COURSE OUTLINE

Course Number: IST 263
Course Title: Database Administration 1
Credits: 4

Hours: Lecture/Lab/Other 3/2

Co- or Pre-requisite: IST 262
Implementation: Spring / 2019

Catalog description (2017-2018 Catalog): [Note: All revisions to the course description in the catalog require the submission of a memo to the Curriculum Committee.]

Database Administration 1 teaches Oracle Database software installation, new database creation and administration. Students will configure the database to support an application; create users; define storage structures; set up security; design a backup and recovery strategy; and monitor the database to ensure that it operates smoothly.

Is course New, Revised, or Modified? [Modified courses are those which have a new prefix or course number]
Revised

Required texts/other materials:
Textbook: Database Administration 1 Packages from Oracle Corporation.

Revision date: September 22, 2014
Course coordinator: Queen E. Okike-Iroka, Ed.D.
Associate Professor.
(609) 570-3464 or Ext. 3464.
oikeq@mccc.edu

Information resources: (Describe the primary information resources that support the course, including books, videos, journals, electronic databases, websites, etc. To request new materials for your course, use the library request form at: www.mccc.edu/student_library_course_form.shtml),

The request form was completed on September 13, 2019.

Other learning resources: (Describe any other student learning resources that are specific to this course, including any special tutoring or study group support, learning system software, etc.)

None
Course Competencies/Goals
The student will be able to:

1. Explain the Oracle Database Architecture and demonstrate normalization in an Oracle relational database.
2. Prepare the Database Environment and manipulate .data
3. Create an Oracle Database and manage the Oracle Instance
4. Configure the Oracle Network Environment and manage database storage structures.
5. Manage Schema Objects, data and concurrency
6. Manage undo data.
7. Implement Oracle database security.
8. Carry out database maintenance and Performance Management Intelligent Infrastructure Enhancements.

Course-specific General Education Knowledge Goals and Core Skills.

General Education Knowledge Goals

Goal 1. Communication. Students will communicate effectively in both speech and writing.
Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

MCCC Core Skills

Goal A. Written and Oral Communication in English. Students will communicate effectively in speech and writing, and demonstrate proficiency in reading.
Goal B. Critical Thinking and Problem-solving. Students will use critical thinking and problem solving skills in analyzing information.
Goal C. Ethical Decision-Making. Students will recognize, analyze and assess ethical issues and situations.
Goal D. 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.
Goal E. Computer Literacy. Students will use computers to access, analyze or present information, solve problems, and communicate with others.
Goal F. Collaboration and Cooperation. Students will develop the interpersonal skills required for effective performance in group situations.
Course Content Details.

Unit 1 Explore the Oracle Database Architecture and Environment.

Learning Objectives
The student will be able to:

- Explain the Memory Structures (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Describe the Process Structures (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Describe Overview of Storage Structures (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Prepare the Database Environment (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Plan an Oracle Database installation (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Install the Oracle software by using Oracle Universal Installer (OUI) (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

Unit 2 Create an Oracle Database and manage the Oracle Instance.

Learning Objectives
The student will be able to:

- Create a database by using the Database Configuration Assistant (DBCA) ;creating an Oracle Database (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Manage the Oracle Instance (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Set database initialization parameters (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Describe the stages of database startup and shutdown (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Use alert log and trace files (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Use data dictionary and dynamic performance views (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

Unit 3 Configure the Oracle Network Environment and Manage Database Storage Structures.

Learning Objectives
The student will be able to:

- Configure and Manage the Oracle Network (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Using the Oracle Shared Server architecture (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Manage Database Storage Structures (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Overview of tablespace and datafiles views (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

• Create and manage tablespaces (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4 Core Skills A, B, D, E, F.)

**Unit 4**

**Administer Oracle Database Security.**

**Learning Objectives**

_The student will be able to:_

• Create and manage database user accounts (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4 Core Skills A, B, D, E, F.)

• Grant and revoke privileges (Course Competencies 1, 2; General Education Goals 1, 2, 4 Core Skills A, B, D, E, F.)

• Create and manage roles (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4 Core Skills A, B, D, E, F.)

• Create and manage profiles (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4 Core Skills A, B, D, E, F.)

**Unit 5**

**Manage Schema Objects, Data and Concurrency.**

**Learning Objectives**

_The student will be able to:_

• Create and Modify tables (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4 Core Skills A, B, D, E, F.)

• Manage Constraints (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

• Create indexes (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

• Create and use temporary tables (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

• Manage Data and Concurrency (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

• Manage data using DML (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

• Identify and administer PL/SQL objects (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

• Monitor and resolve locking conflicts (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

**Unit 6**

**Manage Undo Data.**

**Learning Objectives**

_The student will be able to:_

• Explain overview of undo data (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

• Manage undo data (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

• Implement Oracle Database Security (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Describe Database Security and Principle of Least Privilege (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Work with Standard Database Auditing (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Database Maintenance (Course Competencies 1, 3, 4; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Use and manage optimizer statistics (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Use and manage Automatic Workload Repository (AWR) (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Use advisory framework (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Manage Alerts and Thresholds (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

Unit 7 Maintain Database and Perform Management Intelligent Infrastructure Enhancements.

Learning Objectives

The student will be able to

• Use Automatic Memory Management (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Use Memory Advisors (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Troubleshoot invalid and unusable objects (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Describe Intelligent Infrastructure Enhancements (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Use the Enterprise Manager Support Workbench (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Manage Patches (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

Unit 8 Backup and Recovery Concepts.

Learning Objectives

The student will be able to

• Identify the types of failure that can occur in an Oracle database (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Describe ways to tune instance recovery (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Identify the importance of checkpoints, redo log files, and archived log files (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Overview of flash recovery area (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Configure ARCHIVELOG mode (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
• Performing Database Backups (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
Goals 1, 2, 4; Core Skills A, B, D, E, F.)

- Create consistent database backups (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Back up your database without shutting it down (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Create incremental backups (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Automate database backups (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Manage backups, view backup reports and monitor the flash recovery area (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

Unit 9 Perform Backup, Recovery and Data Movement.

Learning Objectives

The student will be able to

- Overview of Data Recovery Advisor (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Use Data Recovery Advisor to Perform recovery (Control file, Redo log file and Data file) (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Describe and use methods to move data (Directory objects, SQL*Loader, External Tables) (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)
- Use Data Pump Export and Import to move data between Oracle databases (Course Competencies 1, 2; General Education Goals 1, 2, 4; Core Skills A, B, D, E, F.)

Evaluation of Student Learning

Average of weekly homework assignments 50%

Four Units of Tests:

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<thead>
<tr>
<th>Unit</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Unit 1 &amp; 3</td>
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<tr>
<td>Unit 4 &amp; 5</td>
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<tr>
<td>Unit 6 &amp; 7</td>
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</tr>
<tr>
<td>Unit 8 &amp; 9</td>
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Final Examination 10%

Total 100%

Structure of Evaluation:

1. Hands-on laboratory assignments.
2. Multiple choice Unit tests.
3. Hand-on unit tests.
## Grade Policy

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<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
<th>Nominal %</th>
<th>QPA quality point value</th>
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<tbody>
<tr>
<td>A</td>
<td>Superior Achievement</td>
<td>93-100</td>
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<tr>
<td>A-</td>
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<td>B+</td>
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<td>87-89</td>
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<td>B</td>
<td>Above Average Achievement</td>
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<td>Average Achievement</td>
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<td>F</td>
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<td>Withdrawal (Administration-initiated)</td>
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<td>N</td>
<td>No grade reported by the instructor</td>
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<td>N/A</td>
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<tr>
<td>I</td>
<td>Incomplete — no credit earned</td>
<td>-</td>
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</table>

**Audit:**
If you audit the course, you will receive an “X” grade—this cannot be changed to a letter grade at a later date.

**Withdrawal Course Requirements:**
To receive a W grade for any course, a student must consult with the course instructor or an appropriate division representative and then withdraw officially before two-thirds of the course has been completed by submitting a withdrawal form to the Office of Student Records. Withdrawal after this point results in a grade other than W (usually F). At any time before two-thirds of the course has been completed, the instructor may also withdraw with a W grade any student who has been absent excessively. A student thus withdrawn will not be entitled to any refund of tuition or fees. The student may appeal this action.

**Academic Integrity Statement:** Include a statement affirming the college’s Academic Integrity policy and any specific implications for the course. See [http://mlink.mccc.edu/omb/OMB210.pdf](http://mlink.mccc.edu/omb/OMB210.pdf)