

**Course Code:**

PARE201

**Session**

2017/2018

**1. Course Title:**

Technical Research Paper

**2. Version**

1.1

**Date of Production/Revision:**

Session 2017/2018

**Approval Date**

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 and Rosalie Menon

**7. Course Aims:**

1. To identify a research question within the context of the technical aspects of environmental architecture and develop appropriate research in response.
2. To apply appropriate research methodologies and practices during the formation of the technical paper.
3. Undertake analysis of technical information to develop understanding of environmental issues within buildings.
4. Interpret and provide critique of analysis of technical information based on hypothetical contexts or practical case studies where applicable.
5. To develop an academic writing practice and reporting of technical data in answering a self-directed research question.

**8. Intended Learning Outcomes of Course:****By the end of this course students will be able to:**

1. Identify key knowledge gaps and research questions in the context of technical aspects of Environmental Architecture.
2. Plan, develop and apply quantitative research methods, key research techniques/tools and analytical skills.
3. Identify, assess, and synthesize information from various technical sources.
4. Provide analytical level of originality in connecting research gaps, challenges and opportunities.
5. Report clearly, accurately and competently on findings.

**9. Indicative Content:**

Students will be guided by assigned supervisors in the execution of research and production of a written technical paper which provides a detailed, objective and methodical study covering an area (or combination) of the following themes:

1. Principles of heat transfer, light, air movement and Indoor air quality, energy demand/supply.
2. Modelling of building environmental performance.
3. Diagnostics and monitoring of building performance.
4. The role of the occupant in building performance (occupant interaction with buildings, occupant behaviour and occupant perceptions)
5. The links between building environmental performance, comfort and occupant health

**10. Description of Summative Assessment:**

No.	Assessment Method	Description of Assessment Method	Weight %	Submission week (assignments) or length (exam)
1	Written technical paper	The submission for the course will be in the form of a 3,000 word (+ or - 10%) written report/ technical paper which builds on the content covered in Stage 1 (courses 2 and 3) Environmental Design and Analysis; Building Performance Evaluation; performance, comfort and health	100%	Semester 2 Week 13

**10.1 Please describe the Summative Assessment arrangements:**

Students will be required to submit a written research paper of 3,000 words (+ or -10%) including a problem statement, aims and objectives, methods, analysis and interpretation of results, and conclusions. The paper will be assessed against learning level outcomes 1-5. Assessment will include blind marking by two of the supervisors in the programme; and written feedback will be provided by both markers.

**11. Formative Assessment:****11.1 Please describe the Formative Assessment arrangements:**

Face-to-face tutorials will be provided by the assigned supervisor during tutorials. Written feedback of a complete draft of the assessment paper will be provided. Students will be asked to make an interim presentation of their paper to receive feedback from peers and tutors.

**12. Collaborative:**Yes No **12.1 Teaching Institutions:**

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**13. Requirements of Entry:**

Students must have completed all the four Stage 1 courses - Theory of Environmental Architectural Architecture; Environmental Design and Analysis; Building Performance Evaluation and Core Research Skills.

**14. Co-requisites:**

Energy, Comfort and Health  
Dissertation Proposal/Design Thesis  
PGT Elective

**15. Associated Programmes:**

MSc in Environmental Architecture

**16. When Taught:**

Stage 2

**17. Timetable:**

2 hours weekly for ten weeks

**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	5	15
Studio		
Seminar/Presentation	5	10
Tutorial	5	20
Workshop		
Laboratory work		
Project work		
Professional Practice		
E-Learning / Distance Learning		
Placement		
Examination		
Essay / Writing	3	45
Private Study	Not Applicable	50
Other (please specify below)	2	10
<b>TOTAL</b>	<b>20</b>	<b>150</b>

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

- FIELDWORK - including briefing on use of monitoring equipment; associated software and data management.
- Installation and retrieval of equipment in site specific locations.

**23. Additional Relevant Information:**

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**24. Indicative Bibliography:**

Smith, P. F. (2005). *Architecture in a Climate of Change: A guide to sustainable design*. 2nd ed. Oxford: Architectural Press.

- Ed. Thomas, R. (2006). *Environmental Design, An introduction for architects and engineers*. London: Taylor & Francis.
- Ed. Hastings, R. and Wall, M. (2007). *Sustainable Solar Housing 1: strategies and solutions*. London: Earthscan.
- Ed. Hastings, R. and Wall, M. (2007). *Sustainable Solar Housing 2: exemplary buildings and technologies*. London: Earthscan.
- Bokalders, V. and Block, M. (2010). *The Whole Building Handbook: How to design healthy, efficient and sustainable buildings*. London: RIBA Publications.
- Voss, K. and Musall, E. (2013). *Net Zero Energy Buildings: International projects of carbon neutrality in buildings*. Cambridge: Green Books.
- Szokolay, S. V. (2008). *Introduction to Architectural Science: The Basis of Sustainable Design*. 2nd ed. London: Routledge.
- Baker, N. and Steemers, K. (2002). *Daylight Design of Buildings: A Handbook for Architects and Engineers*. London: Routledge.
- MacKay, D. J. C. (2009). *Sustainable energy: without the hot air*. Cambridge: UIT.
- Porteous C. (2002). *The new eco-architecture: alternatives from the modern movement*. Abingdon. Oxford: Spon Press.
- Porteous, C. with MacGregor, K. (2005). *Solar Architecture in Cool Climates*. London: Earthscan.
- Refereed Journals and conference papers:
  - Building and Environment. Elsevier.
  - Architectural Science Review. Taylor and Francis.
  - Buildings and Energy. Elsevier.
  - The Passive and Low Energy Architecture (PLEA) annual conference series.