

Microprocessors and Microcontrollers Lab

Course Code	23EC3652	Year	III	Semester	II
Course Category	PC	Branch	ECE	Course Type	Lab
Credits	1.5	L-T-P	0-0-3	Prerequisites	Computer Architecture and Organization
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes		BL
Upon successful completion of the course, the student will be able to		
CO1	Develop programs using different class of instructions for 8086 microprocessor and ARM processor.	L3
CO2	Analyse assembly language programs and select appropriate IDE to load program into a microprocessor/ microcontroller.	L4
CO3	Build programs to interface microcontroller with the external devices.	L5
CO4	Make an effective lab report.	L3

Mapping of course outcomes with Program outcomes (CO/ PO/PSO Matrix)													
Note: 1- Weak correlation 2-Medium correlation 3-Strong correlation													
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3				3			2				1	
CO2		3			3			2				1	
CO3			3		3			2				1	2
CO4								2	3				
Average	3	3	3		3			2	3			1	2

Syllabus		
Unit No.	Contents	Mapped CO
	Experiments with microprocessor 8086 using Assembler:	
1	Develop assembly language programs to perform arithmetic and logical operations.	CO1, CO2, CO4
2	Develop assembly language programs to perform string operations.	CO1, CO2, CO4
	Experiments with ARM CORTEX M3 Processor	
3	Develop programs to perform arithmetic operations.	CO1 - CO4
4	Develop programs to interface LED, 7-segment display, stepper motor and keyboard.	CO1 - CO4
5	Generate signals using PWM.	CO1 - CO4
6	Develop programs to interface ADC, UART, sensors.	CO1 - CO4

Note: Conduct minimum of 10 experiments.

Learning Resources

Text Books

1. K. M. Bhurchandi, A. K. Ray, Advanced microprocessors and peripherals, 3rd Ed., Tata Mcgraw Hill Education Private Limited, 2012.
2. Muhammad Tahir and Kashif Javed, ARM Microprocessor Systems – Cortex – M Architecture, Programming, and Interfacing, 1st Ed., CRC Press, 2017.
3. Joseph Yiu, The Definitive Guide to ARM Cortex-M3 and Cortex-M4 Processors, 3rd Ed., Newnes, 2014.

Reference Books

1. Douglas V Hall, SSSP Rao, Microprocessors and Interfacing – Programming and Hardware, Tata McGraw Hill Education Private Limited, 3rd Ed., 2012.
2. Dr. Alexander G. Dean, Embedded Systems Fundamentals with ARM Cortex-M based Microcontrollers: A Practical Approach in English, FRDM-KL25Z Ed., Arm Education Media, 2017.
3. Cortex -M3 Technical Reference Manual.

e-Resources

1. www.Arm.com
2. www.ocfreaks.com