Liverpool John Moores University

Title:	3D MODELLING, ANIMATION AND VISUAL EFFECTS
Status:	Definitive
Code:	**5047COMP** (117391)
Version Start Date:	01-08-2011
Owning School/Faculty:	Computing and Mathematical Sciences
Teaching School/Faculty:	Computing and Mathematical Sciences

Team	Leader
Stephen Tang	Y

Academic Level:	FHEQ5	**Credit Value:**	24.00	**Total Delivered Hours:**	72.00
Total Learning Hours:	240	**Private Study:**	168		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24.000
Workshop	48.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Artefacts	AS1	Individual project involving low polygon 3D modelling, visual effects production and key frame animation.	40.0	
Artefacts	AS2	Group project involving high polygon 3D character modelling with complex animation and effects.	60.0	

Aims

To develop a theoretical knowledge of the concepts and techniques required for 3D modelling and animation.
To provide an opportunity to practice the principles of 3D modelling and animation

using appropriate tools, techniques and methods.

Learning Outcomes

After completing the module the student should be able to:

1 Explain various animation and modelling techniques to generate motion and visual effects 3D animated sequences.
2 Produce a storyboard, compose, and render animation sequences.
3 Create low polygon but complex 3D objects and apply key frame animation using 3D modelling software.
4 Create high-quality 3D model and apply complex animation using appropriate techniques using 3D modelling software.
5 Use 3D Modelling and Animation software tools (for example 3DS Max, Maya or Blender) to produce motion and visual effects for an animated sequence.
6 Produce appropriate documentation of the stages and techniques applied for a given computer animation product.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Individual project	1	2	3
Group coursework	4	5	6

Outline Syllabus

Computer Animation: background and history, principles of 3D animation, computer animation software, animation techniques (flip-book, cell, object-orientated, path-based and tweened animations).
3D Production: Storyboarding, scene composition and rendering, colour sciences, colour model and image quality.
3D Modelling: 3-D coordinate systems, 3D graphics model, 3D modelling techniques constructive (solid geometry and spline), converting 2D shapes to 3D models, operations on 3D model, character and organic modelling.
3D Animation: Key-Framing /Track-based Animation, Inverse Kinematics, Forward Kinematic and Pose to pose animation.
3D effects: shading, lighting, texturing, particle systems.

Learning Activities

Formal lectures will deliver theoretical concepts while practical-based workshop sessions, which take place in the computer laboratories, will be used to introduce specific techniques and methods used in the production of 3D models and animation sequences.

References

Course Material	Book
Author	Murdock, K.L.
Publishing Year	2009
Title	3ds max 2010 Bible
Subtitle	
Edition	
Publisher	John Wiley & Sons
ISBN	0470471913

Course Material	Book
Author	Gahan, A.
Publishing Year	2008
Title	3ds Max Modeling for Games
Subtitle	Insider's Guide to Game Character, Vehicle, and Environment Modeling
Edition	
Publisher	Focal Press
ISBN	0240810619

Course Material	Book
Author	Daniele, T.
Publishing Year	2008
Title	Poly-Modeling with 3ds Max
Subtitle	Thinking Outside of the Box
Edition	
Publisher	Focal Press
ISBN	0240810929

Course Material	Book
Author	Griffin, H.
Publishing Year	2001
Title	The Animator's Guide to 2D Computer Animation
Subtitle	
Edition	
Publisher	Focal Press
ISBN	024051579X

Course Material	Book
Author	Bousquet, M.
Publishing Year	2005
Title	Model, Rig, Animate with 3DS Max 7
Subtitle	
Edition	
Publisher	New Riders

ISBN	0321321782

Course Material	Book
Author	Shirley, P., Marschner, S., Ashikhmin, M., and Gleicher, M.
Publishing Year	2009
Title	Fundamentals of Computer Graphics
Subtitle	
Edition	3rd Edition
Publisher	A K Peters
ISBN	1568814690

Notes

This course introduces techniques for computer modelling and animation using a 3D Modelling and Animation software.