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| **Course – 40 Title: Computer Architecture and Organization** | |
| Course No.: CIT 313 Credit : 3 Contact Hours: 3 | Total Marks: 100 |

**11.1 Rationale:**

To be a computer engineer one needs to know architectural design, organizational design and computer family and also to learn the performance factors.

**11.2 Objectives:**

1. To learn the distinguished features of computer architecture, organization and family
2. To learn about RISC and CISC
3. To know activities and architecture of DMA, cache, and memory mapping
4. To learn the parallel computer architecture and performance (High performance computer)

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| **11.3 Learning Outcomes** | **11.4 Course Content** | **11.5 Teaching strategy/ Learning Experience** | **11.6 Assessment Strategy** |
| 1. Describe hardware and software 2. Analyze the relationship between hardware and software | Introduction to Computer Hardware and Software. | Lecture | Short question  Quiz |
| 1. Explain stored computer concept 2. Explain the distinguish features of RISC and CISC | Von Neuman SISD organization. RISC and CISC Machines | Lecture  Exercise  Assignment | Short question  Quiz |
| 1. Describe of peripherals 2. Analyze the interrupts | Computer peripherals, Interrupts | Lecture | Short question  Quiz |
| 1. Define DMA 2. Describe of memory organization and design 3. Describe the cache memory system | DMA, Memory Organization, cache coherence, Cache coherence protocols, Cache memory, Memory system design | Lecture  Assignment | Short answer  Analytical answer  quiz  Group exercise |
| 1. Describe parallel computer 2. Distinguish between parallel and serial computer 3. Explain pipeline processor 4. Analyze the relation among different categories of parallel computers | Parallelism in multiprocessors and Multicomputer; Pipelined processor design: pipelining, super-pipelines, advanced pipelines, static and dynamic scheduling, Concurrent processors, Vector processors and multiprocessors, Array processors. | Lecture  Exercise  Assignment | Short answer  Analytical answer  quiz  Group exercise |
| 1. Explain multicomputers 2. Analyze the efficiency of multicomputers | Compute-intensive processors and Multicomputers, | Lecture | Short answer  Analytical answer |
| 1. Explain vectorization and hypercube systems. 2. Analyze data flow and control flow computer | Automatic Vectorization, Hypercube systems and Key application, Data flow computation. | Lecture | Short answer |

**RECOMMENDED BOOKS AND PERIODICALS**