



MERCER
COUNTY COMMUNITY COLLEGE

COURSE OUTLINE

Course Number	Course Title	Credits
IST 264	Database Administration II	4
Hours: Lecture/Lab/Other 3/2/0	Co- or Pre-requisite IST 263	Implementation Semester & Year Fall 2022

Catalog description:

Combines training, experience, and testing to ensure a strong foundation and expertise in the industry's most advanced database management system. Focus includes an Oracle database configuration for multilingual applications, the Oracle Recovery Management and Flashback technology, and database performance monitoring tools.

General Education Category:

Not GenEd

Course coordinator:

Queen E. Okike-Iroka, Ed.D.
Associate Professor.
(609) 570-3464 or Ext. 3464.
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Required texts & Other materials:

Database Administration II Packages from Oracle Corporation.

Course Student Learning Outcomes (SLO):

1. Explain the Database Architecture and ASM. [Support ILG# 1, 4, 10, 11; PO# 1]
2. Configure database for recoverability use the RMAN Recovery Catalog. [Support ILG# 1, 2, 4, 10, 11; PO# 2, 3]
3. Configure Backup Specifications and use RMAN to Create Backups [Support ILG# 2, 4, 10, 11; PO# 2, 3]
4. Perform user-Managed Backup and Recover.[Support ILG# 4, 10, 11; PO# 2, 3]
5. Use RMAN to Perform Recovery and use RMAN to Duplicate a Database. [Support LG# 1, 4, 10, 11; PO# 2, 3]
6. Perform Tablespace Point-in-Time Recovery. [Support ILG#2, 4, 10, 11; PO# 2, 3]
7. Diagnose Database problems; Monitor and Tune RMAN; Use Flashback Technology, Flashback operations and diagnose the database problems[Support ILG#2, 4, 10, 11; PO# 2, 3]
8. Manage memory, space, database performance, resources; Automate tasks with the Schedule, administer the Scheduler and explore globalization. [Support ILG#2, 4, 10, 11; PO# 2, 3]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 1. Written and Oral Communication in English. Students will communicate effectively in both speech and writing.

Institutional Learning Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

Institutional Learning Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

Institutional Learning Goal 10. Information Literacy: Students will recognize when information is needed

and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.
Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Program Learning Outcomes for Information Technology Database Certificate (PLO)

1. Explain basic concepts of databases;
2. Code using Oracle Structured Query (SQL) Language;
3. Deploy databases on cloud platform.

Units of study in detail – Unit Student Learning Outcomes:

Course Content Details

Unit I Database Architecture and ASM. [Support SLOs# 1]

Learning Objectives

The student will be able to:

- Describe Automatic Storage Management (ASM)
- Set up initialization parameter files for ASM and database instances
- Start up and shut down ASM instances
- Administer ASM disk groups
- Configure multiple archive log file destinations to increase availability
- Define, apply and use a retention policy
- Configure the Flash Recovery Area.

Unit II Use the RMAN Recovery Catalog.[Support SLOs# 2, 6]

Learning Objectives

The student will be able to:

- Identify situations that require RMAN recovery catalog.
- Create and configure a recovery catalog.
- Synchronize the recovery catalog.
- Create and Use RMAN stored scripts.
- Back up the recovery catalog.

Unit III Use RMAN to create Backups Configure. [Support SLOs# 3]

Learning Objectives

The student will be able to:

- Create image file backups.
- Create a whole database backup.
- Enable fast incremental backup. Create duplex backup and back up backup sets.
- Create an archival backup for long-term retention.
- Create a multiseession, compressed and encrypted backup.
- Report on and maintain backups.

Unit IV Perform User-Managed Backup and Recovery[Support SLOs# 4].

Learning Objectives

The student will be able to:

- Recover from a lost TEMP file.
- Recover from a lost redo log group
- Recover from the loss of password file
- Perform user-managed complete database recovery

- Perform user-managed incomplete database recovery
- Perform user-managed and server managed backups
- Identify the need of backup mode
- Back up and recover a control file
- Using RMAN to Perform Recovery

Unit V Use RMAN to Duplicate a Database. [Support SLOs# 5]

Learning Objectives

The student will be able to:

- Use RMAN to Duplicate a Database
- Create a duplicate database
- Use a duplicatedatabase
- Perform Tablespace Point-in-Time Recovery
- Identify the situations tha require TSPITR
- Perform automated TSPITR
- Monitor and Tune RMAN
- Monitor RMAN sessions and jobs
- Configure RMAN for Asynchronous I/O
- Use Flashback Technology
- Restore dropped tables from the recycle bin
- Perform Flashback Query and use Flashback Transaction

Unit VI Diagnose the Database. [Support SLOs# 7]

Learning Objectives

The student will be able to:

- Set up Automatic Diagnostic Repository.
- Using Support Workbench.
- Perform Block Media Recovery.
- Implement Automatic Memory Management.
- Manually configure SGA parameters.
- Configure automatic PGA memory management.
- Use and manage optimizer statistics.
- Use and manage Automatic Workload Repository (AWR).
- Use advisory framework.
- Manage Alerts and Thresholds.

Unit VII Manage Memory Space and Database Performance. [Support SLOs# 8]

Learning Objective

The student will be able to:

- Managing Database Performance
- Use the SQL Tuning Advisor
- Use the SQL Access Advisor to tune a workload
- Manage presumable space allocation
- Reclaim wasted space from tables and indexes by using the segment shrink functionality
- Understand Database Replay

Unit VII Manage Resources; Automate tasks with the Scheduler; administer the Scheduler and explore globalization. [Support SLOs# 8]

.Learning Objectives

The student will be able to

- Understand the database resource manager
 - Create and use Database Resource Manager Components
 - Create a job, program, and schedule.
 - Use a time-based or event-based schedule for executing Scheduler jobs.
 - Create lightweight jobs.
 - Use job chains to perform a series of related tasks.
 - Create Windows and Job Classes.
 - Use advanced Scheduler concepts to prioritize jobs.
 - Customize language-dependent behavior for the database and individual sessions
- Administering the Schedule.

Average of weekly homework assignments	50%
Four Units of Tests:	
Unit 1 & 2	10%
Unit 3 & 4	10%
Unit 5 & 6	10%
Unit 7 & 8	10%
Final evaluation examination	10%
Total	100%