

ADVANCED COMPUTER ARCHITECTURE

Course Code		Year	II	Semester	II
Course Category	Honors	Branch	CSE	Course Type	Theory
Credits	4	L-T-P	4-0-0	Prerequisites	-
Continuous Internal Evaluation :	30	Semester End Evaluation:	70	Total Marks:	100

COURSE OUTCOMES

Upon successful completion of the course, Student will be able to

CO1	Understand Technological Trends in Computer Architecture	L2
CO2	Apply organizational enhancements to the processor for improving performance.	L3
CO3	Apply Reduced instruction set architecture to optimize pipelining and to enhance instruction level parallelism.	L3
CO4	Analyze parallel processing capabilities of a system.	L4

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2	√								√	√				√
CO3	√								√	√				√
CO4		√							√	√				√

Syllabus		
Unit No.	Contents	Mapped CO
I	Processor Structure and Function: Processor Organization, Register Organization, The Instruction Cycle, Instruction Pipelining.	CO1, CO2
II	Reduced Instruction Set Computers (RISCs): Instruction Execution Characteristics, The Use of a Large Register File, Compiler-Based Register Optimization, Reduced Instruction Set Architecture, RISC pipelining.	CO1, CO3
III	Instruction-Level Parallelism and Superscalar Processors: Overview, Design Issues , Pentium 4, ARM Cortex-A8.	CO1, CO3
IV	Parallel Processing: The Use of Multiple Processors, Symmetric Multiprocessors, Cache Coherence and the MESI Protocol, Multithreading and Chip Multiprocessors, Clusters, Nonuniform Memory Access Computers.	CO1, CO4
V	Multicore Computers: Hardware Performance Issues, Software Performance Issues, Multicore Organization, Intel x86 Multicore Organization.ARM11 MPCore.	CO1, CO4

Learning Resources
Text Books
1. “Computer Organization and Architecture- Design for performance”, William Stallings, Pearson Education, Eighth Edition, 2013.
References
1. “Computer Architecture - A Quantitative Approach”, John L. Hennessy and David A. Patterson, Morgan Kaufmann/Elsevier, Fifth edition, 2012.
2. “Advanced Computer Architecture”, Kai Hwang, Tata McGraw-Hill Education, Second Edition, 2013.
e- Resources & other digital material
1. https://nptel.ac.in/courses/106103206
2. https://nptel.ac.in/courses/106102229