

Title:	Industrial Services APPROVED
Long Title:	Industrial Services
Module Code:	MECH6024
Credits:	5
NFQ Level:	Fundamental
Field of Study:	Mechanical Engineering
Valid From:	Semester 1 - 2009/10 (September 2009)
Module Delivered in	3 programme(s)
Module Coordinator:	JOSEPH CONNELL
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Module Description:	This module is designed as an introduction to Building Services Engineering and Industrial Services
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Describe the operation of a number of domestic, commercial and industrial services.
LO2	Apply the principles of heat transfer to perform basic heat loss calculations.
LO3	Discuss energy efficiency in the design and operation of mechanical services and equipment
LO4	Clearly present analytical solutions and technical descriptions.
Pre-requisite learning	
Module Recommendations	
<i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named CIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</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. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.</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. You may not enrol on this module if you have not acquired the learning specified in this section.</i>	
No requirements listed	
Co-requisites	
No Co Requisites listed	

Module Content & Assessment

Indicative Content

SI Units

SI Units for work, power, energy, heat transfer rate, volumetric flow rate.

Heat loss

Heat transfer mechanisms, U-values, fabric heat loss, infiltration heat loss, total heat loss.

Ventilation and Air Conditioning Systems

Classification of systems, description of natural ventilation, mechanical ventilation, constant volume systems, variable volume systems.

Industrial and Commercial Heating

Radiant heating systems & Convective heating systems.

Refrigeration

Properties of refrigerants, vapour compression refrigeration, split systems.

Pumps and Fans

Classification of pumps and fans, pump/fan curves, system curves, operating points, pump/fan laws, variable speed operation.

Domestic heating and Hot & Cold water

Domestic heating systems, domestic hot & cold water systems.

Building Energy Rating

EU legislation, Irish legislation, BER certification

Combined Heat & Power

CHP systems, method of operation, advantages, limitations

Assessment Breakdown

%

Course Work

100.00%

Course Work

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Multiple Choice Questions	Course theory	1,2	20.0	Week 5
Multiple Choice Questions	Course theory	1,2	20.0	Week 7
Short Answer Questions	Course theory	1,2,3,4	20.0	Week 9
Essay	Ireland's Energy Market or Efficiency in Mechanical Services	1,2,3,4	20.0	Week 10
Presentation	PowerPoint presentation on one of the essay topics	1,2,3,4	20.0	Week 11

No End of Module Formal Examination

Reassessment Requirement

Coursework Only

This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.

The institute reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time

<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Course theory	3.0	Every Week	3.00
Independent & Directed Learning (Non-contact)	Study & assessments	4.0	Every Week	4.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				3.00

Workload: Part Time

<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Course Theory	3.0	Every Week	3.00
Independent & Directed Learning (Non-contact)	Study and Assessments	4.0	Every Week	4.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				3.00

Module Resources
<i>Supplementary Book Resources</i>
<ul style="list-style-type: none"> • Tom de Saulles 2002, <i>The Illustrated Guide to Mechanical Building services AG 15/2002</i>, CIBSE/BSRIA [ISBN: 0-86022-606-9] • M. Pheonix 2005, <i>Plumbing</i>, Heinemann [ISBN: 0-435401-94-7] • L. Race & S. mitchell 2003, <i>A practical guide to HVAC Building Services calculations</i>, BSRIA / CIBSE [ISBN: 0-86022-618-2] • CIBSE, HVCA,APHC,IDHE,OFTEC,CORGI 2004, <i>Domestic Heating Design Guide</i> [ISBN: 1-903287-40-5]
<i>This module does not have any article/paper resources</i>
<i>Other Resources</i>
<ul style="list-style-type: none"> • Website: <i>CIBSE publications</i> http://www.cibse.org.uk

Module Delivered in			
Programme Code	Programme	Semester	Delivery
CR_EEPSY_8	<u>Bachelor of Engineering (Honours) in Electrical Engineering</u>	3	Elective
CR_EELEC_7	<u>Bachelor of Engineering in Electrical Engineering</u>	3	Elective
CR_EELEC_6	<u>Higher Certificate in Engineering in Electrical Engineering</u>	3	Elective