

Parallel Computing - Video course

COURSE OUTLINE

This is a first course in parallel programming and does not require any previous parallel computing experience. Data structures and Operating Systems are required. L-T-P: 3-0-2.

With the growing number of cores on a chip, programming them efficiently has become an indispensable knowledge for the future. Modern Parallel Programming is a hands-on course involving significant parallel programming on compute-clusters, multi-core CPUs and massive-core GPUs.

COURSE DETAIL

Module/Lecture Details	Topics
Module 1: Parallel Computing	
Lecture 1	Introduction
Lecture 2	Parallel Programming Paradigms
Lecture 3	Parallel Architecture
Lecture 4	Parallel Architecture (case studies)
Lecture 5	Open MP
Lecture 6	Open MP(Contd.)
Lecture 7	Open MP(Contd..)
Lecture 8	Open MP&PRAM Model of Computation
Lecture 9	PRAM
Lecture 10	Models of Parallel Computation, Complexity
Lecture 11	Memory Consistency



NP-TEL

NPTEL

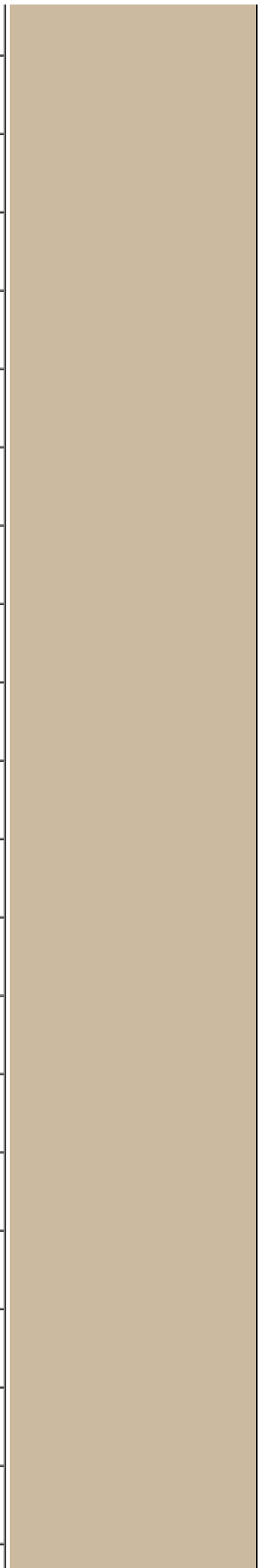
<http://nptel.iitm.ac.in>

Computer Science and Engineering

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Lecture 12	Memory Consistency & Performance Issues
Lecture 13	Parallel Program Design
Lecture 14	Shared Memory & Message Passing
Lecture 15	MPI
Lecture 16	MPI(Contd.)
Lecture 17	MPI(Contd..)
Lecture 18	Algorithmic Techniques
Lecture 19	Algorithmic Techniques(Contd.)
Lecture 20	Algorithmic Techniques(Contd..)
Lecture 21	CUDA
Lecture 22	CUDA(Contd.)
Lecture 23	CUDA(Contd..)
Lecture 24	CUDA(Contd...)
Lecture 25	CUDA(Contd....)
Lecture 26	CUDA(Contd.....)
Lecture 27	CUDA(Contd.....)
Lecture 28	Algorithms,Merging & Sorting
Lecture 29	Algorithms,Merging & Sorting(Contd.)
Lecture 30	Algorithms,Merging & Sorting(Contd..)
Lecture 31	Algorithms,Merging & Sorting(Contd...)



Lecture 32	Algorithms,Merging & Sorting(Contd...)
Lecture 33	Lower Bounds Lock Free Synchronization,Load Stealing
Lecture 34	Lock Free Synchronization,Graph Algorithms

References:

1. Parallel Programming in C with MPI and OpenMP by M J Quinn
2. Introduction to Parallel Computing by Ananth Grama, George Karypis, Vipin Kumar, and Anshul Gupta.
3. Programming Massively Parallel Processors by D. Kirk and W. Hwu