

Subject Name: Computer Architecture

Paper Code: CSEN 2203

Contact Hours per week	L	T	P	Total	Credit Points
	3	1	0	4	4

Module 1:
Introduction: (2L)

Review of basic computer architecture;

Pipelining: (9L)

Basic concepts,

Instruction and arithmetic pipeline,

Scheduling in Pipeline;

Data hazards, control hazards and structural hazards, techniques for handling hazards.

Module 2:

Instruction-level parallelism: (6L)

Basic concepts,

Array and vector processors.

Superscalar, Superpipelined and VLIW processor architectures.

Interconnection networks: (4L)

Crossbar, Delta, Omega, Shuffle-Exchange, Banyan , Hypercube, Butterfly Networks.

Module 3:

Measuring and reporting performance: (2L)

CPI,MIPS etc. Amdahl's Law & Gustafson's Law.

Hierarchical memory technology: (4L)

Inclusion, Coherence and locality properties;

Cache memory organizations, Techniques for reducing cache misses;

Virtual memory organization, mapping and management techniques, memory replacement policies.

Multiprocessor architecture: (6L)

Taxonomy of parallel architectures;

Centralized shared- memory architecture;

Distributed shared-memory architecture.

Cluster computers.

Module 4:

Issues with Multiprocessor Architectures: (4L)

Synchronization, memory consistency; Cache Coherence protocols (brief discussion only);

Non von Neumann architectures: (3L)

Data flow computers, RISC architectures, Systolic architectures.

References:

1) **Kai Hwang:** Advanced Computer Architecture – Parallelism, etc.

- 2) **Hennessey & Patterson** : Computer Architecture – A Quantitative Approach
- 3) **Hamacher et al**: Computer Organization (5th Ed) & above
- 4) Kai Hwang & Briggs: Computer Architecture & Parallel Processing

Subject Name: Indian Culture and Heritage					
Paper Code: HMTS 2002					
Contact Hours per week	L	T	P	Total	Credit Points
	2	0	0	2	1

Module I

Indian Religion & Philosophy

1. Orthodox Indian Philosophy:
2. Unorthodox Indian philosophy:
3. Essentials of Hinduism
4. An overview of Jainism, Buddhism, Sikhism, Islam, Christianity religions

Module II

Values and Personality