

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**INFORMATION & COMMUNICATION**  
**TECHNOLOGY**  
**B. E. SEMESTER: VII**

**Subject Name: Advance Computing**

**Subject Code: 173202**

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam (E)		Mid Sem Exam (Theory) (M)	Practical (Internal)
				Theory	Practical		
4	0	2	6	70	30	30	20

Sr. No.	Course Contents
1.	<b>Parallel Computing at a glance:</b> Motivating Parallelism, Scope of Parallel Computing, Implicit Parallelism: Trends in Microprocessor Architectures, Limitations of Memory System Performance, Dichotomy of Parallel Computing Platforms, Architecture of an Ideal Parallel Computer
2.	<b>Distributed Systems at a glance:</b> Introduction, Distributed computing models, Software concepts, Design issues in distributed systems, Client-server model, WWW 1.0 and 2.0.
3.	<b>Latest trends in Communication.</b> Spread-spectrum Technology, CDMA versus GSM, Third Generation Networks, Wi-Fi v/s 3G,

	Mobile ad hoc networks, Voice over Internet protocol and convergence, Mobile VoIP.
<b>4</b>	<b>Cluster Computing at Glance :</b> Ease of Computing, Scalable Parallel Computer Architecture, Towards Low Cost Parallel Computing & Motivation, Windows opportunity, A Cluster Computer And Its Architecture, Cluster Classification, Commodity Components for Clusters, Network Services/Communication SW, Cluster Middleware and Single Systems Image, Resource management & Scheduling (RMS), Programming environment Tools, Cluster Applications, Representative Cluster Systems, Clusters of SMPS
<b>5.</b>	<b>Administration and Scalable Services</b> Security, System Monitoring, System Tuning, Environment, Resource sharing, Resource sharing enhanced locality.
<b>6.</b>	<b>Introduction to Grid and its Evolution</b> Beginning of the grid, building blocks of the grid, grid applications and application middleware, future of the grid, Evolution of the Grid: first, second and third generation.
<b>7.</b>	<b>Implementing Production Grids:</b> Grid context, Grid support for collaboration, Building an initial multisite, computational and data grid, cross site trust management.
<b>8.</b>	<b>Anatomy of Grid :</b> Virtual organizations, Nature of grid architecture, Grid architecture description and practice, intergrid protocols, relation to other technologies, other perspective on grids.
<b>9.</b>	<b>Introduction to Cloud Computing :</b> Defining Clouds. Cloud Providers, Consuming Cloud Services, Cloud Models –IaaS, PaaS, SaaS, Inside the cloud, Administering cloud services, technical interface, cloud resources
<b>10.</b>	<b>Nature of cloud :</b> Tradition data center, cost of cloud data center, Scaling computer systems, economics, cloud work load, managing data on clouds, public, private and hybrid clouds.
<b>11.</b>	<b>Cloud elements :</b> Infrastructure as a service, Platform as a Service, Software as a Service.

### Text Books:

1. Introduction to Parallel Computing, Ananth Grama, Anshul Gupta, George Karypis, Vipin Kumar, By Pearson Publication.

2. Distributed Computing, Sunita Mahajan and Seema Shah, Oxford University Press.
3. Mobile Computing , Asoke K Telukder, Roopa R Yavagal, TMH.
4. High Performance Cluster Computing, Volume 1, Architecture and Systems,Rajkumar Buyya, Pearson Education.
5. Grid Computing – Making the Global Infrastructure A Reality, Edited by Berman,Fox and Hey, Wiley India.
6. Cloud Computing for Dummies, Hurwitz, Bllor, Kaufman, Halper, Wiley India.

### **Reference Books:**

1. Introduction To Parallel Programming - By Steven Brawer.
2. Distributed Systems: Principles and Paradigms, Taunenbaum.
3. Principles of Mobile Computing, - Hansmann, Merk, Nicklous and Stober, Springer.
4. Cloud Computing, A Practical Approach, Anthony Velte, Toby Velte, Robert Elsenpeter, McGrawHill.
5. Clouding Computing with Windows Azure Plaform, Roger Jennings, Wiley India.
6. Virtualization for Dummies – Bernand Golden, Wiley India.
7. Cloud Computing – Bible, Berrie Sonsisky, Wiley (India).
8. Cloud Security – Ronald Krutz, Wiley (India).