

Module Title:	Building Performance and Services 5
Language of Instruction:	English
Credits:	5
NFQ Level:	7
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:	To examine different processes involved in the energy performance rating of non-domestic buildings. The requirements of non-domestic BERs based on the current EU and Irish legislation The aims of building services section: • To make students aware of the extensive range of energy efficient specialized services for modern buildings to improve overall building performance
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/calculations underpinning the energy performance of Non-domestic buildings
LO2	Embed energy and performance analysis into the heart of the design process using Integrated environmental assessment tools for non domestic buildings
LO3	Recognise and choose specialised M&E services specific to modern specialised buildings and apply physical and statutory regulations/standards that govern their integration
LO4	Apply graphic conventions to represent the various specialised M&E services specific to larger 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
Ventilation and air conditioning • Fundamentals of HVAC • Types of Air conditioning systems and their applications in buildings • Spatial and physical requirements to accommodate a HVAC system in buildings
Smart buildings/technologies • Characteristic features of smart buildings and introduction to Structured cabling systems, Direct digital controls, High band width communication infrastructure, Smart metering technologies, Advanced lighting and HVAC controls. • Areas of application for different control systems-time based controls, temperature based controls and lighting controls.
Security and fire protection • Intruder alarm systems • Detection devices and sensors • Introduction to fire triangle and fire equipment. • Fire detection and alarm systems • Fire management services, Permanent fire protection building installations
Energy Assessment Procedures Energy Ratings of Buildings DEAP (Dwelling energy assessment procedure), NEAP (Non-domestic Energy Assessment Procedure) & use of SBEM, EN 16001 Energy Management, European Energy Manager/ Certified Energy Manager principles
SBEM NEAP methodology, Part L structure, collation of data for analysis, utilize SBEM software to assess compliance and energy performance. evaluation of results, analyze software calculation mechanisms and structure, Legislation National & European legislative environment, EPBD Recast, Cost Optimal Framework, NZEB definitions, SI 666 and accompanying Technical Guidance Document (Part L), Energy Performance Techniques Overview of energy performance techniques applicable to building technology and energy systems, comparison of different international approaches, study of benchmarks for building industry (NZEB, Passive house, Part L), PHPP Rating system structure, NZEB, Passive house theory and technology, analysis of main pillars of energy performance (heating & cooling load data, climate data, ventilation performance), completion of basic energy modelling using PHPP, software inputs & outputs, evaluation of results

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

SETU Carlow Campus 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

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMARC_B	Bachelor of Science (Honours) in Architectural Technology	6	Mandatory
CW_CMART_D	Bachelor of Science in Architectural Technology	6	Mandatory