Module Title:	Mechatronics 5
Language of Instruction:	English

Credits:	5

NFQ Level:	8

Module Delivered In	2 programme(s)

Module Aim:	The aim of this module is to provide the students with the ability to apply control techniques to electromechanical processes and construct PLC programs

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Program PLCs using all 3 methods namely Statement List, Ladder Logic and Sequential Function Charts, to control various Mechanical Machines and processes (software simulations)
LO2	Design a PLC controlled project.
LO3	Describe various hardware components in modern control systems, illustrating their correct use, and configuration
LO4	Convert to and from decimal, binary, BCD, octal, hexadecimal and Gray code number systems.

Pre-requisite learning	
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*	
No recommendations listed	
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*	
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.*	
No requirements listed	

Module Content & Assessment

Indicative Content
PLC programming Method of programming from hand held units to computer interface. Structure programs using Ladder Logic,Statement List and Grafcet,writing programs to control machine functions using these methods. Write programs to control given sequences on simulation panel. Develop programs to control various machines, carrying out maths functions within PLC's, Data manipulation functions (mask/move) combined with advanced functions (sequential load/output function blocks) Interpret given programs and resolve hidden problems.
PLC theory Creating I/O schedules, Fault diagnostics, recognizing different hardware configurations (sinking/sourcing). Analogue and digital configurations, scaling of inputs and data conversion.
Design PLC controlled project. Select a suitable PLC for a project. Design Mains, pneumatic & control circuits. Create I/O schedule and generic PLC program. Generate a BOM and create a back-plate layout of PLC panel.

Assessment Breakdown	%
Project	30.00%
Practical	70.00%

Special Regulation
Computer based PLC programming using a specific industrial programming platform

No Continuous Assessment

Project				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Complete PLC project from I/O schedules to electropneumatic circuit, plc program and hardware specification	2,3	30.00	Week 26

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	PLC practical programming of various simulated plant and equipment & other computer based competencies	1,3,4	70.00	Every Second Week

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	12 Weeks per Stage	2.00
Laboratory	12 Weeks per Stage	3.00
Independent Learning	15 Weeks per Stage	4.33
	Total Hours	125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EMMEC_B	Bachelor of Engineering (Honours) in Mechanical Engineering	5	Mandatory
CW_EEMEC_D	Bachelor of Engineering in Mechanical Engineering	5	Mandatory

Programme Code	Programme	Semester	Delivery
CW_EMMEC_B	Bachelor of Engineering (Honours) in Mechanical Engineering	5	Mandatory
CW_EEMEC_D	Bachelor of Engineering in Mechanical Engineering	5	Mandatory