Syllabus for MA 673

1.0 Types of Parallelism
   1.1 Vector pipelines
   1.2 Attached processors
   1.3 Multiprocessors

2.0 Parallel Problems and Amdahl's Law
   2.1 Amdahl's Law
   2.2 PI: mid-point rule for integration
   2.3 Dot product
   2.4 Mat-vec multiply
   2.5 Tridiagonal solver
   2.6 Gaussian elimination
   2.7 SOR (successive overrelaxation)
   2.8 Least squares
   2.9 Preconditioned conjugate gradient (PCG)
   2.10 Eigenvalues

3.0 Parallel Computers
   3.1 Illiac (iv), Eniac
   Denelcor HEP
   3.2 Alliant FX/8
   3.3 Balance 2100
   3.4 Butterfly
   3.5 Intel hypercubes
   3.6 Connection machines
   3.7 FPS
   3.8 IBM 3090
   3.9 Crays
   3.10 CDC (Cyber 205, ETA 10)

4.0 Portability
   4.1 Schedule
   4.2 Monitors
   4.3 Force

5.0 Applications
   5.1 Heat and mass transfer (Stefan problem)
   5.2 Structural analysis (constrained optimization)
   5.3 Fluid flow (explicit time discretization)