THE GLASGOW SCHOOL: ºf ARt	**Programme Specification**

1. Programmes:

Programme Title	MSc in Environmental Architecture
Head of School	Sally Stewart
Head of Department/Programme Leader	Prof Tim Sharpe
Programme Contact	Dr. Filbert Musau

Minimum Duration of Study	12 months
Maximum Duration of Study	12 months
Mode of Study	Full time
Award to be Conferred	MSc. in Environmental Architecture
Exit Awards	1. PG Certificate in Environmental Architecture – (Stage 1: 60 credits) - duration 15 weeks 2. PG Diploma in Environmental Architecture – (Stage 2: 120 credits) - duration 30 weeks 3. MSc in Environmental Architecture (Stage3: 180 credits) - duration 45 weeks
Source of Funding	Self-funded

2. Version:	Academic Session:	Date of Approval:
18.19.01	2018/19	19 April 2017

3. SCQF Level:
Level 11

3.1 Credits:
180 credits

4. Awarding Institution:
University of Glasgow

5. Teaching Institutions:
The Glasgow School of Art

6. Lead School/Board of Studies:
Mackintosh School of Architecture

7. Programme Accredited By:
Not applicable.

8.	Entry Qualifications	
8.1	Highers	n/a
8.2	A Levels	n/a
8.3	Other	Honours (1st or 2.1) Bachelor Degree in Architecture, Building Services Engineering, Building Physics or related discipline or equivalent professional practice
8.4	IELTS Score Required on Entry	6.5 IELTS with all elements at 5.5 or above

9. Programme Scope:

The programme will focus on the relationships and design challenges for producing sustainable low energy, low carbon and healthy environments with a particular emphasis on the innovative design and delivery of effective building performance to address contemporary challenges in these areas. The MSc in Environmental Architecture is distinctive from other Masters programmes that tend to focus and single issues (i.e. energy) in that it investigates challenges and contradictions in this field and potential unintended consequences. The proposed MSc requires a consideration of the balance between energy drivers, healthy environments and high quality architecture. The content will be developed from staff expertise and new knowledge developed from recent research and consultancy within MEARU and collaborating industry and academic organisations. The aim of this proposal is to capitalise on this expertise through this postgraduate programme enabling students to develop knowledge and skills that will expand and deepen their understanding of how buildings work holistically and how this knowledge can extended and be used to inform design and performance.

10. Programme Aims:

The MSc in Environmental Architecture is focused on exploration and analysis in the following areas to develop awareness, knowledge, understanding and abilities in practical applications:
1. Key theories on Environmental architecture
2. Linkage of theory and the practice of environmental design in architecture
3. Performance evaluation and the gap between design intent and actual performance
4. The science and technical aspects of environmental design in architecture
5. Links between building design and systems design with environmental and energy performance;
6. The occupant role on environmental and energy performance as a key focus
7. Links between performance, occupant comfort and occupant health

10.1 Stage 1 Aims:

- To explore the origins/history and attitudes in Environmental Architecture
- To encourage students to engage with key theories of environmental architecture and develop an ability to position themselves in theory before engaging with environmental design and/or evaluation
- To impart knowledge of key principles of heat transfer, light, ventilation, indoor air quality, and energy demand/supply
- To equip students with knowledge to effectively apply advanced simulation tools, building diagnostics and building performance evaluation tools and techniques, to analyse the data systematically and to critically evaluate the results
- To enhance students understanding of the intrinsic relationship between building occupants and building performance

10.2 Stage 2 Aims:

- To provide students with a variety of core research skills, including a critical understanding of research design
- To interrogate the relationships between forms of research and modes of practice
- To equip students with skills in academic writing practices and verbal communication
- To develop students independent research interests and learning relating to environmental architecture
- To encourage and support students to establish a strong, coherent dissertation or design thesis proposal, as a precursor to be carried forward to the dissertation or design thesis at Stage 3

10.3 Stage 3 Aims:

- Provide students with basic skills and knowledge in the theory and practice of environmental design and building performance
- Develop a focussed area of study, identify literature and develop a research question based on the feedback provided by the examiners of the proposal
- Undertake a self-directed dissertation or design thesis proposal in Stage 3, supported by the continuing guidance of the assigned supervisor;
- To critically review the relevant literature in the approved topic and develop independent standpoints and arguments;
- For exemplary students following a research pathway, the course will provide the opportunity prepare and equip them with skills and qualifications to explore interests and ideas further through PhD study.
- To offer insights, solutions, in-depth understanding or interpretations of matters arising from distinct, specialist subject areas and apply these in practice.
- To develop and improve independent thinking and core research and analytical skills

11. Intended Learning Outcomes of Programme

At the end of the programme each student should have the ability to demonstrate and/or work with:

Knowledge and Understanding of:

- The roles of environmental design and practice in healthy built environments and links between building performance, occupant comfort and health
- The key theories on environmental design in Architecture
- Principles of heat transfer, light, air movement, indoor air quality and energy demand/supply
- Modelling of building environmental performance
- Diagnostics and monitoring of building performance
- The role of the occupant in building performance

Intellectual Skills:
- To reason critically and analytically
- To apply techniques and knowledge appropriately
- To identify and solve research gaps and challenges
- To demonstrate independence of mind and judgement

Research Skills:
- To identify key knowledge gaps and research questions
- To identify, assess and synthesize information from various sources
- To plan, develop and apply research methods
- To apply key research techniques/tools to a design context
- To report clearly, accurately and competently on findings

Transferable skills:
- To communicate concepts effectively orally and in writing
- To manage time and structure work
- To work effectively with others
- To work independently
- To retrieve information efficiently
- To assimilate and assess existing knowledge and ideas

11.1 Intended Learning Outcomes of Stage 1

At the end of Stage 1 each student should have the ability to demonstrate and/or work with:
Knowledge and Understanding
- Identify the origins of different attitudes in Environmental Architecture
- Critically review published theory that has a specific environmental focus, distinguish various theories of Environmental Architecture, and challenge their concepts;
- Research and integrate environmental design theory and principles in a design project;
- Identify the requirements for Building Performance Evaluation and the factors that contribute to the gap between building design intent and performance;

Applied Knowledge and Understanding

- Explain the social, economic and environmental drivers of Environmental Architecture, and
- the importance of built environments, to be in synergy with nature;
- Conceptualise 'environmental architecture' that places technical competence, even innovation, alongside a theoretically supported tectonic rationale; and
- Use a selected environmental simulation software package to effectively analyse design options and/or iterations, and to select and develop design strategies to reduce

environmental and energy impact;

- Critically appraise materials, processes and techniques, and demonstrate application of these in an architectural design context;
- Select different testing methodologies, established standards and protocols used for evaluation of building performance;
- Set-up equipment and identify the limitations of equipment as well as the ethics for working in occupied buildings and with members of the public;
- Organise and analyse data, both quantitative and qualitative, including cross-analysis of information on design intent and the completed building under analysis, and cross analyses of other data sets;

Professional Practice: Communication, Presentation, Working with Others

- Demonstrate the ability to develop one's own insights, to take a theoretical position and critically argue its place in a given context or contemporary challenge in light of 'first principles'.
- To manage time and to work effectively both individually and in a group;
- Effectively communicate design proposals and analysis.
- Draw conclusions from the evaluation results and relate results with building design, systems and occupants;
- Communicate effectively with occupants of the buildings under analysis, and use clear report writing and presentation skills of Building Performance Evaluation findings.

11.2 Intended Learning Outcomes of Stage 2

At the end of Stage 2 each student should have the ability to demonstrate and/or work with:

Knowledge and Understanding

- Understand the contemporary context of reducing energy use in buildings.
- Understanding the key parameters for energy consumption and environmental quality.
- To demonstrate independence and self-direction.
- To reason critically and analytically in the context of the latest knowledge base of environmental architecture.
- Identify key knowledge gaps and research questions in the context of technical aspects of Environmental Architecture.

Applied Knowledge and Understanding

- Investigate and comment on design solutions that meet energy needs whilst maintaining healthy environments.
- Develop an understanding of how these parameters are measured and understood.
- Use this knowledge to develop different design solutions
- To demonstrate knowledge and understanding of research methods or design analysis methods; and an ability to select appropriate research methods or design analysis methods for the articulation of research or design aims.
- Plan, develop and apply quantitative research methods, key research techniques/tools and analytical skills.
- Identify, assess, and synthesize information from various technical sources.

Professional Practice: Communication, Presentation, Working with Others

- To communicate research or design thesis proposal clearly and effectively in appropriate formats.
- Provide analytical level of originality in connecting research gaps, challenges and opportunities.
- Report clearly, accurately and competently on findings.

11.3 Intended Learning Outcomes of Stage 3

At the end of Stage 3 each student should have the ability to demonstrate and/or work with:

Knowledge and Understanding

- Refine a research question/hypothesis or design strategies based on identified challenges or opportunities.

Applied Knowledge and Understanding

- Demonstrate autonomy, critical thinking, understanding, synthesis and active engagement with the current knowledge base in environmental architecture by critically reviewing literature that is relevant to individual interests and a defined project scope.
- Take responsibility and leadership for undertaking a sustained period of independent study; and executing a research or design thesis project at a masters level of originality.
- Plan, develop and apply appropriate research methods/tools, knowledge, analytical skills and intellectual rigor in the execution of a significant research project or design thesis, whilst taking account of health and safety and ethical issues.

Professional Practice: Communication, Presentation, Working with Others

- Critically interpret research findings and discuss their significance.
- 6. Communicate concepts and individual standpoints fluently and effectively in writing or drawings in a clear, logical, concise and accurate professional style using the Harvard referencing system and standard citation conventions.

12. Assessment Methods:

Assessment and feedback is based on the learning outcomes and aims for each course. Assessment methods vary by course, but include the following:
- Written reports
- Essays
- Presentations
- Project work
- Dissertation / design thesis

Students may exit the programme after successful completion of Stage 1 with a Postgraduate Certificate, or after successful completion of Stage 2 with a Postgraduate Diploma.

The programme will provide both formative and summative assessment. Formative assessment will take the form of tutorials, interim presentations and draft written submissions, to provide feedback to students before final summative assessment, and will be graded where appropriate. Formative

assessments will not contribute towards the final grade/ classification. Summative assessment will take the form of written reports, project work, essays and presentations, and will be blind assessed by two internal examiners.

Feedback is given at presentations and reviews of projects and is advisory. Written feedback is given to advise students on progress and on how to develop their work.

Final grades will be comprised of an aggregation of all courses, which will be assessed by the Internal Examination Board. Summative assessment, where a final mark is given, applies to all final course submission. The summative marking of work is undertaken by the Internal Examination Board.

A candidate will be permitted reassessment in any taught course, for which he or she has obtained a grade D1 or worse. A candidate will be entitled to one reassessment only in any course, which must take place prior to the submission of the course work for the next stage.

Reassessment of the dissertation will be permitted on one occasion only, under such conditions as the Examiners may prescribe in each particular case.

All reassessment results will be capped at grade C3.

13. Learning and Teaching Approaches:

Masters level students are expected to take significant leadership and responsibility for their learning, therefore emphasis will be placed on independence and personal development. The curriculum will reflect both research-informed teaching through alignment with the Mackintosh Environmental Architecture Research Unit, and teaching informed by current practice. The programme will draw on a portfolio of case study material acquired within MEARU, to prepare students for the workplace and enhance the learning experience. A significant emphasis will also be placed on peer learning and sharing of ideas, through peer presentations and interactive seminars.

Learning and teaching strategies include the following:

Lectures and seminars
A lecture is a structured talk used to provide a broad introduction to a topic, define basic course material and principles, and place information in an academic, historical and cultural context. The purpose of a lecture is to express ideas and arguments, explore controversies, disseminate research, and encourage independent thinking. Lectures will be supported by seminars, which will require a greater level of independent enquiry from students.

Guest speakers
Core teaching will be supplemented by input from guest lecturers, providing intellectually intense discussions and insights into key industry issues and the external context.

Self-directed learning and research
Students will be expected to engage in a high level of self-directed learning and research, in line with other taught PG programmes at GSA. This will be developed through a focus on specialism, which emphasises independent critical thinking, initiative, leadership, autonomy, enhanced responsibility, personal development and self-directed research and/or project work.

Workshops
Workshops are active, practical classes that are used to explore new concepts, demonstrate techniques/tools, and provide opportunities for experiential learning and student interaction. Workshops may range from practical demonstrations of techniques/protocols for building diagnostics and building performance evaluations to IT sessions on advanced building simulation tools.

Tutorials
Tutorials provide academic one-to-one support to discuss project ideas, reflect on work in progress, provide constructive feedback, and explore concepts and individual student interests. Tutorials normally take the form of a desktop discussion focussed on a particular aspect of a project. The function of a tutorial is to develop a deeper understanding of the topic at hand and develop confidence in oral debate. Preparation is vital and students are encouraged to keep a record of the tutorial discussion. In some cases, group tutorials may be held, which will normally involve 3-6 students concerned with similar area of study, or at the beginning of a project to discuss general topics.

Presentations
Presentations provide an opportunity for students to introduce, explain and justify their work in front of peers and tutors, and receive feedback. Peer presentations also allow students to become active participants in the appraisal process, express their opinion and ideas, and participate in intellectual discussion.

Site visits
Students will have the opportunity to visit 'live' projects, which will be used as case studies to demonstrate the use of monitoring equipment and as exemplars of environmental design.

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14. Relevant QAA Subject Benchmark Statements and Other External or Internal Reference Points:

The programme accords with the following QAA statements:

Programme design, development and approval:

http://www.qaa.ac.uk/en/Publications/Documents/quality-code-B1.pdf

Programme monitoring and review:

http://www.qaa.ac.uk/en/Publications/Documents/quality-code-B8.pdf

Benchmark statement for Architecture:

http://www.qaa.ac.uk/en/Publications/Documents/Subject-benchmark-statement-Architecture.pdf

The programme also aligns with Level 11 descriptors provided by the SCQF:

http://scqf.org.uk/wp-content/uploads/2014/03/SCQF-Revised-Level-Descriptors-Aug-2012-FINAL-web-version1.pdf

15. Additional Relevant Information:

Guest Lectures:
The MSA Friday afternoon Guest Lecture series, which takes place across semesters 1 and 2, has UK and international guest speakers from practice and related areas. This is open to all GSA students and staff, as is the GSA Friday Event lecture series, on Friday mornings.

MSA Research Forum:
The MSA Research Forum meets regularly, where staff, research students and invited guests present their research, to exchange ideas and stimulate debate. These events are open to all staff and students.

GSA Postgraduate Forum:
MS Postgraduate students are invited to participate in the postgraduate forum which meets regularly, contributing to the development of a postgraduate and research community and providing opportunities for student dialogue across the school. The impetus for events comes from postgraduate students themselves rather than the teaching team. It is an additional opportunity to network with students involved in a wider range of disciplines and backgrounds.

Study Visits:
Experiencing buildings and places first hand is an important part of the school's philosophy. Study Visits offer a valuable opportunity to experience a city, its culture, and its buildings and, at times, to meet members of its architectural community -practitioners and students. There are two types of study visits: those that are to a location of general architectural interest, and those to places that relate directly to the project at hand and demand more focused on-site research. Students are encouraged to attend Study Trips if possible, but alternative provisions are made for those who are unable to do so. Prior briefing and subsequent discussion are the related teaching input and a range of staff accompany the trip. Students are expected to keep sketchbooks to record their impressions and studies and to edit them, and photographs, as a journal for their portfolio.

Exhibitions and the Grace and Clark Fyfe Gallery:
The school has its own gallery that houses a programme of exhibitions of architecture and related subjects. Students are encouraged to exhibit their work to the public. The gallery provides such a venue for the exhibition of studio work in progress, completed projects, the outcome of master- classes or for students to arrange their own shows. The school has a strong record of placing student work in venues such as the Lighthouse, the RSA and in galleries throughout Glasgow and beyond.

Honorary Professors:
Honorary professors are employed to share their specific expertise, knowledge, skill and experience to the delivery of the programme. They provide an external professional context and perspective to the programmes of study.

Mackintosh Architectural Students' Association:
As well as the GSA Students' Association, the students of the Mackintosh School of Architecture, at each stage, elect representatives to the Mackintosh Architecture Students' Society. MASS organises seminars, lectures and social events throughout the year and its membership includes staff as well as students. MASS is an affiliated society of the Glasgow School of Art Students' Association (GSASA).

The Student Forum:
The Forum is student led and meets once per month. Items for discussion include housekeeping and cross-school activities. Generally the issues discussed are less programme-oriented, than those covered in the Programme Staff Student Consultative Committees.

It is student convened, with student representation from the Degree, Diploma and PG programmes, as well as the Programme Leaders, Technical Support Officer and Academic Support Manager.

16. Programme Structure and Features:

STAGE 1	TYPE OF COURSE	SCOTCAT CREDIT		ASSESSMENT WEIGHTING %
		CRD	SCQF	
1. Theory of Environmental Architecture	C	15		33.3%
2. Environmental Design and Analysis in Architecture	C	15	11	
3. Building Performance Evaluation	C	15		
4. Core Research Skills for Postgraduates	D	15		
TOTAL CREDITS (STAGE 1)		60		

Exit Award: Postgraduate Certificate in Environmental Architecture

STAGE 2	TYPE OF COURSE	SCOTCAT CREDIT		ASSESSMENT WEIGHTING %
		CRD	SCQF	
5. Energy, Comfort and Health	C	15		33.3%
6. Dissertation Proposal / Design Thesis Proposal	C	15	11	
7. Technical Research Paper	C	15		
8. GSA PGT Elective	B	15		
TOTAL CREDITS (STAGES 1 and 2)		120		

Exit Award: Postgraduate Diploma in Environmental Architecture

STAGE 2	TYPE OF COURSE	SCOTCAT CREDIT		ASSESSMENT WEIGHTING %
		CRD	SCQF	
9. Dissertation / Design Thesis	C	60	11	33.3%
TOTAL CREDITS (STAGES 1, 2 and 3)		180		

Exit Award: MSc in Environmental Architecture

Type of Course
A. Mandatory GSA common course
B. Optional cross-GSA course
C. Core-disciplinary course
D. Elective disciplinary course

17. Can exemptions be granted?

Yes ☐   No ☒

If yes, please explain:

18. Does the programme comply with GSA APEL policy?

Yes ☒   No ☐

If no, please explain:

19. Are there any arrangements for granting advanced entry?

Yes ☐   No ☒

If yes, please explain:

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20. Are there any arrangements for allowing students to transfer into the programme?

Yes ☐   No ☒

If yes, please explain stating requirements and levels to where this can apply:

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21. Are there any arrangements for allowing students to transfer into other programmes?

Yes ☐   No ☒

If yes, please clarify:

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22. What are the requirements for progressing from each stage?

Link to GSA Postgraduate Regulations -
http://www.gla.ac.uk/media/media_413991_en.pdf

Progress
A student will be permitted to progress to preparation of the dissertation, or other substantial independent work required by the degree, Individual Research Project 3, only if he or she has obtained a grade point average of 12 (equivalent to C3) or above in the following taught courses;

Stage 1
Theory of Environmental Architecture
Environmental Design and Analysis in Architecture
Building Performance Evaluation
Core Research Skills for Postgraduates

Stage 2
Energy, Comfort and Health
Dissertation Proposal / Design Thesis Proposal
Technical Research Paper
GSA PGT Elective

With at least 75% of the credits at grade D3 or better and all credits at grade F or above.

In exceptional circumstances a student may be permitted to progress to the dissertation or other substantial independent work where it is judged that the candidate's performance offers a reasonable prospect of that candidate's reaching the standard required for the award of the Masters

degree following reassessment.

Reassessment
A candidate will be permitted reassessment in any taught course, for which he or she has obtained a grade D1 or worse. A candidate will be entitled to one reassessment only in any course, which must take place prior to the submission of the course work for the next stage

Reassessment of the dissertation or other substantial independent work will be permitted on one occasion only, under such conditions as the Examiners may prescribe in each particular case. Normally, resubmission should be no later than 3 months after the date of the meeting of the Board of Examiners.

All reassessment results will be capped at grade C3.

23. Please confirm that the programme follows GSA Examination Board policy and procedures, including External Examiner participation:

Yes ☒   **No** ☐

If no, please explain:

24. Please explain programme management and committee arrangements up to, but not including, Boards of Study:

Board of Studies:
The Board of Studies carries overall responsibility for the management of the School of Architecture and all standing committees of the MSA report to it. It is responsible for all Programme Staff Student Consultative Committees and Forums within the School. The Board of Studies then reports up to the GSA Undergraduate and Postgraduate Committee. The Board of Studies meets once per per semester.

The Board is responsible to the GSA Undergraduate and Postgraduate Committee for all policies and procedures relating to the taught Programmes, for quality assurance and enhancement, including: Programme Monitoring and Annual Reporting, periodic and thematic reviews, proposals for new Programmes or modifications to existing ones, assessment arrangements, nominations for new External Examiners. It is responsible to the GSA Research Committee for all academic matters relating to research.

It comprises the Head of School (Convener), Programme Leaders, Stage Leaders, Subject Leaders, Head of Research, PhD Coordinator, all elected student representatives (Undergraduate, Graduate and Postgraduate), the Academic Support Manager, the Technical Support Officer, the GSA Director of Learning and Teaching, the Architecture Librarian, the Glasgow School of Art Students' Association President and various representatives from GSA Support departments.

Programme Staff Student Consultative Committees:
Programme Staff Student Consultative Committees monitor the delivery of the programmes; discuss

the response to the External Examiners' reports and QLT questionnaires. The Programme Staff Student Consultative Committees meet once each semester and report to the Board of Studies.

Planning and Management Meetings
In preparation for the Programme Committees the academic staff involved holds regular Programme Planning and Management meetings throughout the session.

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25. Please explain the systems and arrangements regarding:

a) Quality assurance of the management, operation and monitoring of the programme

The teaching team is led by the Programme leader. The Programme Leader, working with the Head of School, is responsible for the overall academic vision and direction of the programme and for ensuring the integration of research into the curriculum. He/she has overall responsibility for all aspects of the academic development, delivery and management of the programme; for the academic and personal support of its students; and for the leadership, management and development of the staff team.

The Programme Leader convenes the relevant Programme Staff Student Consultative Committee and Programme Management Committee and represents it at the MSA's Board of Studies and the GSA's Undergraduate and Postgraduate Committee. They are responsible for the assessment of the courses that comprise the programme, represent the programme at the assessment and examination boards, and may convene the examination board for other programmes in the MSA or GSA.

The GSA committee structure can be found at the following link:
http://www.gsa.ac.uk/media/875399/GSA_Committee_Structure_Web.jpg

b) Student feedback and representation

Student representative
One Student representative for the MSc in Environmental Architecture is elected by their peers within the first two weeks of the beginning of session. The rep should discuss issues within their programme group and with relevant tutors before raising them at the committee. The elected representatives are briefed on their role by the President of the GSA Student Association.

Student Forum:

The Forum is student led, and meets once per month. Items for discussion include the running of the café bar, events, cross-school activities and housekeeping. It is convened by one of the student representatives with student representation from each stage of the Degree, Diploma and Postgraduate Programmes, and Programme Leaders, and can invite other staff as required.

c) Programme based student support

Students are appointed a Supervisor during Stage 1.
Supervisors in addition have the role of Pastoral tutors.