|  | Use examples and pictures in your discussion of **Mesh construction** |  |  |  |
|  | Discuss **3D development software**:  Include software, eg 3D Studio Max, Maya, Lightwave, AutoCAD, Cinema 4D, Blender, Mudbox;  Include file formats, eg 3ds, .mb, .lwo, .C4d, .dxf, .obj; plug-ins |  |  |  |
|  | As part of your **3D development software** discussion which file formats are used by which software. Match the software and file formats. Are any used across all software? |  |  |  |
|  | Discuss the **Constraints** to consider when creating 3D models, animations or environments including polygon count; file size; rendering time. See my PowerPoint on constraints if unsure. |  |  |  |

**Merit Criteria**

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| **Date** | **Game check list** | **Outcome achieved**  **Yes/ No** | **Any actions to be carried forward** | **Learner & Staff**  **initial** |
|  | **Use at least one detailed case study** (Focus on a company or person who creates 3D models) with your discussion Applications of 3D. |  |  |  |
|  | **Explained clearly, using generally appropriate subject terminology**. For this grade the evidence will include detailed illustrative examples. You will use technical vocabulary for the most part correctly, but may make mistakes or be unsure about usage at times. |  |  |  |
|  | **Use technical vocabulary** for the most part correctly, some mistakes or unsure usage is ok for Merit criteria. PROOF READ YOUR WORK. |  |  |  |

**Distinction Criteria**

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| **Date** | **Game check list** | **Outcome achieved**  **Yes/ No** | **Any actions to be carried forward** | **Learner & Staff**  **initial** |
|  | **Explain fully and clearly** the use of 3D within the interactive media industry and the ways in which 3D graphics are displayed, including consideration of geometric theory and mesh construction, using explicit examples of particular 3D objects to provide a clear explanation of the points being made. |  |  |  |
|  | You will **justify points** made using **supporting arguments or evidence** and draw out of an example precisely what it is about it that exemplifies the point it illustrates. |  |  |  |
|  | **Fuller and more extensive explanation**, the better application of **examples** and provision of **argument** to support points made will discriminate between this grade and the merit. |  |  |  |
|  | **Technical vocabulary will be secure** and used correctly and confidently at all times. PROOF READ YOUR WORK. |  |  |  |