

EC 501 : ADVANCED MICROPROCESSOR AND MICROCONTROLLER

| Teaching Scheme | | | Examination Scheme | | | | | | | |
|-----------------|--------|-------|--------------------|---------------|-------------|-------|--------------|---------|-------|-------------|
| Lect. | Pract. | Total | Theory | | | | Practical | | | Grand Total |
| | | | Int. Assess. | Sem End Marks | Sem End Hrs | Total | Int. Assess. | Sem End | Total | |
| 3 | 2 | 5 | 30 | 70 | 3 | 100 | 25 | 25 | 50 | 150 |

1. Computers, microcomputers and microprocessors:

Types of computers, how computers and microcomputers are used, microcomputer structure and operation, execution of a three-instruction program, microprocessor evolution and types, the 8086 microprocessor family overview, 8086 internal architecture, introduction to programming the 8086.

2. 8086 system connections, timing and troubleshooting:

A basic 8086 microcomputer system, addressing memory and ports in microcomputer systems.

3. Microprocessors and microcontrollers:

Microprocessors and microcontrollers, Z80 and the 8051, a microcontroller survey, development systems for microcontrollers.

4. 8051 architecture:

8051 micro controller hardware, input/output pins, ports, ports and circuits, external memory, counters and timers, serial data i/o, interrupts.

5. Moving data:

Addressing modes, external data moves, code memory read PUSH and POP opcodes, data exchanges.

6. Logical operations:

Byte-level logical operations, bit-level logical operations, rotate and swap operations.

7. Arithmetic operations:

Flags, incrementing and decrementing, addition, subtraction, multiplication and division, decimal arithmetic.

8. Jump and call instructions:

Jump and call program range, jumps, calls and subroutines, interrupts and returns.

9. An 8051 microcontroller design:

Microcontroller specifications, 8051 micro controller design, testing the design, timing subroutines, look up tables for 8051, serial data transmission.

10. Applications:

Keyboards, displays, pulse measurements, D/A and A/D conversions, multiple interrupts.

11. Serial data communication:

Network configuration, 8051 data communication modes.

12. Introduction to other 16 bit, 32 bit microprocessors and microcontrollers:

Intel 80x86, PIC, ARM etc families.

Reference Books:

1. Microprocessors & Interfacing – Programming & hardware By D. V. Hall (TMH)
2. The 8088 AND 8086 microprocessors By Walter A. Trebel & Avtar Singh (PHI)
3. 8086 Microprocessor By Uffenbeck (PHI)
4. The Intel Microprocessors 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium and Pentium Pro Processor Architecture, programming and interfacing. By Barry B. Brey (PHI)
5. The 8051 Microcontroller: Architecture, programming and applications By Kenneth J. Ayala (Penram International)
6. The 8051 Microcontroller and Embedded Systems By Mazidi & Mazidi (PHI)