SERV: Building Performance and Services 3

Module Title:	Building Performance and Services 3
Language of Instruction:	English

Credits:	5

NFQ Level:	6

Module Delivered In	2 programme(s)

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.

Module Aim:	The aim of the module is to develop understanding of theoretical concepts and parameters that underpin the energy performance of new domestic buildings and learn techniques in calculating building energy performance. Building services section: • To gain knowledge and understanding of M&E services specific to medium scale buildings. • Gain comprehensive understanding of building regulations that govern building services integration in medium scale buildings

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Apply theoretical concepts and parameters that underpin energy performance in new domestic buildings
LO2	Explain Building energy rating and Domestic energy assessment procedures that affect energy rating of new domestic buildings
LO3	Identify and choose M&E services specific to medium scale buildings and apply physical and statutory regulations/standards that govern their integration.
LO4	Apply graphic conventions to represent various M&E services specific to medium scale buildings.
LO5	Explain and choose appropriate renewable technologies that can be used to meet energy load requirements in small scale buildings and larger developments

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

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Module Content & Assessment

Indicative Content
Energy performance in domestic buildings • Passive House facade details • Construction heat bridges • High energy efficient windows • Air-tightness and Blower Door Test (demonstration) • Thermography (demonstration) • Summer comfort
Thermal performance of Building Fabric Thermal comfort, Energy transfer in Buildings, Energy Balance, Thermal effects in buildings, Heat transfer mechanisms Concept of Heat gain and heat loss in buildings • , Thermal insulation, thermal bridges & airtightness , Economics of optimal thermal performance
Heating systems and distribution •Space heating fundamentals • Heating systems for non domestic buildings, Introduction to boiler sizing, basic fuel considerations • Introduction to Low, medium and high pressure hot water heating systems • Heat emitters and heating controls • Renewable technologies suitable for space heating, CHP • District heating; Biomass technologies, heat pumps, etc.
Alternate Renewable Technologies Types of alternate energy sources- wind energy, microgeneration, micro hydro power, ocean energy, tidal energy, wave energy, fuel cell technology. Study of each source of energy under • Principles of operation.suitability and applications of systems
Gas supply and telecommunication infrastructure Gas supply and telecommunication infrastructure for domestic and commercial buildings. Guidelines to integrate these services at site and building levels, pipes sizes and runs, etc.

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	3,4,5	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	1,2,3,4,5	40.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

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Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
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

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMARC_B	Bachelor of Science (Honours) in Architectural Technology	3	Mandatory
CW_CMART_D	Bachelor of Science in Architectural Technology	3	Mandatory