

Liverpool John Moores University

Title: Automation
Status: Definitive
Code: **6501EEEEBHG** (128762)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Beaconhouse IC Islamabad

| Team | Leader |
|-----------------|--------|
| Russell English | 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 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:

| | | | | |
|-----------------------|---|---|---|---|
| Portfolio of Evidence | 1 | 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.

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.