SCHEME OF COURSE WORK

Course Details:

Course Title	**: Microprocessors and Microcontrollers**		
Course Code	**: 13EC1115**	**L T P C**	**: 4 0 0 3**
Program:	**: B.Tech.**		
Specialization:	**: Electronics and Communication Engineering**		
Semester	**: V**		
Prerequisites	**: Digital logic design, computer organization**		
Courses to which it is a prerequisite	**: Embedded systems**		

Course Outcomes (COs):

1	Explain the Architecture of 8086 Microprocessor
2	Develop Programming skills in assembly language for 8086Microprocessor.
3	Describe the interfacing techniques of various peripherals to Microprocessor
4	Design serial data communication and DMA
5	Explain the architecture of 8051

Course Outcomes versus Program Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**M**		**M**	**M**	**M**	**M**						
CO2	**M**		**S**	**S**	**S**	**M**						**M**
CO3	**S**	**M**	**M**	**M**	**S**		**S**	**M**	**S**			**M**
CO4	**M**	**M**	**M**	**S**	**M**	**M**	**S**					
CO5		**M**	**M**	**M**	**M**	**M**						**M**

S - Strongly correlated, M - Moderately correlated, Blank - No correlation

Assessment Methods:	Assignment / Quiz / Seminar / Case Study / Mid-Test / End Exam

Teaching-Learning and Evaluation

Week	Topic / contents	Course outcomes	Sample questions	Teaching-learning strategy	Assessment method & schedule
1	8086 internal architecture, addressing modes, pin diagram	CO-1	1.Draw the architecture of 8086 2. Explain the addressing modes of 8086.	▫ Lecture ▫ Discussion	Assignment 1/ Mid1/Quiz1
2	Minimum mode and maximum mode of operation, timing diagrams, Memory interfacing to 8086 (Static RAM)	CO-1	1. Draw the timing diagram of read & write operation. 2. Interface Static RAM to 8086.	▫ Lecture ▫ Discussion	Assignment 1/ Mid1/Quiz1
3	Memory interfacing to 8086 (EPROM), 8086 interrupts and interrupt responses	CO-1	1. Differentiate between EEPROM, WORM 2. What is interrupt handler?	▫ Lecture ▫ Discussion	Assignment 1/ Mid1/Quiz1
4	Instruction set of 8086, assembler directives, program development Steps.	CO-2	1. Explain data transfer instructions of 8086. 2. Define assembler directives.	▫ Lecture ▫ Discussion	Assignment 1/ Mid1/Quiz1
5	Constructing the machine course Codes for 8086 instructions, Writing programs for use with an assembler.	CO-2	1. Write an assembly program for arithmetic operations. 2. write the difference between logical OR and bitwise OR	▫ Lecture ▫ Discussion ▫ Program solving	Assignment 1/ Mid1/Quiz1
6	Writing and using Procedures and assembler macros, Priority interrupt controller Intel 8259A.	CO-2 & CO-3	1.Define Procedures and macros 2. What are the features of priority interrupt controller?	▫ Lecture ▫ Discussion	Assignment 1/ Mid1/Quiz1
7	Programmable peripheral Interface 8255A. Interfacing of A/D converter to 8086 Microprocessor.	CO-3	1. Interface PPI to 8086 Processor. 2.Expalin the interfacing of A/D converter	▫ Lecture ▫ Discussion ▫ Program solving	Assignment 1/ Mid1/Quiz1
8	Interfacing of D/A converter to 8086 Microprocessor. Interfacing microprocessor to keyboard.	CO-3	1. Explain pin description of D/A converter. 2. What is De-bouncing?	▫ Lecture ▫ Program Solving	Assignment 1/ Mid1/Quiz1
9	**Mid-Test 1**				

10	Interfacing microprocessor to 7-segment display unit, stepper motor.	CO-3	1. Explain the interfacing of 7-Segment display unit to 8086. 2. Write an ALP to rotate a stepper motor in clockwise direction continuously.	▫ Lecture ▫ Discussion ▫ PPT	Assignment 2/ Mid2/Quiz2
11	Serial data transfer scheme, asynchronous and synchronous data transfer schemes, serial I/O 8251 USART architecture.	CO-4	1. Draw the frame format of Asynchronous Scheme. 2.Expalin the architecture of 8251(USART)	▫ Lecture ▫ Discussion ▫ Program solving	Assignment 2/ Mid2/Quiz2
12	Serial I/O 8251 USART interfacing, Sample program of serial data transfer.	CO-4	1. Interface 8251 to 8086 2. Write an ALP to transfer character 'Y' Continuously.	▫ Lecture ▫ Discussion ▫ Program solving	Assignment 2/ Mid2/Quiz2
13	Need for DMA, 8257 DMA Controller, 8279 keyboard/display controller.	C0-4	1. What is the need of DMA? 2. Explain the operation of 8279 keyboard controller.	▫ Lecture ▫ Discussion ▫ PPT	Assignment 2/ Mid2/Quiz2
14	Overviews of 8051 family, Pin description of the 8051, 256-byte on chip RAM.	CO-5	1. Differentiate Microprocessor and Microcontroller. 2. Draw the architecture of 8051.	▫ Lecture ▫ Discussion	Assignment 2/ Mid2/Quiz2
15	8051 flag bits and PSW register, 8051 register banks and stack, instruction set.	CO-5	1. Explain the PSW Register 2. Explain Compare and Rotate instructions with examples.	▫ Lecture ▫ Discussion	Assignment 2/ Mid2/Quiz2
16	Programming 8051 timers, counter programming.	CO-5	1. Differentiate Timer and counter. 2. Explain TMOD register.	▫ Lecture ▫ Discussion	Assignment 2/ Mid2/Quiz2
17	Basics of serial communication, 8051 serial port programming in Assembly language.	CO-5	1.Expalin DB-9 pin connecto of RS232 2. What are the advantages o serial communication?	▫ Lecture ▫ Discussion ▫ Program solving	Assignment 2/ Mid2/Quiz2
18	**Mid-Test 2**				
19/20	**END EXAM**				