

**Course Code:****1. Course Title:**

Building Energy Modelling

**2. Academic Session:**

2011/12

**3. Level:**

SCQF 11

**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 energy modelling
2. To develop a systematic understanding of the capabilities of selected modelling tools.
3. To develop an awareness of the latest building energy modelling tools and the key factors to consider in selecting tools.
4. To impart a comprehensive understanding of the operational principles of selected modelling tools
5. To practically demonstrate the application of a comprehensive modelling tool

**8. Intended Learning Outcomes of Course:**

On completion of this course students should be able to:

1. Appreciate the importance of building energy modelling
2. Distinguish the capabilities of different energy modelling tools
3. Select modelling tools for appropriate tasks
4. Apply energy modelling procedures and strategies
5. Use selected tools to model given contexts

**9. Indicative Content:**

- The role of modelling in the design process
- The role of modelling in energy performance evaluation
- Categories of building energy modelling tools and their capabilities
- Tool selection
- Modelling procedures
  - Tactical concerns and limitations
    - Accuracy of replication
    - Completeness of data input
    - Modelling versus reality
  - How to use building energy modelling software
- Case studies
- Modelling project

**10. Description of Summative Assessment:**

Preparatory work – testing outcomes 1 and 2 – 10%  
1 no. end of day practical exercise – testing outcome 4 – 10%.  
1 no. end of day group practical exercise – testing outcome 5 – 10%.  
4000-word (or equivalent) modelling project report - 70%.

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

The projects will test all the learning outcomes

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

Students will be given a desktop preparatory study exercise and two practical tests at computer workstations – one individual, and the second done in small groups.

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

MSA

**13. Requirements of Entry:**

Knowledge of the principles of energy balance in buildings

**14. Co-requisites:**

None

**15. Associated Programmes:**

This is a cross-GSA elective, open to all PGT students

**16. When Taught:**

Stage 2

**17. Timetable:**

Fridays 10-12am

**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	8	8
Studio		
Seminar/Presentation	4 (group tutorials)	4
Tutorial		
Workshop		
Laboratory work	8 (practical classes)	8
Project work		50
Professional Practice		
E-Learning / Distance Learning		
Placement		
Examination		
Essay		
Private Study		80
Other (please specify below)		
<b>TOTAL</b>	<b>20</b>	<b>150</b>

**22. Description of "Other" Teaching and Learning Methods:****23. Additional Relevant Information:****24. Indicative Bibliography:**

1. CIBSE GUIDE F: Energy efficiency in buildings
2. CIBSE APPLICATION MANUAL: AM11 Building energy and environmental modelling