SECA1404	MICROPROCESSOR AND MICROCONTROLLER BASED SYSTEMS	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To understand the operation of microprocessors and microcontrollers.
- To understand the machine language programming.
- To understand the interfacing techniques and their applications.

UNIT 1 BASIC CONCEPTS **9 Hrs.**

8085 Microprocessor - Architecture and its operation, Concept of instruction execution and timing diagrams, fundamentals of memory interface - Addressing modes.

UNIT 2 8085 INSTRUCTION SET AND ASSEMBLY LANGUAGE PROGRAMMING **9 Hrs.**

Instruction classifications, Writing and executing simple programs - Arithmetic and logic operations – Data transfer - Branching - Looping – Indexing - Counter and time delays - Writing subroutine - Conditional call and return instruction, simple programs.

UNIT 3 INTERFACING **9 Hrs.**

Basic Interface concepts, memory mapped I/O and I/O mapped I/O, Interrupt and vectored interrupt, Programmable peripheral interface 8255 - Programmable Interval timer 8253 - Programmable interrupt controller 8259 - Programmable DMA controller 8257.

UNIT 4 8086 ARCHITECTURE **9 Hrs.**

Architecture – Minimum mode and Maximum mode operation – Address Generation - Addressing modes - Overview of 8086 instruction set - Instruction format - Assembler Directives – Designing a Single Board Computer.

UNIT 5 MICROCONTROLLER **9 Hrs.**

Introduction - Architecture of 8051 - Memory organization - Addressing modes - Instruction set – Assembly Language Programming - Jump, Loop and Call Instructions - Arithmetic and Logic Instructions - Bit Operations -Programs – Introduction to Arduino.

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - Understand the architecture and functional blocks of Processor 8085.
CO2 - Understand the addressing modes and instructions of Microprocessor 8085.
CO3 - Learn the architecture and functions of important interface chips.
CO4 - Understand the architecture and functional blocks of Processor 8086.
CO5 - Learn the architecture and functions of 8051 and basics of Arduino controller.
CO6 - Design and implement Microprocessor and Microcontroller based system.

TEXT / REFERENCE BOOKS

1. Ramesh Goankar, "Microprocessor architecture programming and applications with 8085 / 8088", 5th Edition, Penram International Publishing.
2. A.K.Ray and Bhurchandi, "Advanced Microprocessor", 1st Edition, TMH Publication.
3. Kenneth J.Ayala, "The 8051 microcontroller Architecture, Programming and applications" 2nd Edition ,Penram international.
4. Doughlas V.Hall, "Microprocessors and Digital system", 2nd Editon, Mc Graw Hill,1983.
5. Md.Rafiquzzaman, "Microprocessors and Microcomputer based system design", 2nd Editon,Universal Book Stall, 1992.
6. Hardware Reference Manual for 80X86 family", Intel Corporation, 1990.
7. Muhammad Ali Mazidi and Janice Gillispie Mazidi, "The 8051 Microcontroller and Embedded Systems", 2nd Edition, Pearson.
8. “Arduino Made Simple” by Ashwin Pajankar.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100 **Exam Duration: 3 Hrs.**
PART A: 10 Questions of 2 marks each-No choice **20 Marks**
PART B: 2 Questions from each unit with internal choice, each carrying 16 marks **80 Marks**