

STATUS: A

COMMON COURSE NUMBER: CTS2441C

COURSE TITLE: Oracle DBA: Database Administration Fundamentals I

CREDIT HOURS: 4

CONTACT HOURS BREAKDOWN:

Lecture/Discussion	<u> 56 </u>
Lab	<u> 8 </u>
Other	<u> 0 </u>
Contact Hours/Week	<u> 4 </u>

CATALOG COURSE DESCRIPTION:

Prerequisite: COP 2740C and COP 1341

Corequisite: None

This course is designed to give the Oracle Database Administrator (DBA) a firm foundation in basic administrative tasks. Through instructor-led learning, structured hands-on practices, and challenge-level exercise labs, the DBA will gain the necessary knowledge and skills to set up, maintain, and troubleshoot an Oracle database. This course is designed to prepare students to successfully complete the Oracle Database Administrator certification exams.

General Education Requirements - Associate of Arts Degree, meets Area (s):

General Education Requirements - Associate of Science Degree, meets Area (s):

UNIT TITLES:

1. Oracle Architectural Components
2. Using Administrative Tools
3. Managing an Oracle Instance
4. Creating an Oracle Database
5. Data Dictionary Views and Standard Packages

6. Managing Control Files
7. Maintaining Redo Log Files
8. Managing Tablespaces and Datafiles
9. Storage Structures and Relationships
10. Managing Rollback Segments
11. Managing Temporary Segments
12. Managing Tables
13. Managing Indexes
14. Managing Data Integrity
15. Using Clusters and Index-Organized Tables
16. Managing Users
17. Managing Resource Use
18. Managing Privileges
19. Managing Roles
20. Auditing the Database
21. Loading and Reorganizing Data
22. Using National Language Support

I. Course Overview:

Upon successful completion of this course, the students should be able to

Manage users, privileges, and resources

Use National Language Support Features

Create an operational database

Manage Oracle database files

Start up and shut down an Oracle instance and database

Manage tablespaces, segments, extents, and blocks

II. Units:

Unit 1. 1. Oracle Architectural Components

General Outcome:

1.0 The students should be able to identify the components that connect users to Oracle servers.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

1.1 Describe the structures that connect users to Oracle servers.

1.2 Describe the stages in processing queries.

1.3 Describe the stages in processing DML statements.

1.4 Describe the stages in processing commit statements.

Unit 2. 2. Using Administration Tools

General Outcome:

2.0 The students should be able to identify the available tools, which are useful for administering components of Oracle database administration.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

2.1 Use Server Manager line mode.

2.2 Identify administration applications in Oracle Enterprise Manager.

2.3 Use Oracle Enterprise Manager components.

Unit 3. 3. Managing an Oracle Instance

General Outcome:

3.0 The students should be able to start and terminate an Oracle process including password authentication.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 3.1 Set up OS and password file authentication.
- 3.2 Create a parameter file.
- 3.3 Start an instance and open the database.
- 3.4 Close the database and shut down an instance.
- 3.5 Get and set parameter values.
- 3.6 Manage sessions.
- 3.7 Monitor ALERT and trace files.

Unit 4. 4. Creating an Oracle Database

General Outcome:

4.0 The students should be able to describe the process of planning and creating the container for the data tables, indexes, and other components of the database.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 4.1 Prepare the OS.
- 4.2 Prepare the parameter file.
- 4.3 Create a database in Oracle.

Unit 5. 5. Data Dictionary Views and Standard Packages

General Outcome:

5.0 The students should be able to identify the data dictionary views, and how the views are constructed.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 5.1 Construct data dictionary views.
- 5.2 Use the data dictionary.
- 5.3 Prepare the PL/SQL environment with Admin scripts.
- 5.4 Administer stored procedures and packages.

Unit 6. 6. Managing Control Files

General Outcome:

6.0 The students should be able to identify the importance and use of control files in the database environment.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 6.1 Explain how control files are used.
- 6.2 Examine control file contents.
- 6.3 Obtain information about control files.
- 6.4 Multiplex control files.

Unit 7. 7. Maintaining Redo Log Files

General Outcome:

7.0 The students should be able to describe the purpose, use and the administration of Redo Log files.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 7.1 Describe how online redo log files are used.
- 7.2 Obtain log and archive information.
- 7.3 Control log switches and checkpoints.
- 7.4 Multiplex and maintain redo log files.
- 7.5 Plan online redo log files.
- 7.6 Troubleshoot common redo log file problems.

Unit 8. 8. Managing Tablespaces and Datafiles

General Outcome:

8.0 The students should be able to identify the purpose, use, and administration of tablespaces, and datafiles as they relate to the database.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

8.1 Describe the logical structure of the database.

8.2 Create tablespaces.

8.3 Change tablespace size using various methods.

8.4 Change tablespace status and storage settings.

8.5 Relocate tablespaces.

8.6 Prepare necessary tablespaces.

Unit 9. 9 Storage Structures and Relationships

General Outcome:

9.0 The students should be able to describe the management of physical storage allocation for various disparate database objects.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 9.1 Describe different segment types and their uses.
- 9.2 Control the use of extents by segments.
- 9.3 Use block space utilization parameters.
- 9.4 Obtain information about storage structures.
- 9.5 Locate segments with consideration for fragmentation and lifespan.

Unit 10. 10. Managing Rollback Segments

General Outcome:

10.0 The students should be able to plan, create, and maintain rollback segments.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 10.1 Plan the number and size of rollback segments.
- 10.2 Create rollback segments with appropriate storage settings.
- 10.3 Maintain rollback segments.
- 10.4 Obtain rollback segment information from dictionary views.
- 10.5 Troubleshoot rollback segment problems.

Unit 11. 11. Managing Temporary Segments

General Outcome:

11.0 The students should be able to describe how to support users with needed temporary space for typical database operations.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

11.1 Distinguish between different types of temporary segments.

11.2 Allocate space for temporary segments in the database.

11.3 Obtain temporary segment information from Oracle.

Unit 12. 12. Managing Tables

General Outcome:

12.0 The students should be able to describe the characteristics of four different types of tables and storage management principles.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 12.1 Distinguish between Oracle datatypes.
- 12.2 Create tables with appropriate storage settings.
- 12.3 Control the space used by tables.
- 12.4 Analyze tables to check integrity and migration.
- 12.5 Retrieve data dictionary information about tables.
- 12.6 Convert between different ROWID formats.

Unit 13. 13. Managing Indexes

General Outcome:

13.0 The students should be able to identify the different types of indexes, as well as their advantages and disadvantages.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

13.1 Explain the different index types and their use.

13.2 Create B-tree and bitmap indexes.

13.3 Reorganize indexes.

13.4 Drop indexes.

13.5 Get index information from the data dictionary.

Unit 14. 14. Managing Data Integrity

General Outcome:

14.0 The students should be able to enforce business rules upon the collection and manipulation of data stored in the database.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

14.1 Describe the integrity constraints and triggers.

14.2 Implement data-integrity constraints and triggers.

14.3 Maintain integrity constraints and triggers.

14.4 Obtain constraint and trigger information from Oracle.

Unit 15. 15. Using Clusters and Index-Organized Tables

General Outcome:

15.0 The students should be able to utilize clusters and index organized tables as an alternative to standard tables.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

15.1 Create and maintain clusters.

15.2 Use index-organized tables.

15.3 Obtain dictionary information about clusters and IOTs.

Unit 16. 16. Managing Users

General Outcome:

16.0 The students should be able to manage user access to the database.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

16.1 Create new database users.

16.2 Alter and drop existing users.

16.3 Monitor information about existing users.

Unit 17. 17. Managing Resource Use

General Outcome:

17.0 The students should be able to limit user access to data within the database.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

17.1 Create and assign profiles to control resource use.

17.2 Alter and drop profiles.

17.3 Administer passwords using profiles.

17.4 Obtain profile information from the data dictionary.

Unit 18. 18. Managing Privileges

General Outcome:

18.0 The students should be able to assign privileges to users for the objects the user is allowed to create and/or access.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

18.1 Identify system privileges.

18.2 Identify object privileges.

18.3 Grant and revoke privileges.

18.4 Control OS and password authentication.

Unit 19. 19. Managing Roles

General Outcome:

19.0 The students should be able to create, assign, alter, and disable roles for users of the database.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

19.1 Create and modify roles.

19.2 Control availability of roles.

19.3 Remove roles.

19.4 Use predefined roles.

19.5 Display role information from the data dictionary.

Unit 20. 20. Auditing the Database

General Outcome:

20.0 The students should be able to monitor database activity for suspicious or inappropriate access.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

20.1 Differentiate between database and value-based auditing.

20.2 Use database auditing.

20.3 View enabled auditing options.

20.4 Retrieve and maintain auditing information.

Unit 21. 21. Loading and Reorganizing Data

General Outcome:

21.0 The students should be able to enter data into the database through direct path insert, SQL loader, or use the Import utility, as well as retrieve database data by use of the Export utility.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

21.1 Load data using Direct-path insert.

22.2 Use SQL *Loader conventional and direct path.

22.3 Reorganize data with EXPORT and IMPORT.

Unit 22. 22. Using National Language Support

General Outcome:

22.0 The students should be able to successfully choose a character set and specify language dependent behavior.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

22.1 Choose a character set for a database.

22.2 Specify language-dependent behavior.

22.3 Obtain information about NLS settings.