American Public University System

The Ultimate Advantage is an Educated Mind

Department of Information Technology INFO171: Relational Databases with Oracle: SQL Introduction 3 Credit Hours Length of Course: 8 weeks Prerequisite: None

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Instructor Information

Instructor:

Email:

Office hours:

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Course Description (Catalog)

This course is a study of data modeling and database design. It applies the relational database model to construct Entity Relationship (ER) diagrams using ER Modeling. Through a study and application of the American National Standards Institute (ANSI) Standard Structured Query Language (SQL) constructs the course introduces data definition (create, alter, drop), data manipulation (insert, update, delete), and transaction control (commit, savepoint, and rollback), and defining, altering, and deleting primary keys, foreign keys, and constraints. Students must have access to Oracle software. This software is not provided by the course material grant and must be purchased or provided by the student. Course software requirements with the appropriate versions are listed under the course materials site.

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Course Scope

This course is an introduction to Relational Database Model and design concepts along with data model techniques in the context of the Oracle Database. This course provides extensive, indepth, and practical database design coverage with critical normalization issues that affect database efficiency and effectiveness. This course also use Structure Query Language (SQL) to show how database are implemented and managed by using Data Manipulation Language (DML), Data Definition Language (DDL),and Transaction Control Language (TCL). *Students must have access of Oracle Database 11g.*

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Course Objectives

At the conclusion of the course, participants should be able to:

- 1. Describe the role of databases and database applications
- 2. Learn and practice data modeling using the entity-relationship model (ERM)
- 3. Learn and practice developing database designs
- 4. Have the knowledge of the features and functions of Oracle Database
- 5. To apply the SQL in Database implementation and learn SQL syntax
- 6. Identify the difference between DML,DDL and TCL query statements

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Course Delivery Method

This course delivered via distance learning will enable students to complete academic work in a flexible manner completely online. Course materials and access to an online learning management system will be made available to each student. **Online assignments are due by the last day of each week (Sunday, 11:59 EST)** and include Discussion Forum questions (accomplished in groups through a threaded discussion board), Labs and quizzes (graded electronically. Assigned faculty will support the students throughout this eight-week course.

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Course Materials

Book Number	Authors	Book Title	Publication Info	ISBN
INFO171	Carlos Coronel, Steven Morris, Peter Rob	Database Systems: Design, Implementation, and Management, 10th Edition	Course Technology @ 2013	ISBN-10: 1111969604, ISBN-13: 9781111969608

Software: Students must have access of Oracle Database 11g software for the duration of the course.

Evaluation Procedures

- 1. Detailed instructions for weekly assignments are found in Appendix A.
- 2. Refer to the **e-classroom instructions** (<u>Appendix B</u>) to find out how to upload assignments, participate in online Discussion Board discussions, and take exams.

3. Evaluation Criteria:

Course Requirements: Your final grade will be based on the following course requirements and percentages:

Course Requirement	Percent
Discussion Forum Activities (Week1,3,5,7)	8
Week 1:	
Assignment 1	4
Lab 1	4
Week 2:	
Assignment 2	4
Lab 2	4
Week 3:	
Assignment 3	4
Lab 3	4
Week 4:	
Assignment 4	4
Lab 4	4
Week 5:	
Assignment 5	6
Lab 5	6
Week 6:	
Assignment 6	6
Lab 6	6
Week 7:	
Assignment 7	6
Lab 7	6
Week 8 :	

Total:	100
Final Lab : based on Lab 5 to Lab 7	12
Final Assignment (based on Assignment 3 to 4)	12

Submit all assignments & Labs (except Discussion Board answers and Quizzes) in Assignments section

Assignment Requirements

Discussion Board Introduction

You are required to introduce yourself to your classmates in an online discussion. Additional discussion board topics may be added to clarify issues.

Competency

You will be required to complete assigned work and upload them in Assignments.

In the Week 8: Review the chapter from 1 to 8 and complete the Final Assignment and Final Lab. The Final Assignment and Lab will be based on Week 1 through Week 7 Activities

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Grading Scale

Please see the student handbook to reference the University's grading scale.

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Course Outline

8 Week Course

(Click on the Week Number to Hyperlink to Detailed Information)

<u>Week</u>	Learning Objective(s)	<u>Reading(s)</u>	Assignment(s)
1	Refer to <u>Week 1</u> Objectives in Appendix A	Textbook: Ch 1: Database Systems	Upload Week 1: Discussion Board Week 1 Forum Introduction[Part 1 & Part II], Assignment 1 and Lab 1
2	Refer to <u>Week 2</u> Objectives in Appendix A	Textbook: Ch 2:Data Models	Upload Week 2: Assignment 2 and Lab 2
<u>3</u>	Refer to <u>Week 3</u> Objectives in Appendix A	Textbook: Ch 3 & 4: Relational Database Model &	Upload Week 3: Discussion Board Week 3 Assignment 3 and Lab 3

		ER-Model	
<u>4</u>	Refer to <u>Week 4</u> Objectives in Appendix A	Textbook: Ch 5 & 6: Advanced Data Modeling & Normalization	Upload Week 4 Assignment 4 and Lab 4
<u>5</u>	Refer to <u>Week 5</u> Objectives in Appendix A	Textbook: Ch 7: Introduction to SQL	Upload Week 5: Discussion Board Week 5 Assignment 5 and Lab 5
<u>6</u>	Refer to <u>Week 6</u> Objectives in Appendix A	Textbook: Ch 7 Conti…[SQL]	Upload Week 6 Assignment 6 and Lab 6
Z	Refer to <u>Week 7</u> Objectives in Appendix A	Textbook: Ch 8 : Advanced SQL	Upload Week 7: Discussion Board Week 7 Assignment 7 and Lab 7
<u>8</u>	Refer to <u>Week 8</u> Objectives in Appendix A	Textbook: Ch 8. Conti… [Review Chapter 1 through 8]	Upload Week 8: Final Assignment (Assignment 3 to 4) , and Final Lab(based on Lab 5 to Lab 7)
Appendix A	Weekly Student Course Guide		
Appendix B	e-Classroom Instructions		

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Policies

Please see the <u>student handbook</u> to reference all University policies. Quick links to frequently asked question about policies are listed below.

Drop/Withdrawal Policy Plagiarism Policy Extension Process and Policy

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Academic Services

ONLINE LIBRARY RESEARCH CENTER & LEARNING RESOURCES

The Online Library Resource Center is available to enrolled students and faculty from inside the electronic campus. This is your starting point for access to online books, subscription periodicals, and Web resources that are designed to support your classes and generally not available through search engines on the open Web. In addition, the <u>Online Library</u> provides access to special learning resources, which the University has contracted to assist with your studies. Questions can be directed to <u>librarian@apus.edu</u>.

- Charles Town Library and Inter Library Loan: The University maintains a special library with a limited number of supporting volumes, collection of our professors' publication, and services to search and borrow research books and articles from other libraries.
- *Electronic Books:* You can use the online library to uncover and download over 50,000 titles, which have been scanned and made available in electronic format.
- *Electronic Journals:* The University provides access to over 12,000 journals, which are available in electronic form and only through limited subscription services.
- **Turnitin.com:** <u>Turnitin.com</u> is a tool to improve student research skills that also detect plagiarism. Turnitin.com provides resources on developing topics and assignments that encourage and guide students in producing papers that are intellectually honest, original in thought, and clear in expression. This tool helps ensure a culture of adherence to the University's standards for intellectual honesty. Turnitin.com also reviews students' papers for matches with Internet materials and with thousands of student papers in its database, and returns an Originality Report to instructors and/or students.
- Smarthinking: Students have access to 10 free hours of tutoring service per year through <u>Smarthinking</u>. Tutoring is available in the following subjects: math (basic math through advanced calculus), science (biology, chemistry, and physics), accounting, statistics, economics, Spanish, writing, grammar, and more. Additional information is located in the Online Library. At the <u>Online Library</u> home page, look under Tutorial Center and General Studies and click on the "Smarthinking" Link. All login information is available.

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Appendix A – Weekly Student Course Guide

Week 1 – Database Systems

Resources: Text Book Chapter 1

Objectives: Successful students will learn:

- 1. Difference between Data and information
- 2. Importance of Database Design
- 3. How to Use Oracle Database
- 4. How modern databases evaluate from file systems
- 5. The main components of Database systems along with functions of Database Management Systems (DBMS)

Week 1 Turn In Materials:

Week 1: To Do List:

1. Readings:

Textbook: Chapter 1

2. Forum Discussion:

Week 1 Forum Discussion: Participate week 1 Forum Discussion

3. Assignment:

Submit Week 1 Assignment

4. Lab Assignment

Submit Lab1 Assignment

Due Date: Every Sunday, at 11: 59 EST (Eastern Standard Time)

Important Information:

- 1. **Discussion Board Introduction** Introduce yourself in Discussion Board and respond to at least 2 of your classmates (Back to e-Classroom Instructions). [Part I & II]
- 2. Click on the "Discussion Board" and "Introduce Yourself" links
 - A. Click "**REPLY TO THIS MESSAGE**" and enter a short introductory paragraph about yourself, what you are majoring in and what you expect learn from this course.
 - B. Click Reply
 - C. Respond to 2 other student's answers by clicking the **Subthread** link located beneath their answer
 - D. Click the **Submit** button
- 3. I encourage you to **upload a picture of yourself** (optional) in your "**My Profile**" to personalize the online interaction with your classmates. This is <u>not a course requirement</u>.

- A. <u>To upload your photo</u>, look in the left menu, and click Course Materials.
- B. In the center of the page, click **My Folder**, **Upload To My Folder**, **Browse**, click on the **file name** of your photo, **Open** and **Upload File**.
- C. When your picture uploads, place a **check mark** in the box to make it visible in your profile to other students.
- 4. **Privacy Profile** If you want to share your photo with other students, you must adjust your privacy setting in your profile by following these steps:
 - A. In the left menu click My Profile
 - B. Click the sub-link Modify Profile
 - C. In the table, scroll down to the **Profile Privacy** section and click the small arrow in the drop down menu.
 - D. Select "Show to Everyone" or "Show to instructor" as you prefer
- 5. Scroll down and click the **Re-Create Profile** button

Notes: Please refer to the Announcements posted in the e-classroom.

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Week 2 – Data Models

Resources: Text Book Chapter 2

Objectives: Successful students will learn:

- 1. Data Model and why it is important in Database design
- 2. Basic Data-modeling concepts
- 3. What business rules are and how they influence database design
- 4. Classification of data models

Week 2: To Do List:

1. Readings:

Textbook: Chapter 2

2. Forum Discussion:

None

3. Assignment:

Submit Week 2 Assignment

4. Lab Assignment

Submit Lab2 Assignment

Due Date: Every Sunday, at 11: 59 EST (Eastern Standard Time)

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Week 3 – Relational Database Model & Entity Relationship(ER) Modeling

Resources: Text Book Chapter 3 & 4

Objectives: Successful students will learn:

- 1. Physical and Logic view of Database
- 2. Basic component of Relational Model
- 3. Relational Database (RDB) operators, the data dictionary
- 4. Type of Relationship
- 5. The main characteristics of entity relationship component
- 6. Define relationship between entities
- 7. How ERD components affects database design and implementation
- 8. Knowledge about reconciliation of conflicting goals

Week 3: To Do List:

1. Readings:

Textbook: Chapter 3 & 4

2. Forum Discussion:

Week 3 Forum Discussion: Participate week 3 Forum Discussion

3. Assignment:

Submit Week 3 Assignment

4. Lab Assignment

Submit Lab3 Assignment

Due Date: Every Sunday, at 11: 59 EST (Eastern Standard Time)

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Week 4 – Advanced Data Modeling and Normalization of Database Tables

Resources: Text Book Chapter 5 & 6

Objectives: Successful students will learn:

- 1. Extended entity relationship (EER) model
- 2. How multiple entities and relationships used
- 3. The characteristics of good primary keys and how to select them
- 4. What normalization plays a role in the database design process
- 5. About the normal forms 1NF,2NF,3NF,BCNF, and 4NF
- 6. How normalization and ER modeling are used in a good database design

Required Reading: Text Book Chapter 5 & 6

Week 4: To Do List:

1. Readings:

Textbook: Chapter 5 & 6

2. Forum Discussion:

None

3. Assignment:

Submit Week 4 Assignment

4. Lab Assignment

Submit Lab4 Assignment

Due Date: Every Sunday, at 11: 59 EST (Eastern Standard Time)

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Week 5 – Introduction to Structured Query Language (SQL)

Resources: Text Book Chapter 7

Objectives: Successful students will learn:

- 1. The basic commands and functions of SQL
- 2. How to use SQL for data administration (Create tables and indexes)
- 3. How to use SQL for data manipulation (retrieve data)

Required Reading: Text Book Chapter 7

Week 5: To Do List:

1. Readings:

Textbook: Chapter 7

2. Forum Discussion:

Week 5 Forum Discussion: Participate week 5 Forum Discussion

3. Assignment:

Submit Week 5 Assignment

4. Lab Assignment

Submit Lab5 Assignment

Due Date: Every Sunday, at 11: 59 EST (Eastern Standard Time)

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Week 6 – Introduction to Structured Query Language (SQL) continue

Resources: Text Book Chapter 7

- 1. How to use SQL for data manipulation (to add, modify, delete)
- 2. How to use SQL to query a database for useful information

Required Reading: Text Book Chapter 7

Week 6: To Do List:

1. Readings:

Textbook: Chapter 7

2. Forum Discussion:

None

3. Assignment:

Submit Week 6 Assignment

4. Lab Assignment

Submit Lab6 Assignment

Due Date: Every Sunday, at 11: 59 EST (Eastern Standard Time)

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Week 7 – Advanced Structured Query Language (SQL)

Resources: Text Book Chapter 8

Objectives: Successful students will learn:

- 1. How to use SQL JOIN operators
- 2. About the type of subqueries and correlated query
- 3. How to use SQL functions to manipulate dates, string, and other data
- 4. How to create and use views

Required Reading: Text Book Chapter 8

Week 7: To Do List:

1. Readings:

Textbook: Chapter 8

2. Forum Discussion:

Week 7 Forum Discussion: Participate week 7 Forum Discussion

3. Assignment

Submit Week 7 Assignment

4. Lab Assignment

Submit Lab7 Assignment

Due Date: Every Sunday, at 11: 59 EST (Eastern Standard Time)

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Week 8 – Review

Resources: Review Text Book Chapters 1 through 8

Objectives: Successful students will learn:

- 1. Learn and practice developing database designs by using ER model
- 2. apply the SQL in Database implementation and learn SQL syntax

Required Reading: Text Book Chapters 1 to 8

Week 8: To Do List:

- I. Complete Final Assignment (based on Assignment 3 to 4),
- II. Complete Final Lab (based on Lab 5 to Lab 7)

Due Date: Every Sunday, at 11: 59 EST (Eastern Standard Time)

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Appendix B – e-Classroom Instructions

E-CLASSROOM COMMUNICATION FEATURES AND CAPABILITIES

e-Classroom Instructions Revised Oct 18, 2005

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SYLLABUS - to obtain the course and weekly scopes, objectives, required readings, and turn-ins

ANNOUNCEMENTS - to receive comments and guidance from your professor

MAILBOX – to send and receive all course related emails

ASSIGNMENTS – to upload documents and send comments to your professor

DISCUSSION BOARD – to conduct online discussions with your classmates

TEST & QUIZZES – to measure your knowledge and comprehension

<u>MY PROFILE</u> – to view your grades and professor comments/guidance

COURSE MATERIAL INSTRUCTIONS - to view documents posted by your professor

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e-Classroom Instructions

SYLLABUS

- 1. In the left menu, click the **Syllabus** link
- 2. Scroll down and click View Syllabus
- 3. In a few moments, an MS Word Document will appear (download times may vary according to the speed of your internet service provider and the size of the file)
- 4. To return to the menu, click the Back button at the top left corner of your screen

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ANNOUNCEMENTS

- 1. Your professor will normally post Announcements on a weekly basis.
- 2. These are general announcements to the class. If you have a specific question about Announcements then you should send an email to your professor using Mailbox.

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MAILBOX

View an email

- 1. In the left menu, click **Mailbox**
- 2. On the next page, look in the table and click the Subject of the email you wish to view

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Reply to an email message

- 1. Read the email and scroll down to the bottom of the screen
- 2. Click the **Reply** button
- 3. Scroll down and enter your response in the Message box
- 4. Scroll down and click the **Send Mail** button
- 5. Note: If you scroll down and click **Send and Delete** button, then the original message will be removed from your Inbox

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Send an Email

- 1. In the left menu, click **Mailbox**
- 2. Under Mailbox, click the sub-link Send Message
- 3. Select (or enter in the **TO** box) the email address of the person to whom you wish to send the email
 - A. Instructor check the box to the left of your professor's name
 - B. Student click email specific students from the course and check the box next to the student(s) to whom you wish to send the email
- 4. Type in the **Subject**
- 5. Type in your message in the **Message** box
- 6. Scroll down and click the Send Mail button

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Send an Attachment

- 1. In the left menu, click **Mailbox**
- 2. Under Mailbox, click the sub-link Send Message
- 3. Scroll down and click the words next to the paperclip icon that read Attach File
- 4. Select the number of files you wish to send from your computer (only one per message is recommended) and click the **Continue** button
- 5. Click the **Browse** button
- 6. In the pop-up window, select the folder and finally the file name that you wish to attach
- 7. Click the **Open** button
- 8. Scroll down and enter the addressee's email in the **TO** box (or check the box next to the instructor's name
- 9. Type in the **Subject**
- 10. Type in your message in the **Message** box
- 11. Scroll UP and click the Send Mail button

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Open an Attachment

- 1. In the left menu, click **Mailbox**
- 2. On the next page, look in the table under the **Subject** of column. If you see a **paper clip icon** next to the email Subject, then a document is attached to your email
- 3. Click the Subject of the email you wish to view
- 4. Look in the heading of your email for the word **Attachments** and click on the **file name** of the attachment
- 5. On the next page click the **Download** button
- 6. In the pop-up window, click the **Open** button

7. To return to the message click the **Back** button located in the upper left hand corner of your screen twice

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ASSIGNMENTS

To Upload an Assignment

- Complete your assignment in Microsoft Word and Save it as your last name and the Assignment Name. For example, "Morris Leadership Essay" is a properly named assignment. (Note: Sometimes Microsoft Word Perfect and Microsoft Works (.wps) files are not readable in the e-classroom. If your professor cannot read your Word Perfect or Works file, then save your file as a Rich Text File (.rtf) and upload it again.)
- 2. In the left menu, click the **Assignments** link
- 3. In the table, click the assignment name
- 4. Click the **Browse** button
- 5. A pop-up window will display the files located on your personal computer (PC). Click the folder and/or **file name** for the file you wish to upload
- 6. Click the **Open** button
- 7. Your file will be moved from the hard drive of your PC and copied into the APUS e-classroom
- 8. Enter relevant comments to the instructor in the Student Comments box (optional)
- 9. In the lower right hand portion of your screen, click the box that reads **Submit for Grading** (required)
- 10. Click the **Submit** button (required)
- 11. On the next page you can **View** your Assignment, **Remove** your assignment, **email** your assignment, or place a **Comment** on your uploaded assignment.

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View the Assignment you just uploaded

- 1. your screen will display a Student Folder icon and list the file name twice on the page
- 2. Click on the second file name which appears in bold font
- 3. In a few moments, your document will appear on your screen.
- 4. To return to your menu area, click the **BACK** button at the top of your screen.

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To Remove your Uploaded File

1. Click the **Remove file** link

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Answer Your Professor's Question in Discussion Board

- 1. In the left menu, click the **Discussion Board** link
- 2. In the table, click **Discussion Board name**
- 3. On the next page, again click the Discussion Board name
- 4. Scroll down and click the **REPLY TO THIS MESSAGE** link
- 5. Enter your answer and click the Reply button

Respond to a Student's Answer in Discussion Boards

- 1. Respond to a student's answer by clicking the **Subthread** link located beneath their response
- 2. Click the **Submit** button

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MY PROFILE

- 1. In the left menu, click on the **My Profile** link
- 2. In the **Grade Builder Summary** table, you can view your grades for each graded requirement

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COURSE MATERIAL INSTRUCTONS

Open a File in Course Materials

- 1. In the left menu, click on the **Course Materials** link
- 2. Under Course Materials click the sub-link **Course Folders**
- 3. Click on the name of the folder specified by your professor
- 4. In the table, click on the name of the file you wish to open
- 5. Your screen will display a Folder icon and list the file name twice on the page
- 6. Click on the second file name which appears in **bold font**
- 7. In the pop-up window, click the **Open** button
- 8. In a few moments, your document will appear on your screen.
- 9. To return to your menu area, click the **BACK** button at the top of your screen.

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