COURSE PLAN

Subject code: EC8691	**Branch/Year/Sem/Section: B.E ECE/III/VI**
Subject Name: MICROPROCESSOR & MICROCONTROLLER	**Batch:2019-2020**
Staff Name:S.MIRDULA	**Academic year:2017-2018**

COURSE OBJECTIVE

1. To understand the Architecture of 8086 microprocessor.
2. To learn the design aspects of I/O and Memory Interfacing circuits.
3. To interface microprocessors with supporting chips.
4. To study the Architecture of 8051 microcontroller.
5. To design a microcontroller based system

TEXT BOOK:

1. Yu-Cheng Liu, Glenn A.Gibson,-Microcomputer Systems: The 8086 / 8088 Family - Architecture, Programming and Design‖, Second Edition, Prentice Hall of India, 2007. (UNIT I- III)

2. Mohamed Ali Mazidi, Janice Gillispie Mazidi, Rolin McKinlay, ―The 8051 Microcontroller and Embedded Systems: Using Assembly and C‖, Second Edition, Pearson education, 2011. (UNIT   IV-V)

REFERENCES:

1. Doughlas V.Hall, ―Microprocessors and Interfacing, Programming and Hardware‖,TMH,2012

2. A.K.Ray,K.M.Bhurchandi, "Advanced Microprocessors and Peripherals" 3rd edition, Tata McGrawHill, 2012

WEB RESOURCES
W1: https://www.tutorialspoint.com/microprocessor/microprocessor_8086_overview.htm
W2 : https://www.youtube.com/watch?v=nxryfWg5Hm4
W3:http://www.circuitstoday.com/8051-microcontroller

TEACHING METHODOLOGIES:
  ➢ BB   - BLACK BOARD
  ➢ PPT   - POWER POINT PRESENTATION

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

EC8691	MICROPROCESSOR AND MICROCONTROLLERS	L	T	P	C
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UNIT I   THE 8086 MICROPROCESSOR   9

Introduction to 8086 – Microprocessor architecture – Addressing modes – Instruction set and assembler directives – Assembly language programming – Modular Programming – Linking and Relocation – Stacks – Procedures – Macros – Interrupts and interrupt service routines – Byte and String Manipulation.

UNIT II   8086 SYSTEM BUS STRUCTURE   9

8086 signals – Basic configurations – System bus timing –System design using 8086 – I/O programming – Introduction to Multiprogramming – System Bus Structure – Multiprocessor configurations – Coprocessor, Closely coupled and loosely Coupled configurations – Introduction to advanced processors.

UNIT III   I/O INTERFACING   9

Memory Interfacing and I/O interfacing – Parallel communication interface – Serial communication interface –

D/A and A/D Interface – Timer – Keyboard /display controller – Interrupt controller – DMA controller –

Programming and applications Case studies: Traffic Light control, LED display , LCD display, Keyboard display

interface and Alarm Controller.

UNIT IV   MICROCONTROLLER   9

Architecture of 8051 – Special Function Registers(SFRs) – I/O Pins Ports and Circuits – Instruction set – Addressing modes – Assembly language programming.

UNIT V   INTERFACING MICROCONTROLLER   9

Programming 8051 Timers – Serial Port Programming – Interrupts Programming – LCD & Keyboard Interfacing – ADC, DAC & Sensor Interfacing – External Memory Interface- Stepper Motor and Waveform generation – Comparison of Microprocessor, Microcontroller, PIC and ARM processors

TOTAL: 45 PERIODS

Topic No	Topic Name	Books For reference	Page No	Teaching Methodology	No of periods required	Cumulative periods
UNIT I	THE 8086 MICROPROCESSOR					(9)
1.	8086-Architecture	R2	130	BB	1	1
2.	Addressing modes	R2	202	BB	1	2
3.	Instruction set	R2	228	BB	1	3
4.	Assembler Directives	R2	217	BB	1	4
5.	Modular Programming,Linking and Relocation,Stacks	R2	223	BB	1	5
6.	Assembly Language Programming	R2	284	BB	1	6
7.	Procedures & Macros	R2	288	PPT	1	7
8.	Interrupts & Interrupt Service Routine	R2	130	PPT	1	8
9.	Byte and String Manipulation	R2	302	PPT	1	9

LEARNING OUTCOME:
At the end of unit , the students will be able to
- Analyse the architecture of 8086

UNIT II	8086 SYSTEM BUS STRUCTURE					(9)
10.	8086 Signals	R2	140	BB	1	10
11.	Basic configurations – System bus timing	R2	165	BB	1	11
12.	System design using 8086	R2	168	BB	1	12
13.	I/O programming& Introduction to Multiprogramming	R2	298	BB	1	13
14.	System Bus Structure	R2	187	BB	1	14
15.	Multiprocessor configurations	R2	Notes	BB	1	15
16.	Coprocessor	R2	Notes	BB	1	16
17.	Closely coupled and loosely Coupled configurations	R2	Notes	BB	1	17
18.	Introduction to advanced processors.	R2	207	BB	1	18

LEARNING OUTCOME:
At the end of unit , the students will be able to
- Understand about the 8086 system bus structure

UNIT – III	I/O INTERFACING					(9)
19.	Memory Interfacing and I/O interfacing	R2	297	BB	1	19

20.	Parallel communication interface	R2	301	BB	1	20
21.	Serial communication interface	R2	Notes	BB	1	21
22.	D/A and A/D Interface	R2	397	BB	1	22
23.	Timer – Keyboard /display controller	R2	367, 335	BB	1	23
24.	Interrupt controller & DMA controller	R2	183,191	BB	1	24
25.	Traffic Light control, LED display	R2	644,320	BB	1	25
26.	LCD display, Keyboard display interface	R2	316	BB	1	26
27.	Alarm Controller	R2	Notes	PPT	1	27

LEARNING OUTCOME:
At the end of unit , the students will be able to
- Understand how interfacing works.

UNIT IV	MICROCONTROLLER					(9)
28.	Introduction	R2	480	BB	1	28
29.	Architecture of 8051	R2	481	BB	1	29
30.	Special Function Registers(SFRs)	R2	486	BB	1	30
31.	I/O Pins and Ports	R2	493	BB	1	31
32.	I/O Pins and Circuits	R2	493	BB	1	32
33.	Instruction set	R2	577	BB	1	33
34.	Addressing modes	R2	571	BB	1	34
35.	Assembly language programming	R2	Notes	BB	1	35
36.	Assembly language programming	R2	Notes	BB	1	36

LEARNING OUTCOME:
At the end of unit , the students will be able to
- Analyze the concepts of microcontroller

UNIT V	INTERFACING MICROCONTROLLER					(9)
37.	Programming 8051 Timers	R2	450	BB	1	37
38.	Serial Port Programming	R2	456	BB	1	38
39.	Interrupts Programming	R2	465	BB	1	39
40.	LCD & Keyboard Interfacing	R2	261	BB	1	40
41.	ADC, DAC	R2	345	BB	1	41
42.	Sensor Interfacing	R2	367	BB	1	42
43.	External Memory Interface	R2	442	PPT	1	43

44.	Stepper Motor Interfacing	R2	670	PPT	1	44
45.	**Waveform generation**	R2	672	PPT	1	45

LEARNING OUTCOME:
At the end of unit , the students will be able to
Understand the concepts of interfacing with microcontroller

COURSE OUTCOME
At the end of the course, the student should be able to:
Understand and execute programs based on 8086 microprocessor.
Design Memory Interfacing circuits.
Design and interface I/O circuits.
Design and implement 8051 microcontroller based systems.
CONTENT BEYOND THE SYLLABUS
8096 Microcontroller
8096 Microcontroller based system Design

CONTINUES INTERNAL ASSESSMENT DETAILS

ASSESMENT NUMBER	I	II	MODEL
TOPIC NO.(UNIT)	1-18 (1st & 2nd units)	19-36 (3rd & 4th units)	1-45 (units 1-5)

ASSIGNMENT DETAILS

ASSIGNMENT NUMBER	I	II	III
TOPIC NUMBER FOR REFERENCE	1-18 (1st & 2nd units)	19-36 (3rd & 4th units)	1-45 (units 1-5)
DEAD LINE			

ASSIGNMENT NUMBER	BATCH	DESCRIPTIVE QUESTIONS/TOPIC (Minimum of 8 Pages)
I	B1	1. 8086 Architecture 2. Interrupt & Interrupt Service Routine 3. Introduction to advanced Processor
II	B1	1. Traffic Light Control 2. Alarm Controller 3. Assembly Language Programming
III	B1	1. Comparison of Microprocessor 2. ARM Processor 3. LED & LCD Display

PREPARED BY   **VERIFIED BY**

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