Module Proforma

Approved, 2022.01

Summary Information

Module Code	6570USST
Formal Module Title	Automation and IoT
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 6
Grading Schema	40

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Dante Matellini	Yes	N/A

Module Team Member

Contact Name	Applies to all offerings	Offerings

Partner Module Team

Contact Name	Applies to all offerings	Offerings

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
University of Shanghai For Science and Technology

Learning Methods

Learning Method Type	Hours
Lecture	22
Practical	22

Module Offering(s)

Offering Code	Location	Start Month	Duration
SEP-PAR	PAR	September	12 Weeks

Aims and Outcomes

Aims	The module aims to develop students' knowledge and practical understanding of automation and IoT for industrial processes and applications.

Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Understand and evaluate the difference between various types of automation hardware to choose an appropriate device for an application.
MLO2	Develop understanding of the control and operation of hardware
MLO3	Design interfacing techniques between Automation hardware and industry grade IoT/edge platforms using hardware/software techniques.
MLO4	Import and analyse the data in IoT/edge platform from sensor and automation hardware to produce meaningful results.

Module Content

Outline Syllabus

Automation hardware such as raspberry pi, Programmable Logic Controller (PLC) systems.
Programming the automation hardware using various techniques to understand its control and operation.
Automation hardware input/output consideration.
Sensors' integration and data collection through automation hardware.
Introduction to cloud/edge platforms, e.g. AWS, Siemens Mindsphere, etc., their role and applications.
Learn interfacing techniques between automation hardware and cloud/edge platform, e.g. Siemens Mindsphere using i) hardware technique, OR ii) software technique.
Cloud/edge platform setup, data import and monitoring for display and real-time analysis to demonstrate the concept of IoT.

Module Overview

Additional Information

UNESCO Sustainable Development Goals

No Poverty
Quality Education
Gender Equality
Industry, Innovation and Infrastructure
Partnerships for the Goals

UK SPEC AHEP 4

CEng.
M4 Select and critically evaluate technical literature and other sources of information to solve complex problems.
M6 Apply an integrated or systems approach to the solution of complex problems.
M10 Adopt a holistic and proportionate approach to the mitigation of security risks.
M11 Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.
M12 Use practical laboratory and workshop skills to investigate complex problems.

IEng.
B4 Select and evaluate technical literature and other sources of information to address broadly-defined problems.
B6 Apply an integrated or systems approach to the solution of broadly-defined problems.
B10 Adopt a holistic and proportionate approach to the mitigation of security risks
B11 Recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.
B12 Use practical laboratory and workshop skills to investigate broadly-defined problems.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Essay	Essay	50	0	MLO1, MLO2
Report	Report	50	0	MLO3, MLO4