NIRMA UNIVERSITY
Institute of Technology
B. Tech. Computer Science and Engineering
Semester – VI
Department Elective-II

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3	0	2	4

Course Code	2CSDE63
Course Title	System and Database Administration

Course Outcomes:

At the end of the course, students will be able to -

1. analyze and appraise basic configurational aspects of computer systems
2. review the configuration and administration of database systems
3. adapt database components based on system requirements to achieve better performance
4. develop strategies of regular backup to ensure reliability

Syllabus:

Teaching Hours: 45

Unit I **02**

Introduction: Role and responsibilities of System Administrator and Database administrator

Unit II **07**

System Administration: Booting in single user mode, Start-up scripts, Rebooting and shutting down, multi-booting. Ownership of files and processes, Super-user, choosing a root password, Becoming root, Other Pseudo users, User Management. Components of a process, Life cycle of a process, Monitoring Processes, Process Control Signals and commands, schedule jobs Types of operating system failures, diagnosis, backup and recovery

Unit III **06**

Network Management and Debugging: LAN Setup, Configurations of DHCP, ROOTP, ARP, Network Management Tools, Routing Configuration, Security problems in password file, firewall.

Unit IV **12**

Database Server Architecture and Configuration: Database server Architecture, and its processes. Installation and configuring Database servers: Dedicated server, Shared Server. Physical storage and logical storage. Parameter files, Control files, Data files, Segments, Extents, Data blocks, redo log Files, Temporary files

Storage Management: Create and Manage table spaces, Obtain table space information, Automatic storage management

Network Configuration: for Database Server, and for Database client nodes.

Unit V **06**

Backup and Recovery: Backup and Recovery issue, Types of Backup, Types of Failure, restoring backups, cause and solution of different type of failures, Instance and Media Recovery, Recovery Manager

Unit VI **06**

Security: Database Security, User and schemas, System Privileges, Object privileges, Database Roles,PL/SQL Roles, User profile configuration, Monitor and analyze network attacks, Audit trail

Unit VII **06**

Performance Tuning: monitoring and diagnosing SQL and instance performance issues, Query Execution and Query Plan Analysis, Identify and tune problem SQL statements, Tune concurrency, Tune Instance components, Gain an understanding of the Oracle Database Cloud Service

Self-Study:

The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Laboratory Work:

Above concepts are to be implemented in at least 10 experiments to be carried out.

Suggested Readings^:

1. William R. Stanek, Windows Server 2008 Inside Out, Microsoft Press
2. Tom Carpenter, Microsoft Windows Server Administration Essentials, John Wiley.
3. Craig Mullins, Database Administration: The Complete Guide to DBA Practices and Procedures, Addison Wesley
4. Adam Jorgensen and Bradley ball, Professional Microsoft SQL Server 2014 Administration, Wrox
5. Sam R Alapati , Expert Oracle Database 11g Administration Apress
6. Kevin Loney, Oracle 9i DBA Handbook, Mcgraw Hill.
7. Donald Burkson, Oracle 9i High Performance Tuning with STATSPACK, McGraw Hill

L=Lecture, T=Tutorial, P=Practical, C=Credit

^this is not an exhaustive list