EASWARI ENGINEERING COLLEGE, CHENNAI-600 089
DEPARTMENT OF INFORMATION TECHNOLOGY
LESSON PLAN

SUBJECT CODE : EC 6504

SUBJECT TITLE : **MICROPROCESSOR AND MICROCONTROLLER**

HOURS DISTRIBUTION : (L T P C 3 0 0 3)

COURSE/ BRANCH : B.Tech. / IT

SEMESTER : IV

ACADEMIC YEAR : 2014 - 2015

FACULTY NAME : PRIYADHARSHINI .C

OBJECTIVE OF COURSE :

The student should be made to:

- Study the Architecture of 8086 microprocessor.
- Learn the design aspects of I/O and Memory Interfacing circuits.
- Study about communication and bus interfacing.
- Study the Architecture of 8051 microcontroller.

OUTCOME OF COURSE :

At the end of the course, the student should be able to:

- Design and implement programs on 8086 microprocessor.
- Design I/O circuits.
- Design Memory Interfacing circuits.
- Design and implement 8051 microcontroller based systems.

PREREQUISTE **:** BASIC KNOWLEDGE IN DIGITAL PRINCIPLE SYSTEM DESIGN AND COMPUTER ARCHITECTURE.

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EASWARI ENGINEERING COLLEGE

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LESSON PLAN

Subject Code	:	**EC 6504**		**Total no. of hours given in syllabus**		
Subject Title	:	**Microprocessor and Microcontroller**		Tutorials	:	0
Course/Branch	:	B.Tech/ IT		Practical	:	0
Year/Semester	:	II/IV		Lecture	:	45
Academic Year	:	2014-2015		**TOTAL**	:	**45**
Faculty Name	:	C. Priyadharshini				

AIM:

- To have depth knowledge of 16 bit Microprocessor and 8 bit Microcontroller.
- To study how to interface various peripherals to the Microprocessor
- To have an depth knowledge of 8 bit Microcontroller
- To study the architecture of coprocessor and data processor

Sl.No	Topic	No.of Periods	Reference Books	Page No
UNIT I THE 8086 MICRO PROCESSOR				
OBJECTIVE: • To study the basic architecture , ISR and operational features of microprocessor • To learn the function calls and assembly language programming of 8086 processor				
1	Introduction to 8086, Micro processor CPU architecture	1	T1	1-20,26-33
2	Addressing Modes and Instruction Formats	1	T1	35-39
3	Instruction Sets	1	T1	59-100
4	Assembler Directives andAssembly language programming	1	T1	100-128

Sl.No	Topic	No.of Periods	Reference Books	Page No
5	Modular programming- Linking and Relocation	1	T1	143-151
6	Stacks- Procedures	1	T1	151-169
7	Macros	1	T1	174-183
8	Interrupts and Interrupt Routines	1	T1	169-173
9	Byte and String Manipulation	1	T1	207-226
UNIT II 8086 SYSTEM BUS STRUCTURE				
OBJECTIVE: • To learn about the concepts of I/O Programming and Multiprogramming • To design and understand the concepts of multiprocessor configuration				
10	8086 Signals - Basic configurations	1	T1	310-324
11	System bus timing	1	T1	324-329
12	IO Programming	1	T1	229-269
13	Introduction to Multiprogramming	2	T1	272-305
14	System Bus Structure	1	T1	308-310
15	Multiprocessor configurations - Coprocessor	1	T1	456-460
16	Closely coupled and loosely Coupled configurations	1	T1	460-477
17	Introduction to advanced processors	1	T1	477-516
18	Interrupt Overhead	1	T1	Handouts
UNIT III I/O INTERFACING				
OBJECTIVE: • To understand the interfacing concepts of peripheral devices with that of processor.				
19	Memory Interfacing and I/O interfacing	1	T1	308-315

Sl.No	Topic	No.of Periods	Reference Books	Page No
20	Parallel Communication interface	1	T1	371-374
21	Serial Communication interface	1	T1	361-369
22	D/A and A/D Interface	1	T1	374-377
23	Timer, Keyboard/Display controller	1	T1	380-383 387-395
24	Interrupt Controller	1	R1	268-280
25	DMA Controller	1	T1	395-402
26	Programming and applications Case studies: Traffic Light Control, LED Display.	1		Handouts
27	LCD Display, Keyboard display Interface and Alarm controller.	1	R1 T1	268-277 383-387
	UNIT IV MICROCONTROLLER			
	OBJECTIVE: • To study the basic architecture and operation of special function registers of 8051 microcontroller. • To learn the assembly language programming of 8051 microcontroller			
28	Architecture of 8051	1	T2	28-32 46-49
29	Special Function Registers	1	T2	113-114
30	I/O Pins Ports and Circuits	1	T2	94-106
31	Instruction set	2	T2	140-149 70-88
32	Addressing Modes	1	T2	110-130
33	Assembly Language Programming	2	T2	38-46 167-174
	UNIT V INTERFACING MICROCONTROLLER			

OBJECTIVE:

- To study how to interface the external devices to the microcontroller

Sl.No	Topic	No.of Periods	Reference Books	Page No
34	Programming 8051 Timers	1	T2	240-254
35	Serial Port Programming	1	T2	277-305
36	Interrupts Programming	1	T2	317-339
37	LCD and Keyboard Interfacing	1	T2	351-368
38	ADC, DAC &Sensor Interfacing	2	T2	373-406
39	External Memory Interface	1	T2	411-440
40	Stepper Motor and Waveform generation	2	T2	498-505 479-480
Beyond The Syllabus				
41	Programs in 8085	1		Handouts
42	ARM Processor	1		Handouts

Difficult Topics Identified:

S. No.	Topics	Teaching Aids
1	DMA Controller	PPT
2	Communication between CPU and IOP	Practically using real time aids

ASSIGNMENT TOPICS

SL.NO	ASSIGNMENT TOPICS
1	Two marks in first 2 units.
2	Two Marks in 3rd and 4th unit.

TEXT BOOKS:

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

2. Mohamed Ali Mazidi, Janice Gillispie Mazidi, Rolin McKinlay, "The 8051 Microcontroller and Embedded Systems: Using Assembly and C", Second Edition, Pearson Education, 2011

REFERENCE:

1. Doughlas V.Hall, "Microprocessors and Interfacing, Programming and Hardware:,TMH, 2012.

Prepared By

Mrs. C. Priyadharshini

Approved By

HOD

PROGRAMME EDUCATIONAL OBJECTIVES

1. Graduates will be proficient in utilizing the fundamental knowledge of basic sciences and mathematics to the applications relevant to various streams of Engineering and Technology.

2. Graduates will possess core competencies necessary for application of knowledge of computers and telecommunications equipment to store, retrieve, transmit, manipulate and analyze data in the context of business enterprise.

3. Graduates will be capable of thinking logically, pursue lifelong learning and will have the capacity to understand technical issues related to computing systems and design optimal solutions.

4. Graduates will be able to develop hardware and software systems by understanding the importance of social, business and environmental needs in the human context.

5. Graduates will gain employment in organizations and establish themselves as professionals by applying their technical skills to solve real world problems and meet the diversified needs of industry, academia and research.

6. Graduates will be aware of professional ethics of the software industry and equip themselves with communication skills essential for working in community.

PROGRAMME OUTCOMES (a-l)

(a) Ability to apply knowledge of computing and mathematics appropriate to Information Technology

(b) Ability to analyze a problem, and identify computing requirements appropriate to its solution

(c) Ability to design, implement, and evaluate a system, process, component, or program to meet specific requirements

(d) Ability to interpret and synthesis data to provide valid conclusions

(e) Ability to function effectively as a team member to achieve a common goal

(f) Ability to understand professional, ethical and social issues and responsibilities

(g) Ability to communicate effectively with a diverse groups

(h) Ability to analyze the local and global impact of Information Technology on society

(i) Ability to recognize and engage in continuing professional development and life long learning

(j) Ability to use current techniques, skills, and tools necessary to accomplish projects related to Information Technology.

(k) Ability to understand the impact of the professional engineering solutions in societal and environmental contexts for sustainable development.

(l) Ability to understand engineering and management principles to manage projects in multidisciplinary environment.

UNITS	*Course outcome*	***PEO1***	***PEO 2***	***PEO3***	***PEO 4***	***PEO5***	***PEO 6***	***PO a***	***PO b***	***PO c***	***PO d***	***PO e***	***PO f***	***PO g***	***PO h***	***PO i***	***PO j***	***OC k***	***PO l***
THE 8086 MICROPROCESSOR	1.Identify the basic element and functions of microprocessor & Describe the architecture of microprocessor	**S**	**S**	**S**	**S**	**M**	**W**	**S**	**S**	**S**	**S**	**M**	**W**	**W**	**W**	**S**	**S**	**W**	**S**
	Design and implement programs on 8086 microprocessor**.**	**S**	**S**	**S**	**S**	**W**	**W**	**S**	**S**	**S**	**S**	**M**	**W**	**W**	**W**	**S**	**S**	**W**	**S**
8086 SYSTEM BUS STRUCTURE	Describe the different peripheral devices of 8086 micro processor.	**S**	**S**	**S**	**S**	**W**	**M**	**S**	**S**	**S**	**S**	**M**	**W**	**W**	**W**	**S**	**S**	**W**	**S**
I/O INTERFACING	Demonstrate fundamental understanding on the operation between the microprocessor and its interfacing devices.	**S**	**S**	**S**	**S**	**M**	**M**	**S**	**S**	**S**	**S**	**M**	**W**	**W**	**W**	**S**	**S**	**W**	**S**
MICRO CONTROLLER	Describe the architecture of microcontroller and its peripheral devices.	**S**	**S**	**S**	**S**	**W**	**M**	**S**	**S**	**S**	**S**	**M**	**W**	**W**	**W**	**S**	**S**	**W**	**S**
INTERFACING MICRO CONTROLLER	Demonstrate fundamental understanding on the operation between the microcontroller and its interfacing devices.	**S**	**S**	**S**	**S**	**M**	**M**	**S**	**S**	**S**	**S**	**M**	**W**	**W**	**W**	**S**	**S**	**W**	**S**

MAPPING OF COURSE OUTCOMES WITH PEO & THE PROGRAMME OUTCOME- FINITE ELEMENT METHODS IN MECHANICAL DESIGN (ED 7201)

STRONG	S
MEDIUM	M
WEAK	W