CP5090   **ADVANCED DATABASE TECHNOLOGY AND DESIGN**   **L T P C**
                                                                                     3 0 2 4

OBJECTIVES:
- To comprehend the underlying principles of Relational Database Management System.
- To develop database models using parallel and distributed databases.
- To understand the concepts of XML and Web databases.
- To apprehend the design and implementation of active temporal and deductive databases.
- To develop applications based on NoSQL database.

UNITI   **RELATIONAL MODEL**   **9+6**
Entity Relationship Model – Relational Data Model – Mapping Entity Relationship Model to Relational Model – Relational Algebra – Structured Query Language-Database Normalization – Transaction Management-Recovery

UNIT II   **PARALLEL AND DISTRIBUTED DATABASES**   **9+6**
Parallel Databases– I/O Parallelism– Inter-Query and Intra-Query Parallelism– Inter-Operation and Intra-operation Parallelism – Performance evaluation for Parallel DB Systems – Distributed Database Architecture-Distributed Data Storage – Distributed Transactions – Distributed Query Processing –Distributed Transaction Management – Load balancing tools for DDB – DDB Security.

UNIT III   **XML AND WEB DATABASES**   **9+6**
XML Data Model – DTD – XML Schema – XML Querying – Web Databases – Open Database Connectivity-Java Database Connectivity–Accessing Relational database using PHP – User Driven Querying – Writing to Web Databases – Session Management.

UNIT IV   **ACTIVE TEMPORAL AND DEDUCTIVE DATABASES**   **9+6**
Event Condition Action Model – Design and Implementation Issues for Active Databases – Termination, Confluence, Determination and Modularization – Temporal Databases –Interpreting Time in Relational Databases – Deductive Databases – Datalog Queries

UNIT V   **NoSQL DATABASES**   **9+6**
NoSQL database vs traditional RDBMS database – Migrating from RDBMS to NoSQL– CRUD operations – Querying NoSQL stores – Indexing and Ordering Datasets – MongoDB-Database creation and Querying– Web Application development using MongoDB

TOTAL: 45 +30: 75 PERIODS

OUTCOMES:
Upon completion of the course, the student will be able to
- Design and implement relational databases.
- Design and implement parallel and distributed databases.
- Design and implement XML databases, Active, Temporal and Deductive databases.
- Implement the concept of database connectivity with the applications.
- Design and implement NoSQL database.

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1. R. Elmasri, S.B. Navathe, "Fundamentals of Database Systems", Addison-Wesley, 2011.
2. Han, Jiawei, Jian Pei, and MichelineKamber. Data mining: Concepts and Techniques. 2011.
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4. Henry F Korth, Abraham Silberschatz, S. Sudharshan, "Database System Concepts", Fifth Edition, McGraw Hill, 2006.
5. C. J. Date, A.Kannan and S. Swamynathan, "An Introduction to Database Systems", Eighth Edition, Pearson Education, 2006.

6. V.S.Subramanian, "Principles of Multimedia Database Systems", Harcourt India Pvt. Ltd.,2001.
7. ShashankTiwari, "Professional NoSQL", Wiley, 2011.
8. David Lane, Hugh.E.Williums, Web Database Applications with PHP and MySQL, O'Reilly Media; 2nd edition, 2004

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CP5073   **CLOUD COMPUTING TECHNOLOGIES**   **LT P C**
                                                                      3 0 2 4

OBJECTIVES:

- To understand the concept of cloud and utility computing.
- To understand the various issues in cloud computing.
- To familiarize themselves with the lead players in cloud.
- To appreciate the emergence of cloud as the next generation computing paradigm.
- To be able to set up a private cloud.

UNIT I   INTRODUCTION   9+6
Introduction- Historical Development – Cloud Computing Architecture – The Cloud Reference Model – Cloud Characteristics –Cloud Deployment Models: Public, Private, Community, Hybrid Clouds- Cloud Delivery Models: IaaS, PaaS, SaaS – Open Source Private Cloud Software: Eucalyptus, Open Nebula, Open Stack.

UNIT II   VIRTUALIZATION   9+6
Data Center Technology – Virtualization – Characteristics of Virtualized Environments   - Taxonomy of Virtualization Techniques – Virtualization and Cloud Computing –Pros and Cons of Virtualization – Implementation Levels of Virtualization – Tools and Mechanisms: Xen, VMWare, Microsoft Hyper-V, KVM, Virtual Box

UNIT III   CLOUD COMPUTING MECHANISM   9+6
Cloud Infrastructure Mechanism: Cloud Storage, Cloud Usage Monitor, Resource Replication – Specialized Cloud Mechanism: Load Balancer, SLA Monitor, Pay-per-use Monitor, Audit Monitor, Failover System, Hypervisor, Resource Cluster, Multi Device Broker, State Management Database – Cloud Management Mechanism: Remote Administration System, Resource Management System, SLA Management System, Billing Management System