

<b>Title:</b>	Mathematics and CAD <b>APPROVED</b>
<b>Long Title:</b>	Mathematics and Computer Aided Design
<b>Module Code:</b>	INTR6007
<b>Credits:</b>	5
<b>NFQ Level:</b>	Fundamental
<b>Field of Study:</b>	Interdisciplinary Engineering
<b>Valid From:</b>	Semester 1 - 2009/10 ( September 2009 )
<b>Module Delivered in</b>	<a href="#">3 programme(s)</a>
<b>Module Coordinator:</b>	JOSEPH CONNELL
<b>Module Author:</b>	NOEL BARRY
<b>Module Description:</b>	This module is designed to support transferees into Stage 2 of an Engineering programme in the two separate areas of CAD and Mathematics.
<b>Learning Outcomes</b>	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Perform basic operations in algebra and trigonometry for engineering
LO2	Differentiate and integrate a wide range of functions.
LO3	Be able to produce engineering sketches and formal drawings using a CAD package
LO4	Be able to produce electrical circuit and electrical services drawings in accordance with standards
<b>Pre-requisite learning</b>	
<b>Module Recommendations</b>	
<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	
<b>Incompatible Modules</b>	
<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	
<b>Co-requisite Modules</b>	
No Co-requisite modules listed	
<b>Requirements</b>	
<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>	
This module is designed to enable mature or qualified apprentices students enter a programme which already had first year mathematics and CAD modules completed at level 7. This module would then be done in their first semester, typically semester 1, stage 2 when they enter.	
<b>Co-requisites</b>	
No Co Requisites listed	

**Module Content & Assessment**

**Indicative Content**

**Algebra and Trigonometry**

Basic Mathematics Indices, logarithms, scientific notation, units. Transposition and evaluation of formulae. Linear, quadratic, . Complex roots. Complex Numbers and operations, polar form of complex number. Partial fractions. Polynomial functions. Trigonometric ratios and identities, unit circle. graphs of trigonometric functions (waveforms). Solution of trigonometric equations, sine and cosine rules. Polar form of complex number.

**Calculus**

Limits, Definition and graphical interpretation of a derivative,. Derivatives of sums, products and quotients. The chain rule. Applications of differentiation. Integration as antidifferentiation. Standard Integrals. Summation and definite integration.

**CAD drawings**

1. Electrical drawing principles and symbols. 2. Orthographic and section views 3. Power distribution diagrams, residential, commercial. 4. Professional wiring diagrams, including services. 5. Contract drawings preparation

**System Drawings**

1. Circuit drawings, single and multi-line format. 2. Wiring diagrams and their relationship to circuit diagrams. 3. Topographical drawings, with building plans, legends, services etc.

**Assessment Breakdown**

%

Course Work

100.00%

**Course Work**

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	Home work test in Mathematics	1	10.0	Week 3
Other	Home work test in Mathematics	1	20.0	Week 5
Other	Home work test in Mathematics	2	20.0	Week 7
Other	CAD drawings - Electrical Installations	3	25.0	Week 8
Performance Evaluation	CAD drawings - System drawings	3,4	25.0	Sem End

No End of Module Formal Examination

**Reassessment Requirement**

**Repeat examination**

*Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.*

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	No Description	2.0	Every Week	2.00
Lab	CAD Laboratory Session	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	No Description	3.0	Every Week	3.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

**Workload: Part Time**

<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Mathematics	1.5	Every Week	1.50
Lecture	CAD Laboratory	1.5	Every Week	1.50
Independent & Directed Learning (Non-contact)	Mathematics revision and independent CAD drawings	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>Recommended Book Resources</i>
<ul style="list-style-type: none"> <li>• John Bird 2007, <i>Engineering Mathematics</i>, 5th Ed Ed., Elsevier Science &amp; Technology [ISBN: 9780750685559]</li> <li>• Simmons and Maquire, <i>Manual of Engineering Drawing</i>, 2nd Ed., Newnes [ISBN: 0-7506-5120-2]</li> </ul>
<i>This module does not have any article/paper resources</i>
<i>Other Resources</i>
<ul style="list-style-type: none"> <li>• WebCT resource: Department of Mathematics CITCIT Maths online <a href="http://mathsonline.cit.ie">http://mathsonline.cit.ie</a></li> <li>• Standards document: <i>IEC Preparation of Documents for Electrotechnology</i></li> <li>• Standards: <i>n/a</i></li> <li>• Book: Yarwood 2004, <i>Introduction to AutoCAD</i>, Newnes, ISBN 0-75-6-6176-3</li> </ul>

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