



Title:	Industrial Automation	APPROVED
Long Title:	Industrial Automation	
Module Code:	ELEC6022	
Credits:	5	
NFQ Level:	Fundamental	
Field of Study:	Electrical Engineering	
Valid From:	Semester 1 - 2014/15 ( September 2014 )	
Module Delivered in	<a href="#">3 programme(s)</a>	
Module Coordinator:	JOSEPH CONNELL	
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Module Description:	This module introduces the concept of automation. It develops the knowledge and skills required to integrate sensor circuits with a programmable controller to drive a final control element.	
Learning Outcomes		
On successful completion of this module the learner will be able to:		
LO1	Use digital sensors for industrial plant control.	
LO2	Choose power electronic devices and drivers.	
LO3	Convert number systems to appropriate bases such as Binary, BCD, Hex, for operation and programming of programmable controllers.	
LO4	Specify the hardware requirements of a programmable controller and develop ladder programs to control electro-pneumatic circuits.	
LO5	As part of a team, manage the design, implementation and test of a project.	
Pre-requisite learning		
Module Recommendations		
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).		
9802	ELEC6024	Industrial Electronics 1
Incompatible Modules		
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.		
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. You may not enrol on this module if you have not acquired the learning specified in this section.		
No requirements listed		
Co-requisites		
No Co Requisites listed		

**Module Content & Assessment**

**Indicative Content**

**Electronic circuits**

Introduction to digital sensors, Op-Amp circuits, Solid State Switching

**Logic circuits**

Number systems, Boolean algebra, Adder circuit, J-K flip flop, Counters, Shift Registers.

**Programmable Logic Controller**

Hardware - Microprocessor, Memory, I/O. Programming using statement and/or logic ladder techniques.

**Pneumatic Systems**

Electro-pneumatic systems, Solenoid valves, Typical sensors, Application.

**Project**

Activate an output in response to a changing input. Project plan, log, team-working, specifications, datasheets, health and safety.

**Assessment Breakdown**

%

Course Work

100.00%

**Course Work**

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Open-book Examination	Open-book examination on topics covered.	1,2,3,4	50.0	Week 12
Project	The project should incorporate a sensor circuit, PLC control and electro-pneumatic actuation. A technical report will be completed by the team.	1,3,4,5	50.0	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**

<b>Workload: Full Time</b>				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Class instruction	2.0	Every Week	2.00
Lab	Practical work and instruction	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	Study and project work	3.0	Every Week	3.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

**This module has no Part Time workload.**

Module Resources
<i>Recommended Book Resources</i>
<ul style="list-style-type: none"> <li>• William Bolton, 2013, <i>Mechatronics</i>, 5th Ed., Pearson [ISBN: 978-0273742869]</li> <li>• Edward Hughes 2012, <i>Hughes Electrical and Electronic technology</i>, 11th Ed., Pearson Prentice Hall New York [ISBN: 978-0273755104]</li> </ul>
<i>This module does not have any article/paper resources</i>
<i>This module does not have any other resources</i>

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