507-602 3D GRAPHICS PRINCIPLES

Level 6 Credits 20

PURPOSE

To provide students with an introduction to the basic structural and procedural concepts used in modern computer generated 3D graphics.

LEARNING TIME

Contact hours	Self-directed	Total Hours
60	140	200

OWNING PROGRAMME

MN4331 – Bachelor of Engineering Technology

PRE-REQUISITE

141.510 Engineering Math 3

CO-REQUISITE

Nil

CONTENT

- Animation,
- Visual Effects and Technology.
- Digital Production Process.
- Modelling.
- Rendering.
- Camera. Lighting.
- Shading and Surface Characteristics.
- Retouching and Compositing.
- Image Resolution and Output.

LEARNING OUTCOMES

On the successful completion the student should be able to:

1. Demonstrate an understanding of the technology used in the production of modern computer based 3D graphics

1.1 The technology and methods used in the production of 3D graphics are described

2. Demonstrate an understanding of the modelling techniques used in modern 3D graphics

2.1 A 3D graphics object is modelled

2.2 3D graphics principles are applied to a specific engineering problem

3. Demonstrate participation in activities that develop their personal generic capabilities.

3.1 Different forms of communication have been used

3.2 A high standard of ethical behaviour was evident

3.3 Interpersonal skills were practised

3.4 Teamwork was evident through peer to peer interaction

ASSESSMENT

- The Generic capabilities are assessed formally through written work and formatively through class activities. Students are expected to behave in a professional manner at all times, to be culturally sensitive in their interactions with other people. All work submitted for marking that was performed in an uncontrolled assessment environment is accompanied with a cover sheet declaring that this is the students own work.

Each Learning Outcome will be assessed by a selection of:

- Describing the technology and methods used in the production of 3D graphics
- Writing and executing functional 3D graphics program code
- Solving a specified real-world 3D graphics engineering problem

EVIDENCE OF ACHIEVEMENT

Tests	30%
Worksheets	10%
Project	30%
Examination	30%

LEARNING AND TEACHING STRATEGIES

Lectures
Laboratory Sessions
Student Project
Videos
Live Computer Demonstrations

LEARNING AND TEACHING RESOURCES

Required text:	Kerlow, *The Art of 3-D Computer Animation and Effects*, John Wiley & Sons, 2004
Computer Software:	Visual C++

Course notes
Exemplars
Blackboard
Computer software
Library databases and the Internet

IPENZ GRADUATE ATTRIBUTES

	Graduate Attributes	Outcome
2	Knowledge of Engineering Sciences	1,2
3	Problem Analysis	1,2
4	Design/ development of solutions	2
5	Investigation	2
6	Modern Tool Usage	1,2
7	Individual and Team work	3
8	Communication	3
9	The Engineer and Society	
10	Ethics	3
11	Environment and Sustainability	
12	Project Management and Finance	
13	Life long learning	