LIVERPOOL JOHN MOORES UNIVERSITY

Module Proforma

Approved, 2022.02

Summary Information

Module Code	5412ELE
Formal Module Title	Local Communications Systems and Applications
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Ronan McMahon	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
Engineering

Learning Methods

Learning Method Type	Hours

Lecture	22
Practical	22

Module Offering(s)

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

Aims and Outcomes

Aims	On completion students will be able to review the communications options available to interconnect hardware elements and justify a selection to resolve a problem.

Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Analyse communications requirements within and between hardware elements
MLO2	Review communications options
MLO3	Perform calculations relevant to communications
MLO4	Assess the suitability of communications options to address engineering problems

Module Content

Outline Syllabus
Communications media I2C, I3C, SPI Time Sensitive Networking (TSN) Internet of Things (IoT) Embedded sensor technology and applications Networking Wireless sensor networks SoC Microcontrollers with/without Wifi Power use and minimization Lightweight messaging protocols and servers Data volumes and data rates Security

Module Overview

Additional Information

The module will examine the movement of information and data between devices and systems. General Notes UNESCO Sustainable Development GoalsAffordable and Clean EnergyIndustry, Innovation and InfrastructureSustainable Cities and CommunitiesClimate ActionLife on LandUK SPEC AHEP 4CEng. M1 Apply a comprehensive knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Much of the knowledge will be at the forefront of the particular subject of study and informed by a critical awareness of new developments and the wider context of engineering.M2 Formulate and analyse complex problems to reach substantiated conclusions. This will involve evaluating available data using first principles of mathematics, statistics, natural science and engineering principles, and using engineering judgment to work with information that may be uncertain or incomplete, discussing the limitations of the techniques employed.M3 Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed.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.M13 Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations.IEng. B1 Apply knowledge of mathematics, statistics, natural science and engineering principles to broadly-defined problems. Some of the knowledge will be informed by current developments in the subject of study. B2 Analyse broadly-defined problems reaching substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles. B3 Select and apply appropriate computational and analytical techniques to model broadly-defined problems, recognising the limitations of the techniques employed. 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 B13 Select and apply appropriate materials, equipment, engineering technologies and processes.Where this module is part of a Degree Apprenticeship programme, the knowledge learning outcomes is S9.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Centralised Exam	Exam	70	2	MLO1, MLO2, MLO3
Report	Coursework	30	0	MLO4