Course Name	**Microprocessor and Microcontroller**
Course Pre-requisites	**Digital Electronics**
Name of Instructor	**Mrs. Ishita Deb**
Anti-requisites	**NIL**
Course Description	Microprocessors and Microcontrollers course is intended to introduce the architecture, programming of microprocessors and interfacing various hardware circuits to microprocessors. The topics covered are architecture, addressing modes, instruction set of 8086, minimum and maximum mode operation of 8086, 8086 INSTRUCTION SET, Assembly language programming fundamentals, interfacing of static Ram, EPROM, 8255, stepper motor, 8251 USART, modes of timer operation of 8051, programming of Real time control by using basic microcontroller, This course analyze the complete architectural, programming, interfacing details of 8086 microprocessor-8051 microcontroller.
Course Outcomes	Up on successful completion of this course, student will be able to: • Understand the architecture of microprocessors and micro controller • Understand the programming model of microprocessors and micro controllers • Interface different external peripheral devices with microprocessors and micro controllers • Analyze a problem and formulate appropriate computing solution for processor or controller based application. • Develop an assembly language program for specified application

UNIT-1

8086 architecture: 8086 architecture- functional diagram, Register organization, memory segmentation, programming model, Memory addresses, physical memory organization, Signal descriptions of 8086-common function signals, timing diagrams, Interrupts of 8086.

UNIT-2

Instruction set and assembly language programming of 8086: Instruction formats. Addressing modes, instruction set, assembler directives. Macros, Simple programs involving logical, branch and call instructions. Sorting, evaluating arithmetic expressions, string manipulations.

UNIT-3

I/O Interface: 8255 PPI, various modes of operation and interfacing to 8086, interfacing of key board, display. Stepper motor interfacing, D/A &A/D converter.

Interfacing With advanced devices: Memory interfacing to 8086,Interrupts of 8086, Vector interrupt table, Interrupt service routine, Serial communication standards, serial data transfer schemes, 8251 USART architecture and Interfacing

UNIT-4

Introduction to microcontrollers: overview of 8051 microcontroller, Architecture, I/O ports, Memory organization, addressing modes and instruction set of 8051, Simple programs. Programming Timer interrupts, Programming the serial communication interrupts, Programming 8051 timers and counters

Targeted Application & Tools that can be used:

Application Area:

Microprocessor-based systems are found everywhere today and not just in computers and smartphones. They are used also in automatic testing of products, speed control of motors, traffic light control, communication equipment, television, satellite communication, home appliances, such as microwave oven, washing machine etc.

Professionally Used Software: MASM

Text Book(s)

1: "The 8051 Microcontroller and Embedded Systems : Using Assembly and C" by Muhammad Ali Mazidi

2: Brey B. B., "The Intel Microprocessors", Pearson

Reference Book(s)

1. **Hall Douglas V. and Rao S. S. S. P., "Microprocessor and Interfacing", McGraw Hill Education.**

2. **Das Lyla B., "The x86 Microprocessors", Pearson**

3.**Microprocessors and Microcontrollers : Architecture, Programming and Interfacing Using 8085, 8086 and 8051" by Soumitra Kumar Mandal**

…………………………………………THANK YOU……………………………….

HAPPY LEARNING