

TCS2027 GRID COMPUTING

Module 1

Introduction: Motivation; Definitions of Grid Computing; Evolution of the Grid; Differences with similar efforts (Meta, cluster, heterogeneous, Internet); Examples of usage; Research possibilities / scope in Grid Computing; Thrust areas.

Module 2

High Performance computing: PACX-MPI, MPI-Connect, P-MPI; I-WAY experiment.

Module 3

Earliest Grid Tools / Projects: Condor Part 1, Part 2; Globus Part 1, Part 2; Nimrod.

Module 4

Grid Basics - Technologies / Challenges: Security - Different models: SSL, Kerberos, SASL, GSI, Others; Information Services: NWS.

Module 5

HPC:Scheduling HPC applications in Grids: AppLeS, Scheduling Parameter sweep applications, Metascheduling Part1, Part2; Grid RPC mechanisms - Part1, Part2; Rescheduling; Computational Steering,

Module 6

Grids: Scientific visualization of Grid applications; Grid Applications - Everywhere and Cactus experiments; Data management: Data distribution, Redistribution, Data cache maintenance.

Module 7

Recent Efforts / Challenges: Grid economy; Grid simulation - SimGrid, GridSim, MicroGrid; Grid standards and forums - OGSA, GGF and Other topics.

Text Books:

1. **[Module: 1]**
Ian Foster, Carl Kesselman; The Grid: Blueprint for a New Computing Infrastructure (2nd edition); Morgan Kaufmann Publishers; 2nd edition, 2003.
2. **[Module: 2, 3, and 4]**
Francine Berman, Geoffrey Fox, Tony Hey; Grid Computing: Making the Global Infrastructure a Reality; John Wiley & Sons, 2003.
3. **[Modules: 5, 6, and 7]**
Jarek Nabrzyski, Jennifer M. Schopf, Jon Weglarz; Grid Resource Management: State of the Art and Future Trends; Kluwer Academic Publishers, 2003.