

**Glasgow School of Art Course Specification**

**Course Title: Immersive Systems 2 Study Abroad and Exchanges (Semester 2)**

*Please note that this course specification is correct on the date of publication but may be subject to amendment prior to the start of the 2023-24 Academic Year.*

<b>Course Code:</b>	<b>HECOS Code:</b>	<b>Academic Session:</b>
		2023-24

<b>1. Course Title:</b>
Immersive Systems 2 Study Abroad and Exchanges (Semester 2)

<b>2. Date of Approval:</b>	<b>3. Lead School:</b>	<b>4. Other Schools:</b>
PACAAG April 2020	School of Innovation and Technology	N/A

<b>5. Credits:</b>	<b>6. SCQF Level:</b>	<b>7. Course Leader:</b>
20	8	Sandy Louchart

<b>8. Associated Programmes:</b>
BSc Immersive Systems Design

<b>9. When Taught:</b>
Semester 2

<b>10. Course Aims:</b>
To extend knowledge in software development, 3D modelling and Immersive Systems. To provide a deeper understanding of core programming and interactive systems development skills, and immersive system design methodologies.
This will include:
<ul style="list-style-type: none"> <li>• More advanced knowledge and skills for developing 3D models and content, including introduction to photo-realistic rendering and graphic communication</li> <li>• Introduction to intermediate topics in software design and development with high-level programming languages, including software architecture design</li> <li>• Demonstrate ability to develop immersive 3D experiences using a 3D game engine and Virtual Reality (VR) hardware systems (e.g. Head Mounted Devices - HMD)</li> <li>• Introduction to user interaction design issues for VR and mobile platforms</li> </ul>

<b>11. Intended Learning Outcomes of Course:</b>
By the end of this course students will be able to:
<ul style="list-style-type: none"> <li>• Demonstrate knowledge of essential programming techniques, data structures, abstract data types and design patterns</li> </ul>

- Demonstrate an ability to design an immersive system according to user requirements
- Demonstrate an ability to develop more complex interactive experiences using a 3D game engine
- Demonstrate ability to apply intermediate 3D modelling skills and a deeper understanding in 3D modelling applications
- Demonstrate an ability to assess and evaluate the usability of immersive systems

## 12. Indicative Content:

- Introduction to Graphic Communication in Immersive Systems
- Immersive Systems and Virtual Reality
  - Software system architectures, serialization and data driven design
  - Intermediate scripting
  - Run-time animation and physics
  - The usability of immersive systems
- 3D Modelling
  - 3D modelling for different run time and pre-rendered environments
  - Intermediate Lighting, Rendering and Post Production
  - Animating materials
  - Introduction to Character design
  - Project Planning for modelling and animation

## 13. Description of Summative Assessment Methods:

Assessment Method	Description of Assessment Method	Weight %	Submission week (assignments)
Portfolio of work	Immersive Systems Portfolio (1 x 12 week project)	100	Portfolio of work developed over duration of Immersive Systems submitted in week 27

### 13.1 Please describe the Summative Assessment arrangements:

1. Portfolio of short programming projects to demonstrate ability to develop simple structured and object oriented programs
2. Simple 3D modelling portfolio to demonstrate fundamental competences with 3D modelling

## 14. Description of Formative Assessment Methods:

Engagement with formative assessment is a mandatory requirement. Regular progressive reviews will be conducted with students during their programming and 3D project work.

### 14.1 Please describe the Formative Assessment arrangements:

Formative assessment will be conducted through in-class discussion and demonstration in combination with individual feedback.

## 15. Learning and Teaching Methods:

Formal Contact Hours	Notional Learning Hours
48	200

### 15.1 Description of Teaching and Learning Methods:

In class lab assessments and class tests:  
Assessed labs present students with practical computing problems, requiring completion during an assessed lab session. Alternatives may be arranged with students as required.

Timetable: Immersive systems will be taught over both semesters, based around two two-hour sessions each week, with longer sessions for lab tests as required.

**16. Pre-requisites:**

Successful completion of Stage 1 (or equivalent)

<b>17. Can this course be taken by Exchange/Study Abroad students?</b>	Yes
<b>18. Are all the students on the course taught wholly by distance learning?</b>	No
<b>19. Does this course represent a work placement or a year of study abroad?</b>	No
<b>20. Is this course collaborative with any other institutions?</b>	No
<b>20.1 If yes, then please enter the names of the other teaching institutions:</b>	
N/A	

**21. Additional Relevant Information:**

N/A

**22. Indicative Bibliography:**

This course may be taught using any suitable programming, scripting, and markup languages (e.g. Python, C#, XML, Json)

For C#, an indicative bibliography would include:

Anon 2015. *C# Fundamentals: Development for Absolute Beginners (Channel 9)*. [online] Channel 9. Available at: <<https://channel9.msdn.com/Series/C-Sharp-Fundamentals-Development-for-Absolute-Beginners>> [Accessed 6 Jul. 2015].

Freeman, E., Robson, E., Bates, B. and Sierra, K., 2004. *Head First Design Patterns*. 1 edition ed. Sebastopol, CA: O'Reilly Media.

Miles, R., n.d. *The C# Programming Yellow Book*.

Stephens, R., 2014. *C# 5.0 Programmer's Reference*. 1 edition ed. Indianapolis, IN: John Wiley & Sons.

The course will also utilise a current game engine, and physical computing with a low-cost hardware platform such as Raspberry Pi or Arduino. Possible books and resources would include:

Allan, A., Coleman, D. and Mistry, S., 2015. *Make: Bluetooth: Bluetooth LE Projects with Arduino, Raspberry Pi, and Smartphones*. 1 edition ed. Maker Media, Inc.

Hoile, C., Bowman, C., Meijer, S.D., Corteil, B., Orsini, L. and Mott, T., 2014. *Make: Raspberry Pi and AVR Projects: Augmenting the Pi's ARM with the Atmel ATmega, ICs, and Sensors*. 1 edition ed. Maker Media, Inc.

For 3D Modelling, links to web based resources will be provided, e.g.:

Autodesk, n.d., *Autodesk Knowledge Network*, <https://knowledge.autodesk.com/>

Lynda, n.d., *Lynda.com*, <http://lynda.com>