Liverpool John Moores University

Title:	AUTOMATION
Status:	Definitive
Code:	**5505ENGSBC** (113905)
Version Start Date:	01-08-2018
Owning School/Faculty:	Maritime and Mechanical Engineering
Teaching School/Faculty:	The Sino-British College

Team	Leader
Russell English	Y

Academic Level:	FHEQ5	**Credit Value:**	12	**Total Delivered Hours:**	37
Total Learning Hours:	120	**Private Study:**	83		

Delivery Options
Course typically offered: Semester 1

Component	Contact Hours
Lecture	20
Practical	5
Tutorial	10

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	60	2
Essay	AS2	Coursework	40	

Aims

To develop the students understanding of the equipment and techniques used to implement automatic control of industrial machinery.

Learning Outcomes

After completing the module the student should be able to:

1 explain the characteristics of the elements of automation systems.
2 discuss the social and economic impact of industrial automation.
3 analyse automation problems a design suitable solutions
4 understand the electrical and electronic interfaces needed to control industrial equipment

Learning Outcomes of Assessments

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

EXAM	1	2	3	4
CW	3	4		

Outline Syllabus

Economic drivers behind industrial automation. Health and safety issues related to industrial automation. Electrical actuation systems. Selection and use of motor drive systems, DC - servo and stepper motors. Positional feedback systems – absolute and incremental rotary shaft encoders. De-bouncing of signals sourced from electromechanical devices. Pneumatic and hydraulic valve actuation and control. Electrical interfaces including different types of transducers. The design of integrated electrical/electronic/fluid systems and cost considerations in circuit design. Commercial equipment, selection criteria and software for circuit design.

Learning Activities

A series of lectures supported by tutorials and laboratories.

Notes

The module provides a broad view of the automation systems found in an industrial environment. On completion a student should be able to competently design or analyse a basic system including specification, circuit, mechanical analysis and electrical interfaces.