

Course Code:

PELC235

Session:

2017/18

1. Course Title:

Advanced 3D Modelling

2. Date of production/revision:

15 March 2016

3. Level:

11

4. Credits:

15

5. Lead School/Board of Studies:

DDS

6. Course Contact:

Mike Marriott

7. Course Aims:

This is an advanced course in 3D modelling and animation, and as such only suitable for students with prior experience in 3D modelling.

The course will provide an overview of a range of means by which real-world objects and environments can be captured in 3D providing practical experience. In advanced 3D modelling from data acquired by Photogrammetry, Laser Scanning and published resources.

The main focus of the course is on working from the data after acquisition, with emphasis on advanced techniques in modelling, re-topologisation of 3D data, decimation and optimisation, photo-texturing and re-projection of texture information. Through this course students will gain understanding and experience of the principles and practice of preparing 3D models derived from acquired 3D and 2D data for use in real-time and pre-rendered applications.

8. Intended Learning Outcomes of Course:

By the end of this course students will be able to:

Students completing this course will:

- Demonstrate a critical understanding of a range of specialised principles and concepts of 3D

modelling for visualisation from real-world data acquired through e.g. Photogrammetry, Laser Scanning and published resources.

- Plan and execute a visualisation project, using acquired data through to the preparation of a finished 3D model for a range of end-user applications
- Use a range of software to support and enhance 3D modelling work, and undertake critical evaluations of the range of 3D data and models used and created
- Critically review, consolidate and extend skills in 3D modelling and animation

9. Indicative Content:

This course is for students who already have some experience working with 3D modelling applications, and helps them develop their knowledge and expertise of a range of principles, techniques and tools for effective modelling and optimisation of 3D models using data (3D and texture) acquired from the real world.

Students will learn how to work with complex 3D and 2D data, and will gain an increased understanding and awareness of the differences in requirements for these types of applications.

The course will cover the following, indicative, topics:

- Practical Photogrammetry: 3D data from photography
- Model detail and quality: automatic decimation and manual re-topologisation/re-modelling
- Level of detail for pre-rendered and real time applications, and optimisation
- Photo-texturing for games and interactive environments (including: UV mapping, texture atlas, repeating textures.
- photo-texturing with different 3D levels of detail
- Normal and bump mapping) for higher quality with lower level of detail
- 3D and stereoscopic cameras & lighting
- Rendering using the Mental Ray Renderer.
- Introduction to post-processing of rendered animations (with e.g. Adobe After Effects)

10. Description of Summative Assessment:

For summative assessment, students will develop a highly detailed, complex and well textured 3D model from data captured from the real world. Presentation will be in the form of 1 x 5sec animation at half HD and 1 x still image at full HD. Students will also be required to submit a 500 word critical reflection of their project. Students will be given a range of choices and options for subjects, to allow students to situate the project within their own disciplines and domains.

Coursework: 100%

10.1 Please describe the Summative Assessment arrangements:

Assessment will be based on final scene within 3D Studio Max alongside final output. This will be supported by a 500 word critical reflection of the project.

11. Formative Assessment:

Individual feedback is available during tutorials to provide formative assessment. The wide range of coursework will provide the bulk of formative and summative assessment for the full range of 3D modelling and animation skills.

11.1 Please describe the Formative Assessment arrangements:

Formative feedback will be provided regularly at tutorials. All students will have at least one formative assessment crit during weeks 4 or 5 of the course.

12. Collaborative:	
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
12.1 Teaching Institutions:	
4T	

13. Requirements of Entry:
Students must have prior experience of working with 3D modelling software, e.g. 3DS Max, Maya,

14. Co-requisites:
None

15. Associated Programmes:
None

16. When Taught:
Term 2 (PGT stage 2)

17. Timetable:
9 Weekly classes – 2 hours teaching time per week

18. Available to Visiting Students:	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

19. Distance Learning:	
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

20. Placement:	
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

21. Learning and Teaching Methods:		
Method	Formal Contact Hours	Notional Learning Hours (Including formal contact hours)
Lecture	9	9
Studio		
Seminar/Presentation		
Tutorial	9	9
Workshop		
Laboratory work		21
Project work		75
Professional Practice		

E-Learning / Distance Learning		
Placement		
Examination		
Essay		
Private Study	Not Applicable	36
Other (please specify below)		
TOTAL	18	150

22. Description of “Other” Teaching and Learning Methods:

N/A

23. Additional Relevant Information:

3D computer graphics are an inherently visual medium, involving working with visual display units. As such, this course may not be suitable for registered blind or severely visually impaired students.

24. Indicative Bibliography:

Harper, J., 2012. *Mastering Autodesk 3ds Max 2013*, Wiley

Autodesk, 2014, *3DS Max Design Tutorials*, [online] Available at:

<http://docs.autodesk.com/MAXDES/16/ENU/3ds-Max-Design-Tutorials/> [Accessed 1st July 2014]