

Liverpool John Moores University

Title: MICROCONTROLLER SYSTEMS
Status: Definitive
Code: **5009ENG** (105504)
Version Start Date: 01-08-2016

Owning School/Faculty: Electronics and Electrical Engineering
Teaching School/Faculty: Electronics and Electrical Engineering

| Team | Leader |
|----------------|--------|
| Princy Johnson | Y |

Academic Level: FHEQ5
Credit Value: 24
Total Delivered Hours: 50
Total Learning Hours: 240
Private Study: 190

Delivery Options

Course typically offered: Standard Year Long

| Component | Contact Hours |
|-----------|---------------|
| Lecture | 20 |
| Practical | 20 |
| Tutorial | 8 |

Grading Basis: 40 %

Assessment Details

| Category | Short Description | Description | Weighting (%) | Exam Duration |
|----------|-------------------|-------------|---------------|---------------|
| Exam | AS1 | Examination | 50 | 2 |
| Essay | AS2 | Coursework | 50 | |

Aims

To enhance knowledge and understanding of microprocessor based-system architecture, the techniques and methods for interfacing with microprocessor based-systems

To develop intellectual ability to analyse systems, processes and components requiring engineering solutions and to produce solutions to problems through the practical application of engineering.

To enhance professional practical skills in the use of appropriate programming language for practical testing of design ideas in laboratories or through simulation, with technical analysis and critical evaluation of results.

To develop knowledge and practical skills in the programming and application of Programmable Logic Controllers to control various systems.

Learning Outcomes

After completing the module the student should be able to:

- 1 recognise the fundamental components of a Microcontroller system, a typical architecture and associated instruction set.
- 2 explain Microcontroller memory organisation, I/O interfacing and data transfer.
- 3 design and test programs using PIC specific Flowcode, Assembly Language or C.
- 4 develop and execute simple applications using a standard PIC development board and associated accessories.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

| | | | |
|------|---|---|---|
| EXAM | 1 | 2 | 3 |
| CW | 3 | 4 | |

Outline Syllabus

Typical Microcontroller architecture

Memory organisation

I/O sub-systems

Microprocessor-based system interfacing and data transfer

Digital interfacing with microcontrollers

Analogue interfacing with microcontrollers

C Programming and PIC specific C programming

Learning Activities

By a series of lectures, tutorials and practical classes

Notes

This module extends the knowledge of microcontrollers, includes their programming and interfacing and introduces the use of PLCs