Digital and Embedded Systems

Module Information

2022.01, Approved

Summary Information

Module Code	5301CIT
Formal Module Title	Digital and Embedded Systems
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Changshu Institute of Technology

Learning Methods

Learning Method Type	Hours
Lecture	48
Practical	16

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-PAR	PAR	January	12 Weeks

Aims and Outcomes

Aims	This module is intended to enhance knowledge and understanding of digital circuit design and finite state machines. It's also intended to develop further understanding of modern microcontroller architectures and interfaces requirements to external systems. It aims to provide students with practical skills to design, analyse embedded systems with various external sensors and actuators.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Define electronic circuit operations and design.
MLO2	2	Design, analyse and implement finite state machine based digital circuits.
MLO3	3	Describe and identify suitable interfaces for modern microcontroller/embedded systems.
MLO4	4	Select appropriate hardware, software platforms and interface considering power, cost and capability requirements.
MLO5	5	Produce integrated embedded systems with external sensors and actuators.

Module Content

Outline Syllabus	1. Further introduction to Boolean algebra and Karnaugh maps.2. Design with synchronous sequential state machine.3. Design with asynchronous sequential state machine.4. Embedded processors and the implementation.5. Power requirements of embedded systems and low-power designs.6. Sensors and Sensor interface.7. Actuators and design of drive circuits for actuators.
Module Overview	
Additional Information	This module introduces the students to digital electronics and the application of Embedded processors in electrical circuits.Reports are 2500 maximum word count.Examinations are 2 hour duration.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Exam	Exam	60	2	MLO1, MLO2, MLO3, MLO4
Technology	Programming	40	0	MLO2, MLO4, MLO5

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings

Partner Module Team

Contact Name	Applies to all offerings	Offerings