III Year-II Semester		L	T	P	C
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MICROPROCESSORS AND MICROCONTROLLERS (R1632023)

Prerequisite Course: programming in C

Course Description and Objectives:

Microprocessor and microcontroller have become important building blocks in digital electronics design. It is important for student to understand the architecture of a microprocessor and its interfacing with various modules. 8086 microprocessor architecture, programming, and interfacing is dealt in detail in this course. Interfacing, PIC, architecture, programming in C.

Objectives:
1. To understand the organization and architecture of Micro Processor
2. To understand addressing modes to access memory
3. To understand 8051 micro controller architecture
4. To understand the programming principles for 8086 and 8051
5. To understand the interfacing of MP with IO as well as other devices
6. To understand how to develop cyber physical systems

Course Outcomes:

Upon completion of the course, the student will be able to achieve the following outcomes.

Cos	Course Outcomes	Pos
1	To be able to understand the microprocessor capability in general and explore the evaluation of microprocessors.	6
2	To be able to understand the addressing modes of microprocessors	4
3	To be able to understand the micro controller capability	4
4	To be able to program mp and mc	5
5	To be able to interface mp and mc with other electronic devices	4
6	To be able to develop cyber physical systems system.	5

Syllabus:

UNIT–I:
Introduction to Microprocessor Architecture

Introduction and evolution of Microprocessors– Architecture of 8086–Register Organization of 8086– Memory organization of 8086– General bus operation of 8086–Introduction to 80286–80386 and 80486 and Pentium.

UNIT–II:
Minimum and Maximum Mode Operations

Instruction set, Addressing modes– Minimum and Maximum mode operations of 8086–8086 Control signal interfacing–Read and write cycle timing diagrams.

UNIT-III:
I/O Interface

8255 PPI– Architecture of 8255–Modes of operation– Interfacing I/O devices to 8086 using 8255– Interfacing A to D converters– Interfacing D to A converters– Stepper motor interfacing– Static memory interfacing with 8086–DMA controller (8257)–Architecture– Interfacing 8257 DMA controller– Programmable Interrupt Controller (8259)–Command words and operating modes of 8259– Interfacing of 8259–Keyboard/display controller (8279)–Architecture–Modes of operation–Command words of 8279– Interfacing of 8279.

UNIT–IV:

Introduction to 8051 Micro Controller

Overview of 8051 Micro Controller– Architecture– Register set–I/O ports and Memory Organization–Interrupts–Timers and Counters–Serial Communication.

UNIT-V

PIC Architecture

Block diagram of basic PIC 18 micro controller, registers I/O ports.

UNIT-VI

Programming in C for PIC

Data types, I/O programming, logical operations, data conversion

TEXT BOOKS:

1. Kenneth J Ayala, "The 8051 Micro Controller Architecture, Programming and Applications", Thomson Publishers, 2nd Edition.

2. PIC Microcontroller and Embedded Systems using Assembly and C for PIC 18, - Muhammad Ali Mazidi, RolindD.Mckinay , Danny causey -Pearson Publisher 21st Impression.

REFERENCE BOOKS

1. R.S. Kaler, " A Text book of Microprocessors and Micro Controllers", I.K. International Publishing House Pvt. Ltd.

2. Ajay V. Deshmukh, "Microcontrollers – Theory and Applications", Tata McGraw– Hill Companies – 2005.

3. Ajit Pal, "Microcontrollers – Principles and Applications", PHI Learning Pvt Ltd, 2011.

4. Microprocessors and Interfacing, Douglas V Hall, Mc–Graw Hill, 2nd Edition.

5. Ray and Burchandi, "Advanced Micro Processors and Interfacing", Tata McGraw– Hill.