Topics that will be covered

a. Introduction- Parallel computers and models- Fixed interconnection networks - The Parallel Random Access Machine (PRAM) - PRAM algorithms - Advanced PRAM algorithms - Parallel Prefix - List coloring and List

b. Practical models for parallel computing - The Bulk Synchronous Parallel Model - The LogP model - BSPlib: A small library for BSP

c. Linear arrays and binary trees - Sorting on a linear array - Bit and Word Models - Complexity issues

d. Integer arithmetic on arrays - Division - Matrix algorithms - Sorting on meshes - 3-d arrays - Meshes of Trees (MOT)

e. Hypercubes and hypercubic networks - Embeddings - Routing algorithms on networks - Routing on butterflies - FFT - Odd-even merge-sort