Liverpool John Moores University

Title:	Automation
Status:	Definitive
Code:	**6000ELE** (120053)
Version Start Date:	01-08-2019
Owning School/Faculty:	Electronics and Electrical Engineering
Teaching School/Faculty:	Electronics and Electrical Engineering

Team	Leader
Clifford Mayhew	Y
Colin Wright	

Academic Level:	FHEQ6	**Credit Value:**	10	**Total Delivered Hours:**	38
Total Learning Hours:	100	**Private Study:**	62		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	12
Practical	24

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Exam	70	2
Report	AS1	Report 1	15	
Report	AS2	Report 2	15	

Aims

To develop the students' knowledge and understanding of automation systems used in manufacturing and process industries

Learning Outcomes

After completing the module the student should be able to:

1 Evaluate the differences between the various types of programmable logic controllers (PLC) to choose an appropriate device for an application
2 Produce PLC programs using ladder logic
3 Produce PLC programs using sequential function charts
4 Select appropriate external devices and integrate them into a PLC based industrial automation system

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Exam	1	2	3	4
Report 1	1	2		
Report 2	3	4		

Outline Syllabus

Programmable Logic Controller systems.
Programming with IEC 61131-3 standards – ladder diagram (LD), function block (FBD) and sequential function chart (SFC) programming.
Designing sequential systems using a State Machine paradigm.

PLC input/output considerations.
Integration of proximity sensors, fail safe sensors, flow, pressure, level and temperature measurement sensors, linear and rotary valve positioners, code reading sensors and RFID devices.

Learning Activities

By a combination of lectures and laboratory design exercises

Notes

On completion of the module the student should be able to design and implement automation systems for a range of industrial applications from factory automation to process control.