

Course Code:

PSGV102

Session:

2017/18

1. Course Title:

Games Programming

2. Date of production / revision:

14/04/2015

3. Level:

SCQF 11

4. Credits:

15

5. Lead School/Board of Studies:

School of Simulation and Visualisation

6. Course Contact:

Dr Daniel Livingstone

7. Course Aims:

- Enable students to understand a 3D graphics API, the processes of computer graphics programming, storage, and visualisation of graphics/images on various display devices;
- Develop communication and practical skills with particular reference to 3D graphics programming;
- Design and implement programming structures as well as algorithms in the area of 3D graphics and visualisation

8. Intended Learning Outcomes of Course:

On successful completion of the course the student will be able to:

1. Demonstrate a critical understanding of fundamental game development concepts
2. Understand and apply mathematical concepts and techniques relevant to computer games programming
3. Select and apply game development concepts and techniques in the design, implementation, and documentation of a game demo

9. Indicative Content:

This course will cover issues including

- Computer game platforms and technologies
- Mathematical techniques for 2D and 3D graphics and games development, such as vectors, matrices, and equations of lines and planes
- Computer graphics fundamentals for 3D and 2D representations
- Introduction to the 3D graphics pipeline and 3D techniques for games
- Techniques for input, animation, collision detection
- Implementing game states and object-oriented programming techniques in game development
- Game development using a suitable environment such as Microsoft Visual Studio, languages such as C#/C++/JavaScript and third party libraries such as OpenGL/WebGL/SFML/OpenSceneGraph/ three.js

10. Description of Summative Assessment:

For this course, students are assessed through coursework. Coursework weighting: 100%

No.	Assessment Method	Description of Assessment Method	Weight %	Submission week (assignments) or length (exam)
1	Practical project	Development of an interactive game demo with short written report (~1000 words)	100	Week 13

10.1 Please describe the Summative Assessment arrangements:

The learning outcomes will be assessed through an individual project, consisting of a practical implementation of a game demo, with associated documentation.

11. Formative Assessment:

Individual feedback is available during tutorials/practical sessions to provide formative assessment.

11.1 Please describe the Formative Assessment arrangements:

4T

12. Collaborative:

Yes

No

12.1 Teaching Institutions:

4T

13. Requirements of Entry:

Students should have prior programming experience

14. Co-requisites:

None

15. Associated Programmes:

MSc Serious Games and Virtual Reality

16. When Taught:

Autumn semester

17. Timetable:

Timetable will be available in the induction week.

18. Available to Visiting Students:Yes No **19. Distance Learning:**Yes No **20. Placement:**Yes No **21. Learning and Teaching Methods:**

Method	Formal Contact Hours	Notional Learning Hours (Including formal contact hours)
Lecture	10	10
Studio		
Seminar/Presentation		
Tutorial	20	20
Workshop		
Laboratory work		50
Project work		50
Professional Practice		
E-Learning / Distance Learning		
Placement		
Examination		
Essay		
Private Study	Not Applicable	50
Other (please specify below)		
TOTAL	30	150

22. Description of "Other" Teaching and Learning Methods:

4T

23. Additional Relevant Information:

4T

24. Indicative Bibliography:

Suggested bibliography (the latest list will be provided in the beginning of the course)

Nagel. C, Evjen. B, Glynn. J, Watson, K. & Skinner. M (2012) *Professional C# 2012 and .Net 4.5*, John Wiley & Sons;

Rautenbach. P (2008), *3D Games Programming: Using DirectX 10 and Open GL*, Cengage Learning

Freeman, Robson, Bates, Sierra (2004) *Head First Design Patterns*, O'Reilly

Lengyel (2011) *Mathematics for 3D Game Programming and Computer Graphics, 3rd Edition*, Cengage

Haller et al (2013) *SFML Game Development*, PACKT Publishing

Sukin (2013) *Game Development with Three.js*, PACKT Publishing

Internet Resources

<http://msdn.microsoft.com/en-us/directx/default.aspx><http://www.sfml-dev.org/index.php>

<http://threejs.org/>

<http://opengl.org/>

<http://www.openscenegraph.org/>

<http://gameprogrammingpatterns.com/>