COMPUTER ARCHITECTURE

Paper Code	**ECS-502**
Course Credits	4
Lectures/ Week	3
Tutorials/ Week	1
Course description	**UNIT- I HARDWARE REQUIREMENTS AND MICRO-OPERATIONS** Philosophy of digital systems and computer design, review of digital hardware and MSI/LSI/VLSI devices description and applications. Register transfer and micro-operations: arithmetic, logic and shift micro-operations, simple computer design. **UNIT- II SYSTEM SOFTWARE AND PERIPHERAL DEVICES** Assembly language, the Assembler, introduction to compiler, important peripheral devices, PC family. **UNIT III PROCESSOR DESIGN** Processor organization, arithmetic and logic unit (ALU), design of arithmetic and logic unit, design of accumulator, introduction to parallel computing-Pipeline processing. **UNIT-IV LOGIC CONTROL DESIGN** Processor organization, hardware control, microprogram control, control of processor unit, hardwired and PLA controller, microprogram sequencer. **UNIT-V COMPUTER DESIGN, I/O & MEMORY ORGANIZATION** Design aspects related to: systems configuration, computer Instruction-set, timing and control, instruction executions, design of Control (PLA &microprogram) computer control. Review of I/O Interface and data transfers, review of various memories: bulk magnetic storage, auxiliary memory hierarchy, associative, virtual and cache memories, memory-management hardware

Pre-requisite	Basic Digital Logic
Course/Paper:	
Text Book:	M. Morris Mano, “Computer System Architecture”, 2nd Edition, PHI Ltd. 1982.
Reference Books:	1. M. Morris Mano, “Computer Engineering Hardware”, PHI, 1988. 2. M. Morris Mano, “Digital Logic and Computer Design”, PHI Ltd., 1979. 3. Hayes, “Computer Architecture” McGraw Hill. 4. Hanacher “Computer Organization” Prentice Hall.
Course Outcome:	**CO1.**Thorough understanding of the basics of computer architecture and organization. **CO2.** An abilityto create an assembly language program to program a microprocessor system. **CO3.**Capabilityto easily deal with processor design and their modification for high performance and multi-tasking. **CO4.**Capabilityto articulate design issues in the development of control unit or other components that satisfy design requirements and objectives. **CO5.**An ability to use the new technologies in memory organization of computers.
Computer usage/	Basic computer (Pentium 4)
Software required:	