



Course Outline (Higher Education)

School:	School of Engineering, Information Technology and Physical Sciences
Course Title:	3D MODELLING AND ANIMATION
Course ID:	ITECH2307
Credit Points:	15.00
Prerequisite(s):	(ITECH2001)
Co-requisite(s):	Nil
Exclusion(s):	(ITECH3221 and ITECH3223 and ITECH3228)
ASCED:	020115

Description of the Course:

This course provides tuition into the process of 3D modelling and animation with an emphasis on construction and animation of 3D models and characters for computer games. The use of 3D modelling software, tools and techniques is covered, along with theoretical aspects of design, lighting models, cameras, materials, particle systems, motion capture, colours and colour schemes. Applying these theoretical techniques will result in fully rendered animated scenes with complex lighting and multiple cameras focusing on the 3D models, animation and special effects.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

Program Level:

Level of course in Program	AQF Level of Program					
	5	6	7	8	9	10
Introductory						
Intermediate			✓			
Advanced						

Learning Outcomes:**Knowledge:**

- K1.** Discuss and explain the concepts and techniques used in the design and creation of 3D models, and the animation of 3D models in a scene.
- K2.** Discuss and explain the operation of graphical lighting models and camera systems.
- K3.** Select appropriate materials, colours and colour schemes for a scene based on established theory to provide a desired effect.
- K4.** Explain the process of simulating various real-world effects using particle systems.
- K5.** Discuss the features available in a commercial 3D modelling package.

Skills:

- S1.** Construct 3D models from a collection of geometric primitives.
- S2.** Research, identify and implement resources in the creation of a computer generated 3D environment.
- S3.** Manipulate and produce materials for 3D models.
- S4.** Construct, manipulate and animate bipeds, cameras and particle systems.

Application of knowledge and skills:

- A1.** Choose appropriate tools and techniques to design 3D models, including their geometry, materials and lighting that meet project requirements.
- A2.** Operate commercial 3D software packages to construct and animate 3D models (and their mapped materials), particle systems, lights and cameras in an animated sequence.

Course Content:

This course discusses the technology, design concepts, cultural effects and implications involved in computer games. The course will focus on putting theory into practice, requiring students to design and develop an animated 3D scene. Theoretical aspects will be covered to an extent that is appropriate for the aims of the course. Design issues and concepts relating to computer games assets will be explored and students will be encouraged to experiment and develop their skills. The cultural effects and implications of computer games will be explored. The tools used for asset and level creation for an existing computer game introduced, with a focus on the 3D models, their animation, lighting and camera techniques.

Topics may include:

- Principles of 3D space & 3D modelling;
- Camera angles and positioning;
- Lighting and shading;
- Modelling techniques;
- Colours and colour schemes;

- Materials, mapping and surface properties;
- Animating objects and cameras;
- Rigging 3D Models
- Animating particle systems;
- Cultural impact of computer games;
- Rendering techniques.

Values:

V1. Recognise the cultural effect and implications of 3D modelling for computer games.

Graduate Attributes

The Federation University FedUni graduate attributes (GA) are entrenched in the [Higher Education Graduate Attributes Policy](#) (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor		Development and acquisition of GAs in the course	
		Learning Outcomes (KSA)	Assessment task (AT#)
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	K3, S1, S2, S3, S4, A1 and A2	1 and 2
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	S2 and A1	1
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	S1, S2, S3, S4, A1 and A2	1
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	K1, K2, K3, K4, K5, S1, S2, S3, S4, A1 and A2	1 and 2
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	K3, S1, S2, S3, S4, A1 and A2	1 and 2

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K3, S1, S2, S3, S4, A1, A2	Assignment, portfolio and presentation illustrating the research, design and construction of animated 3D models in a scene.	Assignments: Proposal, Modelling and Animated Scene	60% - 80%
K1, K2, K3, K4, K5, S2	Examinations and/or tests covering theoretical and application content aspects.	Examination(s) and/or Tests	20% - 40%

Adopted Reference Style:

APA

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)