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MODULE DESCRIPTOR

Module Title

Environment and Services

Reference	SU2003	Version	17
Created	September 2022	SCQF Level	SCQF 8
Approved	July 2005	SCQF Points	15
Amended	November 2022	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 Understand design strategies buildings must meet to ensure human comfort.
- 2 Understand the the role of form, fabric and fenestration in the design of low energy/low carbon buildings.
- 3 Understand the role of services and systems to deliver comfort and to satisfy low energy and carbon requirements.
- 4 Apply evaluative methods and strategies to the design of a low energy/low carbon/high comfort 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, 3
Description:	A coursework-based component in the form of a coherent journal/report of class activities undertaken during the timetabled session.				

Component 2

Type:	Coursework	Weighting:	50%	Outcomes Assessed:	4
Description:	This is a design and evaluation exercise to demonstrate application of concepts, strategies and evaluation methods introduced in the module.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The overall module grade is based on 50% weighting of Component 1 (Y axis) and 50% weighting of Component 2 (X axis). In order to pass the module students must achieve a grade D or greater in each component and a grade D or greater overall. Non-submission of either component will result in an NS grade.

		Coursework:						
		A	B	C	D	E	F	NS
Coursework:	A	A	A	B	B	E	E	
	B	A	B	B	C	E	E	
	C	B	B	C	C	E	E	
	D	B	C	C	D	E	E	
	E	E	E	E	E	E	F	
	F	E	E	E	F	F	F	
NS		Non-submission of work by published deadline or non-attendance for examination						

Module Requirements

Prerequisites for Module	None.
Corequisites for module	None.
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.