| | | | | |
|---|---|---|---|---|
| **Grid and Cluster Computing** | **L** | **T** | **P** | Computer Networks |
| | **3** | **1** | **0** | |

**Course Objective:** To understand concepts of Cluster based distributed computing and associated Hardware technologies

| S. NO | Course Outcomes (CO) |
|---|---|
| **CO1** | Understand concepts in Cluster based distributed computing Hardware technologies |
| **CO2** | Learn Programming Models and Paradigms |
| **CO3** | Compare Grid Computing: Grids and Grid Technologies, Programming models and Parallelization Techniques |
| **CO4** | Study Data Management Application |

| S. NO | Contents | Contact Hours |
|---|---|---|
| **UNIT 1** | Cluster Computing Introduction to concepts in Cluster based distributed computing Hardware technologies for cluster computing and software for cluster computing, and different Software Architecture for Cluster Computing. | **8** |
| **UNIT 2** | Programming; Programming Models and Paradigms, features and performance of standard MPI variants, Derived data types, communicators. | **9** |
| **UNIT 3** | Resource management and scheduling Managing, cluster resources: single system images, system level middleware, distributed task scheduling, monitoring and administering system resources Parallel I/O and Parallel Virtual File System. Scheduling: Condor, Maui Scheduler, Portable Batch System (PBS). | **9** |
| **UNIT 4** | Grid Computing: Grids and Grid Technologies, Programming models and Parallelization Techniques, Grid Security Infrastructure, Setting up Grid, deployment of Grid software and tools, and application execution | **8** |
| **UNIT 5** | Standard application development tools and paradigms Performance evaluation tools, HINT, netperf, netpipe, ttcp, Iperf.message | **8** |
| **UNIT 6** | Data Management Application Case Study: Molecular Modeling for Drug Design and Brain Activity Analysis, Resource management and scheduling. | **8** |
| | **TOTAL** | **42** |