THE GLASGOW SCHOOL OF ART	**Course Specification**

Course Code:	**Session:**
PARE101	2017/2018

1. Course Title:
Building Performance Evaluation

2. Version	**Date of Production/Revision:**	**Approval Date:**
1.1	Session 2017/2018	20 April 2016

3. Level:
SCQF11

4. Credits:
15

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

6. Course Contact:
Dr. Filbert Musau

7. Course Aims:

1. To develop a critical awareness of the importance of Building Performance Evaluation;
2. To understand the requirement for Building Performance Evaluation and the gap between building design intent and building performance;
3. To develop a systematic understanding of the capabilities of different measuring and monitoring tools, and factors to consider in selecting tools and preparation before use;
4. To practically demonstrate practical use and application of selected monitoring tools to evaluate given contexts;
5. To develop skills to critically analyse, interpret and report monitoring result;
6. To develop a critical understanding of the health issues related to monitored results/findings.

8. Intended Learning Outcomes of Course:

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

1. Identify the requirements for Building Performance Evaluation and the factors that contribute to

the gap between building design intent and performance;
2. Select different testing methodologies, established standards and protocols used for evaluation of building performance;
3. 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;
4. 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;
5. Draw conclusions from the evaluation results and relate results with building design, systems and occupants;
6. Communicate effectively with occupants of the buildings under analysis, and use clear report writing and presentation skills of Building Performance Evaluation findings.

9. Indicative Content:

The course will delivered be through seminars, group presentations, practical experience and site visit to 'live' projects. The content will introduce to and demonstrate to students the use of tools and techniques used for Building Performance Evaluation. Practical experience will include the testing of building fabric and/or mechanical systems within a building. These include in-situ U-value testing, thermography, airtightness, mechanical fan performance, indoor environment monitoring and energy consumption.

The students will use data collected during the practical experience to enhance skills for quantitative and qualitative data analysis, interpretation of the results, formulating conclusions and development of a written report. The skills gained through this course are linked with, and will be transferable to the courses in stages 2 and 3.

10. Description of Summative Assessment:

No.	Assessment Method	Description of Assessment Method	Weight %	Submission week (assignments) or length (exam)
1	Oral presentation	10 minute presentation of the building performance evaluation exercise, main outcomes and recommendations for improvement	20%	Semester 1 Week 12
1	Submission of written report	A 1500-word *(+ or -10%)*written report covering an aspect of Building Performance Evaluation, including analysis and conclusions from the results	80%	Semester 1 Week 13

10.1 Please describe the Summative Assessment arrangements:

The report can be based on data collected by the student or in relation to other data sets; as agreed with the tutor. The presentation is for 10 minutes, presented to peers and tutors, and summarising the main aspects and focus of the evaluation.

11. Formative Assessment:
Face to face conversation with students as they practically use selected BPE tools.
11.1 Please describe the Formative Assessment arrangements:
Written feedback of a draft of the assessment paper will be provided. Students will be asked to make a presentation of their paper to receive feedback from peers and tutors. The final submission will be blind second marked and students given feedback for their submissions.

12. Collaborative:	
Yes ☐	**No** ☒
12.1 Teaching Institutions:	
5T	

13. Requirements of Entry:
Knowledge of undergraduate level architectural design and undergraduate environmental design in architecture or building services/mechanical systems or other built environment related degree.

14. Co-requisites:
1. Theory of Environmental Architecture 2. Environmental Design and Analysis in Architecture 3. Core Research Skills

15. Associated Programmes:
MSc in Environmental Architecture

16. When Taught:
Stage 1

17. Timetable:
2 hours weekly for 8 weeks and 4 hours for site visits.

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	6	26
Studio	Not Applicable	
Seminar/Presentation	2	4
Tutorial	2	6
Workshop	6	20
Laboratory work	Not Applicable	
Project work	4	94
Professional Practice	Not Applicable	
E-Learning / Distance Learning	Not Applicable	
Placement	Not Applicable	
Examination	Not Applicable	
Essay	Not Applicable	
Private Study	Not Applicable	
Other (please specify below)	Not Applicable	
TOTAL	**20**	**150**

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

1. Group lectures, seminars and individual tutorials.
2. Individual supervision to guide, demonstrate, direct and monitor progress.
3. Workshops to demonstrate use of sensors, loggers and equipment, including practical testing.
4. Visit to MEARU or other BPE projects and presentation of published MEARU or other BPE work.

23. Additional Relevant Information:

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24. Indicative Bibliography:

ATTMA, (2010), *Technical standard L1 - Measuring air permeability of building envelopes (dwellings),* Northampton: The Air Tightness Testing & Measurement Association.

ATTMA, (2010), *Technical standard L2 - Measuring air permeability of building envelopes (non-dwellings),* Northampton: The Air Tightness Testing & Measurement Association.
Baker, P., (2011), *Historic Scotland Technical Paper 10 - U-values and traditional buildings: In situ measurements and their comparisons to calculated values*, Glasgow: Historic Scotland. www.historic-scotland.gov.uk/technicalpapers
Nicol, F., Roaf, S., and Humphreys, M. A., (2012), *Adaptive thermal comfort: principles and practice*. Abingdon, Oxon [England] and New York, NY: Earthscan.
Roaf, S., (2004), *Adapting buildings and cities for climate change: a 21st century survival guide*. Oxford: Architectural Press.
Baker, N., and Steemers, K. A., (2000), *Energy and environment in architecture: a technical design guide,* London: E. & F. N. Spon.