

Module Code	ACDA5018
Title	Distributed Intelligence Systems
Date	13/10/2021
Level	5
Credits	20
Pre-Requisites	None

AIM(S)

- To develop in the student an in depth understanding of the design and implementation of distributed microcontroller systems and their application to modern electronic devices and systems.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to:

- Analyse distributed microcontroller systems for a range of technical applications through the use of state-of-the-art simulation and synthesis software.
- Implement advanced distributed microcontroller systems, including point to point and point to multipoint systems.

INDICATIVE CONTENT

- Interconnection standards and protocols
- Point to point systems, Point to multipoint systems: Mesh, Star
- RS232, RS485, SPI, I2C, CAN
- LoRa, Bluetooth, Zigbee
- Data security, design safety features, failure modes

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Report	2,500 words	50%

Assessment Component 2

☐ Written exam ☐ Coursework ☒ Practical

Mode of assessment	Volume	Weighting
Lab Practical	2 Hours	50%

Assessment Summary

Activity type	Percentage
Written exam	0%
Coursework	50%
Practical	50%
TOTAL	100%

INDICATIVE READING LIST

Module Code	ACDA5018	
Module Title	Distributed Intelligence Systems	
Classification	Reading List entry	Electronic*
Essential	Williams, R. (2006) <i>Real-time Systems Development</i> . Oxford: Butterworth-Heinemann	☐
Essential	Gaonkar, R. S. <i>Fundamentals of Microcontrollers and Applications in Embedded Systems with the PIC18F Microcontroller Famil</i>) Clifton Park NY: Thomson / Delmar Learning	☐
Essential	Bates, M. (2008) <i>Programming 8-Bit PIC Microcontrollers in C with Interactive Hardware Simulation</i> . Oxford: Newnes	☐
Further	Journals	☐