

**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**  
**PROGRAMME:** B.E. Computer Science & Engineering, VI Semester  
**Course:** CS 601 Micro Processor and Interfacing

**Course Contents**

Category of Course	Course Title	Course Code	Credit-6C			Theory Paper (ES)
			L	T	P	
Departmental Core DC- 601	Micro Processor and Interfacing	CS 601	3	1	2	Max.Marks-100 Min.Marks-35 Duration-3hrs.

**Branch:** Computer Science and Engineering VI Semester

**Course:** CS 601 Micro Processor and Interfacing

**RATIONALE:**

The purpose of this subject is to cover the underlying concepts and techniques used in Micro Processor and Interfacing. In this subject we cover the unique issues associated with designing, testing, integrating, and implementing microcontroller/microprocessor-based embedded systems.

**PREREQUISITE**

The students should have acquired fundamental microcontroller-associated programming skills using both the C programming language and assembly language

**UNIT –I**

Evolution of microprocessor, single chip micro computers, Micro processor Application, Microprocessor and its architecture, addressing modes, instruction, Instruction sets, Arithmetic and Logic Instruction, Program control instruction, Introduction – 8086 family, procedure and macros, connection , Timing and Trouble shooting interrupt, 80286, 80836 and 80486 micro processor system concept.

**UNIT – II**

Microprocessor Cycle, AIU, Timing and control Unit, Register data, Address bus, Pin Configuration, Intel 8086 instruction, Opcode and operands, limitation word size. Programming the microprocessor Assembly language, The Pentium and Pentium Pro Micro Processor with features, Pentium II, Pentium III and Pentium – IV Microprocessor with software changes.

Instruction set for Intel 8086, Introduction Intimation and data formats, Addressing modes, Status flags, Symbols and abbreviations, programming of microprocessors, Assembly language, high level language, areas of application of various languages, Stacks, Sub routines system, software, commands in assembly language, software Development, Debugging program, Modular programming, Structured programming, Top-down, Bottom- up design , MACRO microprogramming

**UNIT-III**

Assembly language programming with Examples like Addition of 8/16-bit Binary number, subtraction of 8/16 bit binary number, Address partitioning, addressing mode, type of addressing mode, memory and I/o interfacing, Data transfer schemes, Interfacing device and I/o devices I/o ports, Basic I/o Interfacing MDS, Micro controllers, I/o processor and co- processors ,Microcomputer Development system, Single chip micro computers, intel 8748 intel 8051, inter 8096, intel 8049intel 2920/2921, I/o processor UPI-425,UPI-41,42, Co-processor, math processor math co-processor – 8087, 80287, 80387DX 803875x.

## **UNIT –IV**

Bus Interface I/o port Addressing, decoding 8279, Programmable key board/display interface, 8254 Internal Timer, 16550 programmable communication interface A/D, 8259A Programmable Interrupt Controller, 8237 DMA Controller, Shared bus operation, disk Memory system Video display. ISA Bus, Extended ISA ( EISA) and VESA Local Buses, Peripheral Component Inter Connect (Pc I) Bus, Parallel Printer interface (LPT) Universal serial Bus (USB) Accelerated graphics port (AGP),Programmable Communication interfere 8251 VSART CRT Controller 8275, 6854, Floppy disk Controller 8272, I/o processor 8089.

## **UNIT – V**

Memory Unit, RAM,SRAM, DRAM,ROM, PROM EPROM, EEPROM Nonvolatile RAM semiconductor Technology for memory, Shift register, Magnetic Memory, Tap, disc, main memory and secondary memory cache memory, program memory and Data Memory, Real and virtual memory Buses, memory Addressing capacity of CPU, processing speed of computer.

### **List of Experiments**

1. Add a data byte located at offset 0500H in 2000H segment to another data byte available at 06000H in same segment and store the resulting 0700H in same segment?
2. Add the contents of memory location 2000H, offset 0500H to the contained of accumulator.
3. Write a program to find the average to two temperature name HI-TEMP and LO-TEMP and puts the result in the memory location AV-TEMP.
4. Find out the largest number from an unordered array of sixteen 8-bit numbers stored sequentially in the memory locations starting at offset 0500H in the segment 2000H
5. Move a byte string, 16 bytes long, from the offset 0200H to 0300H in the segment 7000H.
6. Write a program to add a profit factor to each element in a cost array and puts the result in a PRICES array, where profit factor is 15H and COST =20H, 28H, 15H, 26H, 19H, 27H, 16H, 29H.
7. Write a program to find out the number of positive numbers and negative numbers from a given series of signed numbers.
8. Write a program that performs the addition, subtraction, multiplications, division of the given operands. Perform BCD operation for addition and subtraction.
9. A Program to find out the number of even and odd numbers from a given series of 16 bit hexad4ecimal numbers.

### **Suggested Reading:**

1. Douglas V Hall, "Microprocessors and interfacing – Programming & Hardware" TMH
2. Barry B. Brey, "The intel Microprocessor – 8086", Pearson Education
3. Kenneth J.Ayala,"The 8086 Microprocessor: Programming & Interfacing The PC",Cengage Learning
4. Krishna Kant,"Microprocessors and Microcontrollers", PHI Learning
5. A.K.Ray KM Bhurchandi, "Advanced Microprocessor and peripherals" McGraw Hill
6. R.S. Gaonkar , "Microprocessors and interfacing", TMH