

**Course Title: Database Administration**

**Course Code: CACS405**

**Year/Semester: IV/VII**

**Class Load: 6 Hrs. /Week (Theory: 3Hrs, Practical 3Hrs.)**

### **Course Description**

This course provides the comprehensive knowledge about relational database management system in administrative approach to integrate in enterprise level of database in network environment which encompasses with oracle database instances Management, database installment in network environment, implementing user role and privileges, multitenant database management, back and recovery.

**Objectives:** The general objectives of this course is to provide core knowledge of administrative works on relational database management system.

#### **Unit 1 Introduction to an Oracle database 12Hrs**

Overview of the Oracle Database Architecture (process, memory, storage structure), DBA roles and responsibilities, Familiar with SQL\*Plus, Accepting Values at Runtime, Overview of SQL Command (DDL (Tables, Constraints, Indexes Views, Synonyms, Sequences Partitioning and Materialized Views), DML, Join and Subquery)

#### **Unit 2 Managing Database Instances 5Hrs**

Oracle Database installation, Database creation, starting up and shutting down oracle instance, Oracle Network component, communicating between Databases; Using Dynamic Performance Views, Using the Automatic Diagnostic Repository (ADR), Using the Alert Log and Trace Files, Managing Initialization Parameter Files.

#### **Unit 3: Tablespace and Storage management**

**4Hrs**

Working with Tablespaces and Data Files, Creating and adding tablespace and datafiles, Managing Control Files, Online Redo Logs and Archive logs; Multiplexing online redo logs and control files, database archiving.

#### **Unit 4 Managing Users, Roles and Privileges 6Hrs**

Assigning Quotas to Users, Applying the Principle of Least Privilege, Creating and Assigning Profiles, Administering User Authentication Methods, Managing Oracle Database Users, Privileges, and Roles.

#### **Unit 5: Multitenant Database Architecture**

**7 Hrs**

Understanding the Multitenant Architecture, Pluggable Architecture; Creating CDB; Creating Pluggable Databases (PDBs) within a CDB; Manage CDBs and PDBs, Backup and Duplicate, Manage Security in Multitenant databases

#### **Unit 6 Configure the Oracle Network Environment 5Hrs**

Overview of Network Configuration, Oracle Net Listener Configuration and Management, Oracle Net Naming Methods, Networking the Net Configuration Assistant, Configure Client Connections with Net Manager, View Listener Configuration, Start and Stop the Oracle Listener, Use TNSPING to Test Oracle Net Connectivity, Connect to the Database, Configure NetServices with Enterprise Manager

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### **Unit -7:Backup and Recovery5Hrs**

Backup and Recovery Concepts, Database backup, restoration and recovery, defining a backup and recovery strategy, Backup and Recovery options; Data Dump; User-Managed Backup and Recovery; Configuring RMAN; RMAN Backups, Restore and Recovery, Perform CDB and PDB flashback.

### **Unit-8**

#### **Automate Tasks with the Scheduler4Hrs**

Introduction to the Scheduler, Access Rights, Scheduler Components and Workflow, create a Job, Job Classes, Use Time Based, Event-Based Schedules, Create an Event-Based Schedule.

### **Laboratory Works**

Laboratory works should be done covering all the topics listed above and a small work should be carried out using the concept learnt in each unit in the group. Work should be assigned on individual basis.

### **Teaching Methods**

The general teaching pedagogy includes class lectures, group discussions, case studies, guest lectures, research work, project work, assignments (theoretical and practical), and examinations (written and verbal), depending upon the nature of the topics. The teaching faculty will determine the choice of teaching pedagogy as per the need of the topics.

### **References**

1. Fernandez, I. Beginning Oracle Database 12c Administration. Apress.
2. Press, O. Oracle Database 19 C: Administration Workshop vol-I/II.
3. Thomas, B. Oracle Database 12C Administration Certified Associate. Sybex.
4. Pro Oracle Database 18c Administration: Manage and Safeguard Your Organization's Data, Michelle Malcher and Darl Kuhn, Third Edition.
5. Oracle Database 12c DBA Handbook, Manage a Scalable, Secure Oracle Enterprise Database Environment, Bob Bryla.

