



Sub Committee for Curriculum Development

Course Name: Database Administration II

(UG/PG): PG

Number of Credits: 3

Level: 4

Learning Objective(s):

- Diagnose and repair data failures with Flashback technology.
- Manage space to optimize database storage so you can respond to growing space requirements.
- Monitor and manage major database components, including memory, performance and resources.
- Secure the availability of your database through appropriate backup and recovery strategies.
- Automate DBA tasks with the Scheduler

Pedagogy:

- **Case Studies for Creation of Database Maintenance**
- **Case studies for Database Security**
- **Complex sql queries to understand performance conflicts**

Pre-requisites:

- Must have Knowledge of Database Architecture, Backup and recovery concepts and Performance measuring of simple queries

Course Outline:

S.No.	Topic	Hours
1.	Core Concepts and Tools of the Database <ul style="list-style-type: none">• The Database Architecture: Overview• ASM Storage Concepts• Connecting to the Database and the ASM Instance• DBA Tools Overview	3
2.	Configuring for Recoverability <ul style="list-style-type: none">• Purpose of Backup and Recovery (B&R), Typical Tasks and Terminology• Using the Backup Tool• Configuring your Database for B&R Operations• Configuring Archivelog Mode• Configuring Backup Retention• Configuring and Using a Flash Recovery Area	4
3	Backup using the Tool (RMAN) <ul style="list-style-type: none">• Tracking and Storing Backup Information• Setting up a Recovery Catalog• Recording Backups• Using Stored Scripts• Managing the Recovery Catalog (Backup, Export, Import, Upgrade, Drop and Virtual Private Catalog)• Creating and Using the following:	4

	<ul style="list-style-type: none"> - Backup Sets and Image Copies - Whole Database Backup - Fast Incremental Backup - Configure Backup Destinations - Duplexed Backup Sets • Archival Backups 	
4	<p>Configuring Backup Settings</p> <ul style="list-style-type: none"> • Configuring and Managing Persistent Settings • Configuring Autobackup of Control File • Backup optimization • Advanced Configuration Settings: Compressing Backups • Configuring Backup and Restore for Very Large Files (Multisection) 	4
6	<p>Restore and Recovery Task</p> <ul style="list-style-type: none"> • Restoring and Recovering • Causes of File Loss • Automatic Tempfile Recovery • Recovering from the Loss of a Redo Log Group • Recovering from a Lost Index Tablespace • Re-creating a Password Authentication File • Complete and Incomplete Recovery • Other Recovery Operations 	3
7	<p>Using Tool (RMAN) to Perform Recovery</p> <ul style="list-style-type: none"> • Complete Recovery after Loss of a Critical or Noncritical Data File • Recovering Image Copies and Switching Files • Restore and Recovery of a Database in NOARCHIVELOG Mode • Incomplete Recovery • Performing Recovery with a Backup Control File • Restoring from Autobackup: Server Parameter File and Control File • Restoring and Recovering the Database on a New Host 	3
8	<p>Using Flashback Technology</p> <ul style="list-style-type: none"> • Flashback Technology: Overview and Setup • Using Flashback Technology to Query Data • Flashback Table • Flashback Transaction Query • Performing Flashback Transaction Backout • Configuring Flashback Database • Performing Flashback Database Operations • Monitoring Flashback Database 	4
9	<p>Managing Memory and Database Performance</p> <ul style="list-style-type: none"> • Memory Structures • Database Memory Parameters • Using Automatic Memory Management • Automatic Shared Memory Management • Using Memory Advisors • Using Data Dictionary Views • Tuning Activities • Using Statistic Preferences • Optimizer Statistics Collection • Monitor the Performance of Sessions and Services • Automatic Workload Repository (AWR) • Describing the Benefits of Database Replay 	4
10	<p>Managing Performance by SQL Tuning</p> <ul style="list-style-type: none"> • SQL Tuning and SQL Advisors • Using SQL Tuning Advisor • SQL Access Advisor • SQL Performance Analyzer Overview 	4

11	Managing Resources <ul style="list-style-type: none"> • Database Resource Manager: Overview and Concepts • Accessing and Creating Resource Plans • Creating Consumer Group • Specifying Resource Plan Directives, including: <ul style="list-style-type: none"> - Limiting CPU Utilization at the Database Level - Instance Caging • Activating a Resource Plan • Monitoring the Resource Manager 	6
12	Administering User Security and Implementing Database Security <ul style="list-style-type: none"> • Create and manage database user accounts • Authenticate users • Assign default storage areas (tablespaces) • Grant and revoke privileges • Create and manage roles • Create and manage profiles • Implement standard password security features • Control resource usage by users • Describe DBA responsibilities for security • Apply the principal of least privilege • Enable standard database auditing • Specify audit options • Review audit information • Maintain the audit trail 	6

Books Recommended

- Oracle Database Architecture Documentations

Research Papers/Articles recommended for reading:

Suggested Evaluation Methods:

- Presentation
- Test
- Assignment
- Quiz

Parallel/Similar courses the existing curriculum:

S.No	Name of the course	Institute where it was offered
1	Database Administration (M.Sc. IInd SEM)	SICSR

Name of Member	Tejaswini Apte	Samaya Pillai	Harshad Gune		
Designation	Asst. Professor	Asst. Professor	Asso Professor		
Org. / Inst.	SICSR	SICSR	SICSR		
Signature					

Name of the Expert:

Signature:

Date:

