

1st Semester	MCA01002	Computer System Architecture	L-T-P 3-0-0	3 CREDITS
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Module – I: (08 Hours)

Introduction: Review of basic computer architecture, Quantitative techniques in computer design, measuring and reporting performance.

Module – II: (08 Hours)

Pipelining: Basic concepts, Instruction and Arithmetic pipeline, Data hazards, Control hazards and Structural hazards, Techniques for handling hazards. Exception handling. Pipeline optimization techniques.

Module – III: (08 Hours)

Hierarchical memory technology: Inclusion, Coherence and locality properties, Cache memory organizations, Techniques for reducing cache misses; Virtual memory organization, Mapping and Management techniques, Memory replacement policies.

Module – IV: (08 Hours)

Instruction-level Parallelism: Basic concepts, Techniques for increasing ILP, Superscalar, Superpipelined and VLIW Processor architectures. Array and Vector processors

Module – V: (08 Hours)

Multiprocessor architecture: Taxonomy of Parallel Architectures, Centralized shared- memory architecture, Synchronization, Memory consistency, Interconnection networks. Distributed shared memory architecture. Cluster computers

Books:

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, “Computer Organization”, Fifth Edition, Tata McGraw Hill, 2002.
2. William Stallings, “Computer Organization and Architecture – Designing for Performance”, Sixth Edition, Pearson Education, 2003.
3. Patterson, “Computer Organisation and Design”, Elsevier
4. John P Hayes, “Computer Organization”, McGraw Hill
5. Morris Mano, “Computer System Architecture”, PHI