Advanced and Embedded Sensors

Module Information

2022.01, Approved

Summary Information

Module Code	6171CSD
Formal Module Title	Advanced and Embedded Sensors
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 6
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	22
Practical	22
Tutorial	11

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	This module will build on the technologies that have been examined to date, to explore how developments in sensing systems are leading to advanced systems with extremely high levels of functionality and embedded sensors of increasing complexity. This module will look at the most advanced systems currently available and how they are driving the market.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Analyse a system and choose suitable embedded sensor technologies to measure selected parameter(s).
MLO2	2	Design and build an embedded sensor system to make the required measurements.
MLO3	3	Remotely monitor and display data measurements.

Module Content

Outline Syllabus	Embedded sensor technology and applicationsAdditive manufacturing and sensor integrationAdvanced sensorsNetworkingWireless sensor networksMicrocontroller programmingSPI and I2C interfacesSoC Microcontrollers with WifiBrowser based instrumentation using Node-red/DashboardsPower use minimizationUse of local and cloud based message serversLightweight messaging protocols
Module Overview	
Additional Information	After completion of this module the student will be able to integrate embedded sensors into manufactured objects to aid the design of IoT and remote monitoring systems.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Report	70	0	MLO1, MLO2, MLO3
Report	Lab	30	0	MLO1, MLO2, MLO3

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Ronan McMahon	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings