SEMESTER	1
Paper Number	MCMS 4104
Paper Title	Advanced Computer Architecture
No. of credits	6
Theory / Composite	Theory
No. of periods assigned	Th: 5 Tut: 1
Name of faculty member(s)	
Course description / objectives	On completion of this course, the students will be able to: 1. appreciate the need for parallelism at hardware level 2. understand the application area of different parallel architectures such as SIMD and MIMD. 3. understand implicit and explicit parallel platform 4. learn to decompose into sub problems and execute them in a pipelined fashion. 5. use performance metrics for analysis of parallel algorithms 6. develop parallel algorithms for various parallel systems
Syllabus	Introduction: Elements of Modern Computers, Performance, The Switch from Uniprocessors to Multiprocessors Parallel Processing: Parallel Computer Structures, Architectural Classification, Parallel Processing Applications Principles of Pipelining and Vector Processing: Pipelining, Instruction and Arithmetic Pipelines, Principles of designing pipelined processors, vector processing requirements Structures and Algorithms of Array Processors (SIMD Computers): SIMD Array Processors, SIMD Interconnection networks, Parallel Algorithms for Array Processors Multiprocessor Architecture and Programming: Functional Structures, Interconnection Networks, Multistage Interconnection Networks, Parallel Memory Organizations Memory and I/O sub-systems: Hierarchical Memory Structures, Cache Memories and Management, I/O sub-systems
Reading/Reference Lists	1. Kai Hwang, Advanced Computer Architecture,Tata Mc Graw Hills 2. Kai Hwang and F. A. Briggs, Computer Architecture and Parallel Processing, Tata Mc Graw Hills 3. Hennessy Patterson, Computer Architecture, A quantitative Approach , 5th ed, Elsevier. 4. Dongarra, Foster, Fox & others, Source Book of parallel Computing, Elsevier. 5. M.J Quinn, Designing Efficient Algorithms for Parallel Computers, Mc Graw Hill
Evaluation	Total – 100 CIA – 20 Semester Examination – 80