

# INDL C2603: Industrial Automation and Robotics

Module Title:			Industrial Automation and Robotics	
Language o	f Instruction	ı:	English	
Credits:		5		
oround.		0		
NFQ Level:		8		
Module Deli	vered In		2 programme(s)	
Teaching & Strategies:	Learning		A combination of lectures, class discussions, tutorials, laboratory exercises and demonstrations will be used. Emphasis will be placed on active learning including problem / project-based learning.	
Module Aim	:		To provide students with a high-level overview of industrial automation and robotic systems.	
Learning Ou	itcomes			
On successfi	ul completion	n of th	nis module the learner should be able to:	
LO1	Understand	d the	fundamental principles of industrial automation.	
LO2	Describe va	arious	s robot types, components, and typical applications	
LO3	Explain the	desi	gn and operation of components and subsystems that comprise robotic and automated systems.	
LO4	Understand	d how	sensors, hardware, and software are used in combination to control robotic and automated systems.	
Pre-requisite	e learning			
Module Rec This is prior l	ommendatic earning (or a	ons a prac	tical skill) that is recommended before enrolment in this module.	
No recommendations listed				
<i>Incompatible Modules</i> These are modules which have learning outcomes that are too similar to the learning outcomes of this module.				
No incompat	No incompatible modules listed			
Co-requisite	Modules			
No Co-requis	ite modules	listed	1	
<b>Requirements</b> This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.				
No requireme	ents listed			



### INDL C2603: Industrial Automation and Robotics

### **Module Content & Assessment**

#### Indicative Content

#### Introduction to industrial automation

Definition and purpose of industrial automation. History and trends of industrial automation. Architecture of Industrial Automation Systems. Common components in industrial systems

#### Introduction to Robotics

Industrial Robot Definition, History and Evolution. Industrial robot type and application. Robot design philosophy. Robot configuration and coordination. Robot parameters (payload, work envelop, etc)

#### **Components of Robotic Systems**

Mechanical body parts and axis or freedom of rotation. Robot end-effectors (grippers, tooling, etc). Robot Sensors (Ultrasonic, photoelectric, Vision, Pressure). Actuators (Servomotor, valves, solenoids)

#### Introduction to control

Definition and use of control in automated systems. Type of industrial controllers. Open and closed loop control system. Reading data from sensors.

Assessment Breakdown	%
Continuous Assessment	20.00%
Practical	20.00%
End of Module Formal Examination	60.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	A mixture of theory and/or practical assessments to reinforce learning throughout the semester.	1,2,3	20.00	n/a

## No Project

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	A series of assignments and practical tasks to complement the theory elements of the module.	4	20.00	n/a

End of Module Formal Examination						
	Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date	
	Formal Exam	Final Examination	1,2,3,4	60.00	End-of-Semester	

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



## INDL C2603: Industrial Automation and Robotics

## Module Workload

Workload: Full Time					
Workload Type	Frequency	Average Weekly Learner Workload			
Lecture	Every Week	3.00			
Laboratory	Every Week	2.00			
Independent Learning Time	Every Week	1.00			
	Total Hours	6.00			

Module Delivered In				
Programme Code	Programme	Semester	Delivery	
CW_EEROB_B	Bachelor of Engineering (Honours) in Robotics and Automated Systems	3	Mandatory	
CW_EEROO_D	Bachelor of Engineering in Robotics and Automated Systems	3	Mandatory	