

Module Outline

Part 1- as validated

1.	Title	Engineering Automation and Manufacture
2.	Level *	6
3.	Credits	20
4.	Indicative Student Study Hours	36 hours lectures 164 hours self-directed learning
5.	Core (must take and pass), Compulsory (must take) or Optional	Optional

5. Brief Description of Module (purpose, principal aims and objectives)

This module is intended to cover the fundamentals of automation and control, where an understanding of how processes are controlled and automated will be achieved through the study of fundamental control theory, motion control and process control. An understanding of modelling and control of modern automated equipment through the study of industrial robots and programmable logic controllers. Approaches to equipment control PLC, automated assembly, design and operation of automated manufacturing systems, selection, specification and justification of an automated system including a plc system will be covered as part of manufacturing systems to focus on the justification, design and operation of manufacturing systems that comprise of automated equipment

Major topics covered are:

Robotics: robot types, mobile robots, end effectors/manipulators.

PLC's: system operational characteristics, programming languages, programming methods, communication standards, sensors, actuators, interfacing, fault finding, de-bugging methods.

Health and safety, safe working practices, risk assessments, cell safety features, programming languages, programming methods

The module will provide students with the essential skills necessary to be able to develop robotic automated manufacturing systems for practical applications.

Produce all elements of a PLC program for a given industrial task and analyse its performance. Apply fault finding techniques and de-bugging methods.

6. Learning Outcomes - On successful completion of this module a student will be able to:

(Add more lines if required)

	<u>Specific Learning Outcomes</u>
1.	Understand and work effectively with the practical application of automated systems in manufacturing

2.	Implement major control systems on a practical automated system, based on critical evaluation
3.	Undertake independent research and analysis and to think creatively about engineering problems
	<u>Generic Learning Outcomes</u>
4.	Take responsibility for own learning and development using reflection and evaluation
5.	Work with ideas and concepts by evaluating information from a range of perspectives

7. Assessment						
Pass on aggregate or Pass all components <i>(modules can only be pass all components if this is a PSRB requirement)</i>					Pass on aggregate	
Summary of Assessment Plan						
	Type	% Weighting	Anonymous Yes / No	Word Count/ Exam Length	Learning Outcomes Coverage	Comments
1.	Investigative report	50%	Yes	2000 words	LO 3, 4, 5	
2.	Practical experiment evaluation	50%	Yes	2000 words and supporting video (up to 5 minutes)	LO 1, 2	
Further Details of Assessment Proposals						
Give brief explanation of each assessment activity listed						
<p>Investigative report</p> <p>The student will research and report on the applications of robotic systems on the UK manufacturing industry with particular emphasis on cost effectiveness, sustainability and future applications of those systems.</p> <p>Practical experiment evaluation</p> <p>The student will design and produce all elements of a PLC program for a given industrial task and analyse its performance. The practical element will involve the student applying safe working practices, fault-finding, and de-bugging methods.</p> <p>In addition, Students are required to provide up to five minutes of supporting video evidence of their experiment.</p>						

8. Summary of Pre and / or Co Requisite Requirements

Not applicable

9. For use on following programmes

BEng Engineering