

Revised: Fall 2016

ITD130

Database Management Software

COURSE OUTLINE

Prerequisites:

ITE 115 or instructor's permission

Course Description:

Introduces the student to Relational Database and Relational Database theory. Includes planning, defining and using a database; table design, linking and normalization; types of database, database description and definition.

Upon completion of this course, the student will gain an introduction to normalization, structured query language, and an overview of the commercial databases available. This class is designed to give the student an introduction into database theory including decision making and data manipulation. The course will give the student hands on experience with one or more of the most common databases in use today including Access, SQL Server 2010, and MySQL.

Semester Credits: 3 Lecture Hours: 3 Lab/Recitation Hours: 0 Select Hours

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Course Outcomes

At the completion of this course, the student should be able to:

- Normalize tables in a database as required.
- Understand and use standard SQL to create tables, enter data
- Be able to construct SQL statements to query databases.
- Understand differences in SQL language for the various databases.
- Understand database constraints and how to apply them.
- Use various GUI tools to work with database files.
- Understand how to write stored procedures

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Required Materials:

Various Database Software Tools (supplied by the instructor)

Textbook:

Required: **Beginning SQL** by Paul Wilton and John Colby, Wrox books - Wiley Publishing, copyright 2005 ISBN 0-7645-7732-8

The following supplementary materials are available:

1. Safari Online is available for students to view other Java text and reference books online for free
2. Recorded lectures provided by the instructor.

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Topical Description: (Outline chapters and sections to be covered in the book – may include timeline)

Daily or Weekly Schedule (NOTE: Modules are two weeks in length):
EACH MODULE REQUIRES A LABORATORY AND QUIZ TO BE SUBMITTED IN BLACKBOARD

Module 1: Introduction to Databases, the Software, and Creating Databases, Tables and Inserting Data

Learning objectives:

1. Understand database history
2. Understand what SQL queries are and standards
3. Be able to describe how relational databases are organized
4. Be able to create and delete tables
5. Understand how to alter tables
6. Understand good database design
7. Be able to load the sample databases
8. Understand how to insert new data
9. Be able to insert data into the sample databases
10. Understand how to update and delete data

Reading Assignment:

Textbook – Chapters 1 and 2

Module 2: Data Extraction from Single Tables

Learning objectives:

1. Understand how to use basic SELECT statements
2. Be familiar with logical operators and operator precedence
3. Understand how to order results with the ORDER BY clause
4. Be familiar with the use of LIKE and BETWEEN
5. Be able to use wildcard characters in SQL statements

Reading Assignment:

Textbook – Chapter 3 to page 90

Module 3: Utilizing the SELECT statement on Multiple Tables

Learning objectives:

1. Selecting data from multiple tables

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2. Understand how set-based selection work
3. Understand how NULL data is handled
4. Be able to utilize ORDER BY phrases

Reading Assignment:

Textbook – Finish Chapter 3

Module 4: Constraints, Indexes, and Normalization

Learning objectives:

1. Understand how normalization fits into database design
2. Be able to ensure data validity with constraints
3. Understand how to utilize indexes to speed up results

Reading Assignment:

Textbook – Chapters 4

Module 5: Grouping and aggregating Data

1. Understand how to group data based on set parameters
2. Be able to summarize data using aggregation
3. Understand the difference between grouping and aggregating

Reading Assignment:

Textbook – Chapters 6

Module 6: Manipulating Data, Functions, and Advanced Joins

Learning objectives:

1. Understand SQL arithmetic
2. Be able to utilize String functions
3. Understand how to convert data types
4. Be able to use an INSERT INTO with the SELECT statement
5. Understand the different types of SQL joins
6. Be able to join tables and specify conditions
7. Understand what type of join is needed based on query

Reading Assignment: Textbook – Chapters 5 and 7

Module 7: Views, Transactions, and Stored Procedures

Learning objectives:

1. Understand when to utilize database views
2. Understand the advantages and limitation of database views
3. Be able to describe what database transactions are
4. Understand database locks
5. Be able to describe isolation levels

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6. Work with stored procedures. Understand how to write them and call them
7. Know how to manage stored procedures in phpMyAdmin

Reading Assignment: Textbook – Chapters 10 and 11 and handouts for stored procedures

Studying for the MTA (Microsoft Technology Associates) Database Test

Learning objectives:

1. Take the MTA test for the module requirements

Reading Assignment: Handouts, Powerpoints, Recorded Lectures

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Notes to Instructors

(List information about optional topics, departmental exams, etc)

1. Each module (except mod 2) is two weeks long and requires both a quiz and a laboratory assignment submitted through Blackboard
2. A midterm exam is required
3. A comprehensive final exam is required.

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