

Module Title:	Building Performance and Services 4
Language of Instruction:	English

Credits:	5
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NFQ Level:	6
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Module Delivered In	No Programmes
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Teaching & Learning Strategies:	Integrated projects in line with studio projects to develop student's ability to recognize and illustrate application of various energy efficient details and services at site and building level. • Group/teamwork utilized to carryout case studies as appropriate. • Internal tests to support student learning/revision of fundamental concepts and calculations through the module. • Lecture format utilized to provide theoretical instructions.
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Module Aim:	To gain knowledge and understanding of the Domestic energy assessment procedure to establish building energy rating. To gain knowledge and understanding of M&E services specific to multi storey buildings. • Gain comprehensive understanding of building regulations that govern building services integration in multi storey buildings and large housing developments.
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Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Discuss Building energy rating and apply theoretical concepts and calculations underpinning the energy performance of existing buildings
LO2	Identify and apply principles and interventions appropriate for energy upgrade and refurbishment of existing buildings
LO3	Identify and apply various M&E services specific to multi storey buildings and application of physical and statutory regulations/standards that govern their integration.
LO4	Apply graphic conventions to represent various M&E services specific to larger housing developments and multi storey, medium scale buildings.

Pre-requisite learning
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>
No recommendations listed
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>
No requirements listed

Module Content & Assessment

Indicative Content

Domestic energy assessment procedure and calculations

General principles, Calculation procedures and conventions- dwelling dimensions, ventilation rates, Heat losses, Domestic hot water, lighting and internal heat gains, solar heat gains, Mean internal temperature and dwelling thermal mass, space heat use, Space heating requirements, total energy use.

Energy upgrade and conditions for recommendation

Attic insulation possibilities, Cavity wall insulation, External wall insulation, Internal wall insulation, Replacement windows, Heating upgrade, Heating controls, Ventilation, Draught proofing, Other secondary measures

Building services in multistorey buildings

• Electrical supply and distribution; this includes horizontal and vertical distribution and spatial allowances to accommodate the same. • Drainage: Foul water and surface water drainage systems for multi-storey structures (eg.apartments). • Water supply: Cold and hot water supply for multi-storey structures; Pump and pressure boosting systems; Design and planning considerations for pumps, tanks and toilet area. Gas supply and distribution in buildings Mechanical Transportation • Design and planning considerations for Passenger lifts, speeds and capacities, • lift shaft construction; escalators and travelators; Refuse disposal management • Refuse management in multi-storey buildings

Artificial Lighting

• Fundamental of natural and artificial lighting • Lamps • Types of light fittings • Lighting levels • Artificial lighting design

Sustainable site services

• Introduction to Sustainable urban drainage systems • Services layout plans for housing development • Basic sizing calculations for SUDS systems, • Sustainable wastewater management systems

Assessment Breakdown	%
Project	60.00%
End of Module Formal Examination	40.00%

No Continuous Assessment

Project

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Building Performance project	1,2	30.00	n/a
Project	Building Services project	3,4	30.00	n/a

No Practical

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	n/a	1,2,3,4	40.00	End-of-Semester

ITCarlow reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	12 Weeks per Stage	4.00
Independent Learning Time	12 Weeks per Stage	3.33
Project	12 Weeks per Stage	3.33
Total Hours		128.00

