

**SARDAR RAJA COLLEGE OF ENGINEERING
ALANGULAM**

DEPARTMENT OF COMPUTER APPLICATIONS

MICRO LESSON PLAN



SUBJECT : MICROPROCESSORS AND ITS APPLICATIONS

CODE : MC9232

YEAR : II

SEM : III

**STAFF NAME : Mr. V.KALIMUTHU,
AP/ ECE.**

SUBJECT DESCRIPTION AND OBJECTIVES

SUBJECT DESCRIPTION

A **microprocessor** incorporates the functions of a computer's central processing unit (CPU) on a single integrated circuit (IC),^[1] or at most a few integrated circuits.^[2] It is a multipurpose, programmable device that accepts digital data as input, processes it according to instructions stored in its memory, and provides results as output. It is an example of sequential digital logic, as it has internal memory. Microprocessors operate on numbers and symbols represented in the binary numeral system.

.A microprocessor control program (embedded software) can be easily tailored to different needs of a product line, allowing upgrades in performance with minimal redesign of the product. Different features can be implemented in different models of a product line at negligible production cost.

Microprocessor control of a system can provide control strategies that would be impractical to implement using electromechanical controls or purpose-built electronic controls. For example, an engine control system in an automobile can adjust ignition timing based on engine speed, load on the engine, ambient temperature, and any observed tendency for knocking—allowing an automobile to operate on a range of fuel grades.

OBJECTIVES

Perform the following interfacing concepts with a microprocessor chip

- Traffic signal controller using 8255 PPI
- Stepper Motor controller using 8255 PPI
- ADC/DAC interface
- Waveform generation using 8253/8254 Timers
- DC Motor Speed Controller
- Keyboard/Display Controller using 8279
- Study of BIOS and DOS function calls for keyboard & Display interfacing

UNIT I THE 8086 PROCESSOR - SOFTWARE ASPECTS**11**

Evolution of Microprocessors - 8086 architecture – Addressing modes- Instruction set and assembler directives – Assembly language programming – Interrupts and interrupt service routines.

UNIT II 8086 SYSTEM DESIGN**10**

8086 signals description – Basic configurations - System bus timing –System design using 8086 – Minimum mode /Maximum modes 8086 system and timings.

UNIT III INTERFACING CONCEPTS**10**

Memory Interfacing and I/O interfacing - Parallel communication interface – Serial communication interface – Timer – Keyboard /display controller – Interrupt controller –DMA controller – Programming and applications.

UNIT IV ADVANCED PROCESSORS**7**

Intel 80286 – Internal Architectural – Register Organization – Internal Block Diagram –Modes of operation – Real Address Mode – Protected Virtual Address mode – Privilege – Protection - Architectural features and Register Organization of i386, i486 and Pentium processors.

UNIT V BUILDING SYSTEMS**7**

Bus Concepts – Bus Standards –The Peripheral Component Interconnect (PCI) Bus –Universal Serial Bus (USB) – Platform Architectures.

TOTAL : 45 PERIODS**REFERENCES:**

1. A. K. Ray & K. M. Bhurchandi, “Advanced Microprocessors and peripherals- Architectures, Programming and Interfacing”, TMH, 2002 reprint.
2. Barry B. Brey, “The Intel Microprocessors, 8086/8088, 80186/80188, 80286, 80386,80486, Pentium, PentiumPro Processor, PentiumII, PentiumIII, PentiumIV, Architecture, Programming & Interfacing”, 6th Edition, Pearson Education/PHI, 2002.
3. Yu-cheng Liu, Glenn A. Gibson, “Microcomputer systems: The 8086/8088 Family architecture, Programming and Design”, PHI 2003.
4. Peter Abel, “IBM PC Assembly language and programming”, Prentice Hall of India Pvt. Ltd.
5. Websites of latest processors.

LESSON PLAN

HOURS	LECTURE TOPIC	READING
UNIT I- THE 8086 PROCESSOR - SOFTWARE ASPECTS		
1	Evolution of Microprocessors	R1
2		
3	8086 architecture	R1
4	Addressing modes	R1
5	Instruction set	R1
6	assembler directives	R1
7	Assembly language programming	R1
8	Interrupts	R1
9	Interrupt service routines	R1
10		
11		
UNIT II - 8086 SYSTEM DESIGN		
12	8086 signals description	R2

13	Basic configurations	R2
14		
15	System bus timing	R2
16	System design using 8086	R2
17	Minimum mode /Maximum modes 8086 system	R3
18		
19	Timings.	R2
20		
21		
UNIT III - INTERFACING CONCEPTS		
22	Memory Interfacing	R3
23		
24	I/O interfacing	R3
25	Parallel communication interface	R3
26	Serial communication interface	R3
27		

28	Timer	R3
29	Keyboard /display controller	R3
30	Interrupt controller	R2
31	DMA controller	R2
32	Programming and applications	R2
33		
UNIT IV - ADVANCED PROCESSORS		
34	Intel 80286	R1
35	Internal Architectural	R1
36	Register Organization	R1
37	Internal Block Diagram	R1
38	Modes of operation	R1
39	Real Address Mode	R1
40	Protected Virtual Address mode	R1
41	Privilege, Protection	R1
42	Architectural features	R1

43	Register Organization of i386, i486	R1
44	Pentium processors.	R1
45		
UNIT-V – BUILDING SYSTEMS		
46	Bus Concepts	R2
47		
48	Bus Standards	R2
49		
50	The Peripheral Component Interconnect (PCI) Bus	R2
51	Universal Serial Bus (USB)	R2
52		
53	Platform Architectures	R2