



Code: CST301	Computer Architecture	Credit: 03
		L-T-P: (3-0-0)
Course Content	<p>Flynn Classification, Stack machines, subroutine calls, allocation and evaluation of data in stack machines. SIMD, SPMD and MIMD.</p> <p>CPU Organization: Addressing techniques, Instruction formats: Instruction set design, Instruction types: example for zero address, one address, two address and three address machines, Stack, accumulator and general purpose register organization. Register Transfer Language: arithmetic, logic and shift micro operations and their hardware implementations as a simple ALU. Control Unit, Hardwired and Micro programmed control unit design.</p> <p>Memory Organization: device characteristics, RAM organization: 1D and 2D organization, Virtual memory - Paging and Segmentation, High speed memories: Associative and Cache memory.</p> <p>Input-Output Design: IO interface, Bus structure, Modes of data transfer, Interrupts, Input Output Processor, Serial Communication</p> <p>Pipelining: Pipeline structure, Pipeline types - Instruction and Arithmetic pipelines. Interleaved memory organization, instruction prefetch, data buffers, pipeline performance measures. Array processors : Routing mechanisms, Static v/s dynamic network. Multiprocessor systems, data flow concepts. Parallel processing languages.</p>	
Important Text Books/References	<ol style="list-style-type: none">1. J.L. Hennessy and D.A. Patterson, Computer Architecture: A Quantitative Approach, 4th Edition Elsevier.2. Flynn : Computer Architecture, Narosa3. David Culler: Parallel Computer Architecture: A Hardware/Software Approach, Morgan Kaufmann.4. Hwang and Briggs: Computer Architecture and Parallel Processing, McGraw-Hill.	