

Glasgow School of Art Programme Specification

Programme Title: MSc Heritage Visualisation / MSc Serious Games & Virtual Reality



Please note that this programme specification is correct on the date of publication but may be subject to amendment prior to the start of the 2024-25 Academic Year.

| 1. Programme Details | |
|------------------------------|---|
| Programme Title | Master of Science in Visualisation with the following named awards: <ul style="list-style-type: none"> • Heritage Visualisation • Serious Games and Virtual Reality |
| School | School of Innovation and Technology |
| Programme Leader | Dr Daniel Livingstone |
| Award to be Conferred | MSc Heritage Visualisation / MSc Serious Games and Virtual Reality |
| Exit Awards | Stage 1: PG Cert in Heritage Visualisation / Serious Games and Virtual Reality Stage 2: PG Diploma in Heritage Visualisation / Serious Games and Virtual Reality Stage 3: MSc in Heritage Visualisation / Serious Games and Virtual Reality |
| SCQF Level | 11 |
| Credits | 180 |
| Mode of Study | Full-time, Part-time with Distance/Blended Learning Options |
| HECOS Code | <ul style="list-style-type: none"> • MSc Heritage Visualisation 100805/100358/100363 • MSc Serious Games and Virtual Reality 101268/100363/100358 |

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|-------------------------|-------------------------------|
| Academic Session | 2024-25 |
| Date of Approval | Programme Approval March 2023 |

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| Awarding Institution | University of Glasgow |
| Teaching Institutions | Glasgow School of Art |
| Campus | Glasgow |
| Lead School/Board of Studies | School of Innovation and Technology |
| Other Schools/Board of Studies | N/A |
| Programme Accredited By (PSRBs) | N/A |

| 2. Entry Qualifications | |
|--------------------------------------|--|
| Highers | N/A |
| A Levels | N/A |
| Other | Good Bachelors Honours degree in a related discipline or equivalent professional experience. High calibre graduates from other disciplines may be considered if they are able to demonstrate an interest and ability in the field of visualisation. Applications are reviewed through portfolio submission and interview. |
| English Language Requirements | All students will have to provide evidence of English language proficiency when applying. International Students |

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| | <p>Students who require a Tier 4 visa to study in the UK must meet one of the following requirements in order to gain entry:</p> <ul style="list-style-type: none"> • IELTS for UKVI Academic with an overall score of 6.5 with a minimum of 6.0 in all components; • complete an acceptable Pre-sessional English Language Programme taught in the UK with an outcome that equates to the IELTS scores as stated above. <p>Students who have a degree from an English speaking country, or are a national of an English speaking country as listed in the UKVI Guidance, may use this as proof of English language ability.</p> |
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3. Programme Introduction

The Master of Science (MSc) in Visualisation programme provides an academic framework for postgraduate students to engage with the application of 3D visualisation and interaction and Extended Reality (e.g. Augmented and Virtual Reality and ‘metaverse’) technologies across a variety of fields and contexts, as well as equipping students with the knowledge and skills required to develop a research project within this field

The MSc provides a higher level taught programme to those emerging from a wide range of disciplines, wishing to engage in advanced study in the application of modern visualisation and interaction techniques across a range of domains. The degree will allow them to develop industry appropriate skills for future PhD study or a range of career paths in heritage, games, media and digital content production, academia, and related fields developing a unique portfolio of work and hands on experience.

Students are asked to locate their developing professional and personal practice within a specialist pathway: Heritage Visualisation or Serious Games & Virtual Reality.

1. Heritage Visualisation

Heritage Visualisation is a specialist pathway in the realm of 3D visualisation. The MSc Heritage Visualisation aims to help students develop the knowledge and skill sets required to deliver and conduct digital documentation of heritage (both physical heritage sites and non-tangible forms of heritage) and to create a unique opportunity to combine heritage with state of the art digital technologies, including 3D laser scanning, digital reconstruction of historic sites and artefacts, and interaction and visualisation using virtual reality facilities. It allows an ideal opportunity for digital documentation and reconstruction of heritage in a real-time or pre-rendered 3D environment for use in areas such as tourism, art, education, entertainment and science.

2. Serious Games and Virtual Reality

Digital games are firmly established as one of the most significant sectors of the entertainment and creative industries, and the technology behind today's games is being implemented in many other industries beyond entertainment. Serious games are games with purpose beyond just providing entertainment. Examples include, but are not limited to, edutainment and training, health games,

and games for policy and social change. Virtual Reality (VR) has likewise seen dramatic growth and adoption in recent years, with a slew of new Head Mounted Devices (HMD) continuing to come to market reducing the barriers to working with immersive VR. Accordingly, Virtual Reality has found a new audience in the entertainment field, as well as with industrial and education sectors due to the rich immersion possible. Modern mobile phones and specialist devices have also led to an explosion in Augmented Reality devices and applications, which along with Virtual Reality have created a rich ecology of 'Extended Reality' or XR applications.

The MSc Serious Games and Virtual Reality pathway was one of the first MSc programmes in the UK to specialise in the educational, industrial and commercial applications of Virtual Reality.

4. Programme Aims

The aims of the programme are to:

- Provide a strong critical understanding of core concepts on the design and evaluation of serious games/virtual reality or of critical issues in heritage visualisation.
- Provide an introduction to and exploration of the relevant theoretical and practical issues involved in three-dimensional modelling and animation;
- Introduce and consolidate knowledge and understanding of the fundamental principles of design and development of interactive 3D visualisation/simulation or Virtual Reality systems for heritage and serious games.
- Develop communication, documentation and interpersonal skills for communicating design goals and research outputs, and support collaborative working to complete work according to a shared vision
- Develop autonomous and self-directed exploration, individual expression and critical activity within an environment of professional and peer-critique.
- Encourage multi-disciplinary research in visualisation and related fields

5. Programme Intended Learning Outcomes

After full participation in and successful completion of the programme, students will be able to:

- Demonstrate a critical understanding of effective methods of developing non-interactive 3D visualisations appropriate to the chosen specialism
- Demonstrate practical skills involved using 3D digital technologies, e.g. data acquisition (2D and 3D), commercial visualisation software and game engines, for the development of interactive applications
- Critically review and analyse existing problems, sources and knowledge in a manner that allows informed judgement and critical appreciation across multiple disciplines.
- Communicate effectively within professional and academic standards with peers and tutors, using accepted terminology in related disciplines.
- Apply research techniques to plan and execute an independent research project within the chosen specialism domain

6. Description of Learning and Teaching Approaches

Students will be expected to take significant responsibility for the management of their learning. Courses and projects will be undertaken by directed and self-directed study, and will involve lectures, tutorials, workshops, practical sessions, guest talks, and independent research.

The principal teaching strategies employed on this programme are:

Self-directed Learning and Research

In line with other taught postgraduate programmes at GSA, significant emphasis is placed on self-directed study, from project design and development, to gaining theoretical knowledge through traditional research methods. This is further developed by emphasizing upon autonomy, reflection upon personal learning and self-directed project work within a collaborative environment.

Lectures

Lectures and seminars are used to disseminate theoretical, contextual and historical knowledge and address specific issues underpinning practical work. Lectures also have the broad aim of generating further debate in seminars, tutorials or further enquiry in self-directed learning or research.

Labs and Practical sessions

Practical sessions are designed to provide students with hands-on experience in studio lab sessions. These sessions usually follow lectures, and take place in computer studios as practical classes. Tutors or Teaching Assistants will be on-hand during the scheduled sessions to help students and answer their questions. Computer studios within SIT can be used by students at any time during opening hours.

Guest Speakers

Input from visiting lecturers and guest speakers will enable visualisation students access to, and understanding of, relevant contemporary practice, research and commercial contexts.

Dissertation Support & Arrangements

Dissertation projects are significant and challenging student-led projects, and the following arrangements are to ensure that students are provided appropriate support in adequately preparing and planning for their projects, and in completing them.

During stage 2, a range of support is provided to help students prepare research proposals for stage 3. A lecture on dissertation projects will present dates, deadlines and administrative and practical guidance for the dissertation projects and proposals. Students are asked to submit draft proposals to allow initial feedback to be given by the end of stage 2. Additional talks on a range of relevant topics (ethics, referencing, etc.) are also offered by school and Learning & Teaching staff during stages 2 and 3.

Students may propose their own projects, or work from lists of projects provide. Students are expected to meet with possible tutors obtain agreement from a tutor for project supervision. Project proposals are signed by both supervisor and student accordingly.

During the dissertation itself, supervisory support is individual in nature, and adapts to the needs and demands of the student. Students are expected to meet regularly with supervisors over the dissertation period (typically for short meetings every other week).

Practical support in technical aspects of project work is also available to students over stage 3, through a mix of scheduled support sessions and by-appointment with tutors. The scheduled

support sessions during stage 3 provide an additional opportunity for students to interact and engage with each other while working on their own independent projects.

To support learning and teaching a range of specialist hardware is available for use on campus including various VR Head Mounted Devices, graphics drawing tablets, and Android devices for Augmented Reality. During Stage 3 some hardware may be available for short-term loan subject to demand.

7. Description of Assessment Methods

Formative and summative assessment strategies are employed through the MSc programme. Formative and summative assessment feedback operates to guide students in improving their work, including interpersonal skills, formal presentation abilities, creative practice, technical and domain specific knowledge, and academic writing and research.

Formative assessment may be through presentation at seminars, tutorials, and so on, or through the submission of intermediate work. Formative feedback from intermediate project submission would typically be written, while ongoing formative feedback may be in written or verbal forms. Feedback then provides the opportunity to refine and develop work and ideas, and to prepare for submission in the summative assessments.

Summative assessment is through a mix of practical projects with supporting documentation and reflective reports and journals, through presentations, and through written essay and report submissions.

The final independent research project is assessed through written dissertation, practical submission and supporting presentation.

Assessment is regulated by the GSA Code of Assessment, and the regulations published in the GSA section of the Postgraduate Degree regulations published by The University of Glasgow.

8. Programme Structure

Both programmes have a similar structure in the first semester.

In Semester 1 students take Academic Skills for Masters Research (20 credits) and either Heritage Visualisation 1 (40 credits) or Serious Game Design and Implementation (40 credits) depending on pathway.

Each of these latter courses comprises three key projects/topics:

1. 3D modelling
2. Interactive Application development
3. Domain specific topic: Critical approaches to digital documentation *or* Serious Game Design and Research

In Semester 2, Heritage Visualisation students take the course Heritage Visualisation 2 (40 credits), which combines field and studio-based work for the documentation and visual interpretation of a heritage site. (Past projects have involved working with sites such as Provan Hall, Glasgow Cathedral, Govan Stones or the Alasdair Gray Archive)

Students also choose a 20 credit elective class. This can be a cross-school PG elective or the HCI & Extended Reality course (20 credits) offered within the school.

The Serious Games & VR programme structure in semester two comprises two core courses: HCI & Extended Reality (20 credits) and Game Development Project (20 credits). Student also take a GSA postgraduate cross-school elective class (20 credits). Options include a range of programme related courses offered by the school as well as unrelated courses from across the GSA.

Part-Time Study

Part-time study is also offered through a day-release mode, with part-time students taking the same classes at the same time as full-time students. Part time study will generally require two days of attendance per week during the teaching period for stage 1 and stage 2 courses.

Schedules will be provided in advance of each term to allow students to plan their time accordingly. Contact hours are supplemented through the use of online support through, e.g., virtual learning environments. The provision of online learning resources through Canvas and the GSA's video streaming service will enable part-time students the ability to follow the programme in a more blended manner, supplementing attendance in studio with independent online learning.

For students studying part time, 60 credits of taught courses would be taken in each of year 1 and year 2. The research project (60 credits) can be completed full time in the summer of year 2 or part-time with submission in Year 3, across semesters 1 & 2.

The independent research project in Stage 3 requires attendance at supervision meetings, but there may be held online for students who would prefer to complete this course in a distance learning mode.

The recommended part-time course structures are shown in the tables below, after the full-time programme structures.

Heritage Visualisation – Full Time – Stage 1

| Course | Credits | SCQF Level | Semester | Course Code |
|--------------------------------------|-----------|------------|----------|-------------|
| Academic Skills for Masters Research | 20 | 11 | 1 | PCXS104 |
| Heritage Visualisation 1 | 40 | 11 | 1 | PIHV105 |
| Total Stage Credits | 60 | | | |

| Heritage Visualisation – Full Time - Stage 2 | | | | |
|---|----------------|-------------------|-----------------|--------------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| Heritage Visualisation 2 | 40 | 11 | 2 | PIHV212 |
| PGT Elective | 20 | 11 | 2 | |
| Total Stage Credits | 60 | | | |

| Heritage Visualisation – Full Time - Stage 3 | | | | |
|---|----------------|-------------------|-----------------|--------------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| MSc Research Project | 60 | 11 | 3 | PVIS301 |
| Total Stage Credits | 60 | | | |

| Serious Games and Virtual Reality – Full Time – Stage 1 | | | | |
|--|----------------|-------------------|-----------------|--------------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| Academic Skills for Masters Research | 20 | 11 | 1 | PCXS104 |
| Serious Games Design and Implementation | 40 | 11 | 1 | PSGV104 |
| Total Stage Credits | 60 | | | |

| Serious Games and Virtual Reality – Full Time – Stage 2 | | | | |
|--|----------------|-------------------|-----------------|--------------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| Human Computer Interaction and Extended Reality | 20 | 11 | 2 | PSGV204 |
| Game Development Project | 20 | 11 | 2 | PSGV203 |
| PGT Elective | 20 | 11 | 2 | |
| Total Stage Credits | 60 | | | |

| Serious Games and Virtual Reality – Full Time – Stage 3 | | | | |
|--|----------------|-------------------|-----------------|--------------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| MSc Research Project | 60 | 11 | 3 | PVIS301 |
| Total Stage Credits | 60 | | | |

| Heritage Visualisation – Part Time – Stage 1 – Year 1 | | | | |
|--|----------------|-------------------|-----------------|--------------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| Heritage Visualisation 1 | 40 | 11 | 1 | PIHV105 |
| PGT Elective | 20 | 11 | 2 | |
| Total Stage Credits | 60 | | | |

| Heritage Visualisation – Part Time - Stage 2 – Year 2 | | | | |
|--|----------------|-------------------|-----------------|--------------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| Academic Skills for Masters Research | 20 | 11 | 1 | PCXS104 |
| Heritage Visualisation 2 | 40 | 11 | 2 | PIHV212 |
| Total Stage Credits | 60 | | | |

| Heritage Visualisation – Part Time - Stage 3 – Year 2 & Year 3 Options | | | | |
|---|----------------|-------------------|-------------------|--------------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| MSc Research Project | 60 | 11 | 3 of Year 2 or | PVIS301 |

| Heritage Visualisation – Part Time - Stage 3 – Year 2 & Year 3 Options | | | | |
|--|-----------|------------|-----------------|-------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| | | | 1 & 2 of Year 3 | |
| Total Stage Credits | 60 | | | |

| Serious Games and Virtual Reality – Part Time – Stage 1 – Year 1 | | | | |
|--|-----------|------------|----------|-------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| Serious Games Design and Implementation | 40 | 11 | 1 | PSGV104 |
| Human Computer Interaction and Extended Reality | 20 | 11 | 2 | PSGV204 |
| Total Stage Credits | 60 | | | |

| Serious Games and Virtual Reality – Part Time - Stage 2, Year 2 | | | | |
|---|-----------|------------|----------|-------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| Academic Skills for Masters Research | 20 | 11 | 1 | PCXS104 |
| Game Development Project | 20 | 11 | 2 | PSGV203 |
| PGT Elective | 20 | 11 | 2 | |
| Total Stage Credits | 60 | | | |

| Serious Games and Virtual Reality – Part Time - Stage 3 – Year 2 and Year 3 options | | | | |
|---|-----------|------------|--------------------------------------|-------------|
| Course | Credits | SCQF Level | Semester | Course Code |
| MSc Research Project | 60 | 11 | 3 of Year 2 Or 1 & 2 of Year 3 | PVIS301 |
| Total Stage Credits | 60 | | | |

| 9. Outgoing Exchange and Visiting Student Arrangements |
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| N/A |

| 10. Relevant QAA Subject Benchmark Statements and Other External Reference Points |
|---|
| <p>Subject Benchmark Statements describe the nature of study and the academic standards expected of graduates in specific subject areas. For further information relevant to this programme see:</p> <p>The QAA statement regarding Masters level education available at the following link: https://www.qaa.ac.uk/docs/qaa/quality-code/master's-degree-characteristics-statement.pdf</p> <p>The Level 11 Descriptors provided by the SCQF governing attainment during Masters level study, available at: https://www.sqa.org.uk/files_ccc/SCQF-LevelDescriptors.pdf</p> |

11. Programme Regulations and Requirements for Progression

All GSA Degree programmes are validated by the University of Glasgow and the GSA's Programme Regulations are published in the [University of Glasgow University Regulations](#).

These regulations include the requirements in relation to:

- (a) Award of the degree
- (b) Progression requirements
- (c) Early exit awards

In referring to regulations for degree programmes, students should consult the University Regulations which were in force in the academic session in which they first registered for the degree programme in question.