SECA1404	MICROPROCESSOR AND MICROCONTROLLER BASED SYSTEMS	L	Т	Р	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.
- Doughlas V.Hall, "Microprocessors and Digital system", 2nd Editon, Mc Graw Hill, 1983.
- 5. Md.Rafiguzzaman, "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
PART A: 10 Questions of 2 marks each-No choice
Exam Duration: 3 Hrs.
20 Marks

PART B: 2 Questions from each unit with internal choice, each carrying 16 marks

80 Marks