



BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(An Autonomous Institution)
Amalapuram-533201, Dr. B.R. Ambedkar Konaseema DT, Andhra Pradesh.
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
(Accredited by NBA)

III Year II Semester Course Code: 23EE6T11	MICROPROCESSORS AND MICROCONTROLLERS (PROFESSIONAL CORE)	L	T	P	C
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Pre-requisite:

Basic knowledge in digital electronics, fundamentals of computers.

Course objectives:

- To understand the organization and architecture of Microprocessor
- To understand addressing modes to access memory
- To understand 8051 micro controller architecture
- To understand the programming principles for 8086 and 8051
- To understand the interfacing of Microprocessor with I/O as well as other devices
- To understand how to develop cyber physical systems

Course Outcomes:

After the completion of the course the student should be able to:

- CO1: Know the concepts of the Microprocessor capability in general and explore the evaluation of microprocessors.
- CO2: Analyse the instruction sets - addressing modes - minimum and maximum modes operations of 8086 Microprocessors
- CO3: Analyse the Microcontroller and interfacing capability CO4: Describe the architecture and interfacing of 8051 controller
- CO5: Know the concepts of PIC micro controller and its programming.

UNIT - I**Introduction to Microprocessor Architecture**

Introduction and evolution of Microprocessors – Architecture of 8086 – Memory Organization of 8086 – Register Organization of 8086– Introduction to 80286 - 80386 - 80486 and Pentium (brief description about architectural advancements only).

UNIT - II**Minimum and Maximum Mode Operations**

Instruction sets of 8086 - Addressing modes – Assembler directives –Simple Programs- General bus operation of 8086 – Minimum and Maximum mode operations of 8086 – 8086 Control signal interfacing – Read and write cycle timing diagrams.

UNIT - III**Microprocessors I/O interfacing**

8255 PPI– Architecture of 8255–Modes of operation– Interfacing I/O devices to 8086 using



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8255-Interfacing A to D converters- Interfacing D to A converters- Stepper motor interfacing- Static memory interfacing with 8086 - Architecture and interfacing of DMA controller (8257).

UNIT - IV

8051 Microcontroller

Overview of 8051 Microcontroller - Architecture- Memory Organization - Register set - Instruction set - Simple Programs - I/O ports and Interrupts - Timers and Counters - Serial Communication - Interfacing of peripherals.

UNIT - V

PIC Architecture

Block diagram of basic PIC 18 micro controller - registers I/O ports - Programming in C for PIC: Data types - I/O programming - logical operations - data conversion.

Text Books:

1. Ray and Burchandi - "Advanced Microprocessors and Interfacing"- Tata McGraw-Hill - 3rd edition - 2006.
2. Kenneth J Ayala - "The 8051 Microcontroller Architecture- Programming and Applications" - Thomson Publishers - 2nd Edition.
3. PIC Microcontroller and Embedded Systems using Assembly and C for PIC 18 - - Muhammad Ali Mazidi - Rolind D. McKinay - Danny Causey - Pearson Publisher 21st Impression.

Reference Books:

1. Microprocessors and Interfacing - Douglas V Hall - Mc-Graw Hill - 2nd Edition.
2. R.S. Kaler - "A Text book of Microprocessors and Micro Controllers" - I.K. International Publishing House Pvt. Ltd.
3. Ajay V. Deshmukh - "Microcontrollers - Theory and Applications" - Tata McGraw-Hill Companies -2005.
4. Ajit Pal - "Microcontrollers - Principles and Applications" - PHI Learning Pvt Ltd - 2011.

Online Learning Resources:

1. <https://archive.nptel.ac.in/courses/108/105/108105102>
2. <https://archive.nptel.ac.in/courses/108/103/108103157>
3. <https://nptel.ac.in/courses/106108100>