

Liverpool John Moores University

Title: MICROPROCESSOR BASED SYSTEMS
Status: Definitive
Code: **5013ENG** (106177)
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:** 61.5
Total Learning Hours: 240 **Private Study:** 178.5

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	24
Tutorial	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	50	1.5
Essay	AS2	Coursework 1	25	
Essay	AS3	Coursework 2	25	

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 Identify and describe the fundamental components of a Microprocessor based system, a typical architecture and associated instruction set.
- 2 Identify and describe Microprocessor based memory subsystems, I/O interfacing and data transfer.
- 3 Design/test programs using PIC specific Flowcode, 'Assembly Language' or 'C'.
- 4 To develop and execute simple applications using a standard PIC development board and associated accessories.
- 5 Design/test a function/ladder logic program for an automation system/process.
- 6 Interface a Programmable Logic Controller to a process.

Learning Outcomes of Assessments

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

EXAM	1	2	3	5
CW	3	4		
CW	5	6		

Outline Syllabus

Typical Microprocessor-based system architecture

Memory and I/O sub-systems

Digital to analogue conversion.

Analogue to digital conversion.

Microprocessor-based system interfacing and data transfer

C Programming and PIC specific C programming

Programmable Logic Controller evolution and structure

Basic logic functions and ladder logic programming

Combinational and sequential problems

Programmable Logic Controller functions

Learning Activities

By a series of lectures, tutorials and practical classes

Notes

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