

## Liverpool John Moores University

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Title: Industrial Automation  
Status: Definitive  
Code: **6500USST** (126470)  
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering  
Teaching School/Faculty: University of Shanghai For Science and Technology

Team	Leader
Clifford Mayhew	Y

**Academic Level:** FHEQ6  
**Credit Value:** 10  
**Total Delivered Hours:** 33  
**Total Learning Hours:** 100  
**Private Study:** 67

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	11
Practical	22

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	Portfolio	Portfolio of Evidence	100	

### 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 Critically evaluate the differences between the various types of programmable logic controllers (PLC) to choose an appropriate device for an application
- 2 Design PLC programs using ladder logic
- 3 Design PLC programs using sequential function charts
- 4 Assess and 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:

Portfolio of Evidence	1	2	3	4
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### **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.*

### **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.