CS : MULTICORE-ARCHITECTURES AND PROGRAMMING ISSUES

UNIT I : Multi-core Architecture :
Performance of Multi-core systems - ILP and its limitations - TLP and implementation is RLP and implementation - Interconnection of architectures for large scale multi core sys Scalability issues- An Unified Model for Multi-core Architectures.

UNIT II : Memory hierarchy in Multi-core :
Memory Hierarchy Issues in multi core - Multi level cache memory-Design issues. Impro performance - Optimization techniques- Storage systems - Cloud computing and multi architecture

UNIT III: Application and Technological impact on Multi-core :
The Impact of Diverse Memory Architectures on Multi-core Consumer Software- Impac Network Sharing on Multi-core Architectures- The Impact of Multi-Core Architectures Design of Chip-Level Interconnect Networks- Using Multi-core Architectures in Cyber-Phys Systems- Impact of Thermal Constraints on Multi-Core Architectures- The Impact of Multi-c on Computational Science Software- The Impact of Performance Asymmetry in Emerg Multi-core Architectures

UNIT IV : Programming for Multi core :
Introduction- Transaction memory- Foundations of shared memory- Concurrent objects- Mut exclusion- monitors and blocking systems- message passing- thread level programming.

UNIT V : Architectural support for Programming Languages and Operating Systems :
Update-Aware Storage Systems for Low-Locality, Update-Intensive Workloads - Lightweig Persistent Memory - Dynamically Replicated Memory: Building Reliable Systems fro Nanoscale Resistive Memories - Addressing Shared Resource Constraints in Multi-co Processors via Scheduling

Reference Books:

1. Computer Architecture: A Quantitative Approach, John L.Hennessy, David A. Patterso 5th edition, 2012, Elsevier Publication.
2. Software Development for Embedded Multi-Core Systems, Max Domeika, First Editio 2008, Newnes Publication.
3. The Art of Multiprocessor Programming, Maurice Herlihy, Nir Shavit, Revised Firs Edition, 2012, Elsevier Publication.
4. Parallel Programming: for Multi-core and Cluster Systems, Thomas Rauber, Gudul Rünger, 2nd Edition, 2010, Springer Publication.
5. Selected Papers from Proceedings of ASPLOS- An International conference on Architectural Support for Programming Languages and Operating Systems(www.informatik.uni-trier.de/~ley/db/conf/asplos/index.html)2011-2012.