

Title:	Electrical Applications 2 APPROVED
Long Title:	Electrical Applications 2
Module Code:	ELEC6034
Credits:	5
NFQ Level:	Fundamental
Field of Study:	Electrical Engineering
Valid From:	Semester 1 - 2014/15 (September 2014)
Module Delivered in	3 programme(s)
Module Coordinator:	JOSEPH CONNELL
Module Author:	GERARD GEANEY
Module Description:	This module develops the student's capacity for effective use of computer software, electrical design and skills pertinent to a career in electrical engineering. It encompasses applications and skills for engineering, it encourages efficient use of electrical knowledge and software tools.

Learning Outcomes

On successful completion of this module the learner will be able to:

LO1	Produce documents/reports that reference industrial standards/regulations appropriate to electrical engineering (complying with ETCl and IEC standards).
LO2	Use spreadsheets to graph/represent data and embed mathematical calculations in the spreadsheet to analyse data.
LO3	Develop and design electrical engineering power circuits complying with ETCl and IEC standards. Safely conduct and observe measurements from these circuits and problem solve/debug errors in these circuits.
LO4	Integrate sensors into electrical circuits incorporating Programmable Logic Controllers. Develop the logic for the interaction between the PLC and the sensors to be successful.
LO5	Select and incorporate protection devices in accordance with industrial standards/regulations (complying with ETCl and IEC standards) within the design parameters of electrical circuits.

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).

No recommendations listed

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

Technical Report

Produce appropriate graphs and tables from data generated in lab experiments using suitable spreadsheet software. Embed mathematical calculations on spreadsheets and verify the calculated results.

Electrical power circuit design

Build and assemble power circuits Incorporating solid state switching, protection devices (overcurrent and overload devices) and sensors for electrical circuits and automation.

PLC (programmable logic controllers)

Develop logic solutions utilising programmable logic controllers which interact with industrial type sensors. Debug faults in the logic in monitor mode.

Electrical power theory

Develop an understanding of the theoretical concepts utilised in solid state switching and common industrial sensors

Assessment Breakdown

%

Course Work

100.00%

Course Work

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Written Report	Produce lab reports of various experiments including analysis of the results from the labs.	1,2	50.0	Every Second Week
Practical/Skills Evaluation	Design, assemble and test electrical circuits through practical labs and simulation software.	3,4,5	50.0	Every Second Week

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>
Lab	Practical assembly and debugging of electrical/electronic circuits. Utilise software packages to program PLCs and develop reports.	3.0	Every Week	3.00
Independent Learning	Directed information research	2.0	Every Week	2.00
Total Hours				5.00
Total Weekly Learner Workload				5.00
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>
Lab	Practical assembly and debugging of electrical/electronic circuits. Utilise software packages to program PLCs and develop reports.	3.0	Every Week	3.00
Independent Learning	Directed information research	2.0	Every Week	2.00
Total Hours				5.00
Total Weekly Learner Workload				5.00
Total Weekly Contact Hours				3.00

Module Resources
<i>Recommended Book Resources</i>
<ul style="list-style-type: none"> • W. Bolton, 2009, <i>Programmable Logic Controllers, Fifth Edition</i> [ISBN: 978-1856177511] • J.F. Whitfield, 2009, <i>Electrical Craft Principles, 5th Edition</i> [ISBN: 978-0863419324] • Brian Scaddan IEng; MIIE (elec), 2005, <i>Electrical Installation Work, Seventh Edition</i> [ISBN: 978-0080969817]
<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	<u>Bachelor of Engineering (Honours) in Electrical Engineering</u>	2	Elective
CR_EELEC_7	<u>Bachelor of Engineering in Electrical Engineering</u>	2	Elective
CR_EELEC_6	<u>Higher Certificate in Engineering in Electrical Engineering</u>	2	Elective