**SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY**

**Department of Electronics and Communication Engineering**

**SECA1404 -MICROPROCESSOR AND MICROCONTROLLER BASED SYSTEMS**

**Batch-2020-2024**

**COURSE OUTCOME**

**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.**

**Unit-1- BASIC CONCEPTS**

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| --- | --- | --- |
| Unit | Topics | Hours |
| 1 | 8085 Microprocessor – Introduction concepts | 1 |
| 1 | Architecture and its operation | 1 |
| 1 | 8085 – PIN Configuration | 1 |
| 1 | Concept of instruction execution | 1 |
| 1 | timing diagrams | 3 |
| 1 | fundamentals of memory interface | 1 |
| 1 | Addressing modes | 1 |

**Unit-2- 8085 INSTRUCTION SET AND ASSEMBLY LANGUAGE PROGRAMMING**

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| --- | --- | --- |
| Unit | Topics | Hours |
| 2 | Instruction classifications | 1 |
| 2 | Arithmetic and logic operations | 1 |
| 2 | Data transfer instructions | 1 |
| 2 | Branching – Looping instructions | 2 |
| 2 | Indexing - Counter and time delays | 1 |
| 2 | Writing subroutine - Conditional call and return instruction | 1 |
| 2 | Writing and executing simple programs | 2 |

**Unit-3- INTERFACING**

|  |  |  |
| --- | --- | --- |
| Unit No | Topic | Hour |
| 3 | Basic Interface concepts | 1 |
| 3 | memory mapped I/O and I/O mapped I/O | 2 |
| 3 | Interrupt and vectored interrupt | 2 |
| 3 | Programmable peripheral interface 8255 | 1 |
| 3 | Programmable Interval timer 8253 | 1 |
| 3 | Programmable interrupt controller 8259 | 1 |
| 3 | Programmable DMA controller 8257 | 1 |

**Unit-4-8086 ARCHITECTURE**

|  |  |  |
| --- | --- | --- |
| Unit | Topics | Hours |
| 4 | Architecture of 8086 | 1 |
| 4 | Minimum mode and Maximum mode operation | 2 |
| 4 | Address Generation - Addressing modes | 1 |
| 4 | Overview of 8086 instruction set | 1 |
| 4 | Instruction format | 2 |
| 4 | Assembler Directives | 1 |
| 4 | Designing a Single Board Computer | 1 |

**Unit-5-** **MICROCONTROLLER**

|  |  |  |
| --- | --- | --- |
| Unit | Topics | Hours |
| 5 | Introduction - Architecture of 8051 - Addressing modes | 1 |
| 5 | Memory organization | 1 |
| 5 | Instruction set | 2 |
| 5 | Assembly Language Programming | 1 |
| 5 | Jump, Loop and Call Instructions | 1 |
| 5 | Arithmetic and Logic Instructions | 1 |
| 5 | Bit Operations -Programs | 1 |
| 5 | Introduction to Arduino. | 1 |