**Liverpool** John Moores University


Title:                            INDUSTRIAL AUTOMATION
Status:                          Definitive
Code:                            **6500ENGCBT**   (118456)
Version Start Date:        01-08-2011

Owning School/Faculty:        Engineering
Teaching School/Faculty:     Partner College

| Team | emplid | Leader |
|------|--------|--------|
| Gareth Lewis | | Y |

| **Academic Level:** | FHEQ6 | **Credit Value:** | 12.00 | **Total Delivered Hours:** | 37.00 |
|---|---|---|---|---|---|
| **Total Learning Hours:** | 120 | **Private Study:** | 83 | | |

**Delivery Options**
Course typically offered: Semester 1

| Component | Contact Hours |
|-----------|---------------|
| Lecture | 20.000 |
| Practical | 5.000 |
| Tutorial | 10.000 |


**Grading Basis:** 40 %


**Assessment Details**

| Category | Short Description | Description | Weighting (%) | Exam Duration |
|----------|-------------------|-------------|---------------|---------------|
| Exam | AS1 | Examination | 70.0 | 2.00 |
| Report | AS2 | Laboratory assignment | 30.0 | |

**Aims**

*To develop the students' knowledge and understanding of industrial automation systems for manufacturing and process industries*


**Learning Outcomes**

After completing the module the student should be able to:

1    Critically review the differences between the various types of programmable logic controllers to choose an appropriate device for an application
2    Analyse industrial control problems and design suitable solutions
3    Write PLC programs in the appropriate language
4    Understand how to integrate external devices into a PLC based industrial automation system

## Learning Outcomes of Assessments

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

EXAM            1    3    4

C/W             1    2    3

## Outline Syllabus

*Programmable Logical Controller systems. Programming with IEC 61131-3 standards – ladder diagram (LD), function block (FBD) and sequential function chart (SFC) programming. PLC input/output considerations. Designing sequential systems using a State Machine paradigm. Introduction to networks used in industrial control systems: PROFIBUS, Ethernet/PROFINET. 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

Lectures, tutorials, laboratories, assignments, private study

## References

| Course Material | Book |
|---|---|
| Author | Parr E.A |
| Publishing Year | 2003 |
| Title | Programmable Controllers - An Engineer's Guide |
| Subtitle | |
| Edition | |
| Publisher | Newnes |
| ISBN | |

| Course Material | Book |
|---|---|
| Author | IEC 61131-3 |
| Publishing Year | 2001 |
| Title | 'Programming Industrial Automation Systems |

| Subtitle | Concepts and Programming Languages, Requirements for Programming Systems, AIDS to Decision-Making Tools' |
|---|---|
| **Edition** | |
| **Publisher** | Springer-Verlag Berlin and Heidelberg GmbH & Co |
| **ISBN** | 3540677526 |

**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.