

**This Version is No Longer Current**  
The latest version of this module is available [here](#)

## MODULE DESCRIPTOR

### Module Title

Environment and Services

|           |           |             |        |
|-----------|-----------|-------------|--------|
| Reference | SU2003    | Version     | 13     |
| Created   | May 2019  | SCQF Level  | SCQF 8 |
| Approved  | July 2005 | SCQF Points | 15     |
| Amended   | May 2019  | ECTS Points | 7.5    |

### Aims of Module

To equip the student with general principles which guide the introduction of environmental strategies and services in buildings, and with the ability to apply these to the design and evaluation of particular building types.

### Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Recognise and justify the human and environmental factors that buildings must meet in order to ensure the comfort and sustainability of human life on Earth, with particular emphasis on low energy and carbon.
- 2 Recognise the requirement for, and critically describe the nature of environmental and services strategies to deliver comfort and low energy/carbon systems in buildings of low to medium complexity.
- 3 Through design and the use of various evaluative methods, be able to apply and evaluate a coherent environmental and services strategy to a building of low to medium complexity.

### Indicative Module Content

This module provides an understanding of the human requirements for comfort and the various factors that affect it, including temperature, humidity, light levels, sound, etc., and the conditions that must be met by buildings, as well as the services and systems that can be deployed to achieve them (such as heating, cooling, natural and mechanical ventilation, air conditioning, MVHR, water supply hot and cold, drainage, daylight and electric light, electrical installation, sound-proofing and noise reduction, and reverberation time). Principles for integration of services are given in relation to design of buildings of low to medium complexity. These are studied in the context of the global environmental requirement to reduce carbon emissions and therefore to produce strategies that lower energy requirements and reduce carbon, including embodied carbon in materials, manufacture, transportations and assembly. Fabric Energy Efficiency (FEE) is stressed as a strategy to achieve thermal comfort and low carbon, as are renewables. Methods of evaluating performance are studied, including software-based methods.

### Module Delivery

This module is taught through classroom exercises, labs, workshops, and material delivered through Moodle (short videos, targeted reading list, and selected bibliography). The general pattern requires students to engage with specific material online before a particular classroom session, at which the principles gleaned from that material will be demonstrated or applied through design and evaluation exercises.

### Indicative Student Workload

|  | Full Time | Part Time |
|--|-----------|-----------|
| Contact Hours  | 40        | N/A       |
| Non-Contact Hours  | 110       | N/A       |
| Placement/Work-Based Learning Experience [Notional] Hours                    | N/A       | N/A       |
| TOTAL  | 150       | N/A       |
| <i>Actual Placement hours for professional, statutory or regulatory body</i> |           |           |

### ASSESSMENT PLAN

*If a major/minor model is used and box is ticked, % weightings below are indicative only.*

#### Component 1

|              |   |            |     |                    |      |
|--------------|---|------------|-----|--------------------|------|
| Type:        | Coursework  | Weighting: | 50% | Outcomes Assessed: | 1, 2 |
| Description: | A coursework-based component in the form of a coherent journal/report of class activities undertaken during the timetabled session. Satisfactory performance requires a minimum 80% attendance and engagement with the class sessions in order to achieve a pass. |            |     |                    |      |

#### Component 2

|              |   |            |     |                    |   |
|--------------|---|------------|-----|--------------------|---|
| Type:        | Examination   | Weighting: | 50% | Outcomes Assessed: | 3 |
| Description: | This is a supervised, time limited (1 day), open book design and evaluation exercise, carried out under no-conferring conditions in the studio. |            |     |                    |   |

### MODULE PERFORMANCE DESCRIPTOR

#### Explanatory Text

In order to pass the module students must achieve 40% or greater in each component and 40% or greater overall.

| Module Grade | Minimum Requirements to achieve Module Grade:                                  |
|--------------|--|
| <b>A</b>     | 70% or better  |
| <b>B</b>     | 60% or better  |
| <b>C</b>     | 50% or better  |
| <b>D</b>     | 40% or better  |
| <b>E</b>     | 35% or better  |
| <b>F</b>     | Less than 35%  |
| <b>NS</b>    | Non-submission of work by published deadline or non-attendance for examination |

**Module Requirements**

Prerequisites for Module

None.

Corequisites for module

None Required

Precluded Modules

None.

**ADDITIONAL NOTES**

Where appropriate mixed discipline team working will be encouraged. Reports may be assessed as coursework or by interview panel.

**INDICATIVE BIBLIOGRAPHY**

- 1 Chadderton, D. K., Building Services Engineering (2012).
- 2 McMullan, R., Environmental Science in Building, 7th Edition. (2012)
- 3 Zunde, J. M. & Bougdah, J (2006), Integrated Strategies in Architecture.
- 4 Hall F. & Greeno R., Building Services Handbook, Routledge 2017.