

## **IT230 – Relational Databases (Exists as MSIS 230)**

### **1. Course Description**

This course provides a thorough review of basic relational database concepts and how to apply these concepts to a variety of application problems. The course focuses on the use and properties of relational database management systems. Topics covered include DBMS architecture levels, data modeling, data definition and manipulation capabilities of Structured Query Language programming, and programming techniques for accessing relational databases.

### **2. COURSE TEXT AND MATERIALS.**

Kroenke David M., “Database Processing: Fundamentals, Design, and Implementation”, Tenth Edition, Prentice Hall, 2006, ISBN 0-13-1167272-X.

Bordoloi, B. and Bock, D, “SQL for SQL Server”, First Edition, Prentice Hall, 2004, ISBN 978-0131132993.

### **3. LEARNING OBJECTIVES.**

The primary objectives of this course are to provide a thorough review of basic relational database concepts and for you to be able to apply these concepts to a variety of application problems. This course focuses on developing the student’s ability to create and manipulate relational databases. Through this, the student will develop a thorough practical understanding of DBMS architecture levels, data modeling, data definition and manipulation capabilities of Structured Query Language programming, and programming techniques for accessing relational databases. The specific learning objectives of this course are to enable the student:

- To understand and interpret data models and relational concepts,
- To create and interpret database designs and recognize which designs are more effective, and why,
- To recognize the concepts and capabilities of data manipulation language constructs,
- To recognize the concepts and capabilities of data manipulation language constructs,
- To solve basic data definition and manipulation problems using SQL,
- To understand how web-enabled databases are designed, implemented, and accessed,
- To become capable of using a major current database management system, including important aspects of database administration

#### 4. COURSE FORMAT AND EVALUATION.

This is a hands-on demanding course involving a series of individual projects to be completed using a current Database Management System.

The final evaluation will be based on a combination of these projects, exams, and class participation as follows:

Evaluation item	Weight
Projects	40%
Mid-term exam	25%
Final exam	25%
Participation	10%

#### 5. ADMINISTRATIVE NOTES.

This is a placeholder for statements on course policies, academic integrity, disabilities, etc.

#### 6. COMPUTER ACCESS AND RESOURCES.

SQL Server 2005 is required for this course, and is available in the labs. You may wish to download and install it on your own machine, and if so, the Express edition is available for free from Microsoft. If you wish to install this software, install both the SQL Server 2005 Express Edition from <http://www.microsoft.com/downloads/details.aspx?FamilyID=220549b5-0b07-4448-8848-dcc397514b41&DisplayLang=en> and the SQL Server Management Studio Express from <http://www.microsoft.com/downloads/details.aspx?FamilyID=c243a5ae-4bd1-4e3d-94b8-5a0f62bf7796&DisplayLang=en> .

#### 7. SCHEDULE, TOPICS AND COMPETENCIES.

Week	Topics and Competencies	Readings
1	Introduction to relational databases, introduction to SQL	Kroenke: Chapters 1 and 2
2	Relational model and normalization	Kroenke: Chapter 3
3	Database design, table structure, common design problems	Kroenke: Chapter 4

4	Data modeling, ERDs, process of data modeling, transforming data models into database design	Kroenke: Chapters 5 and 6
5	DDL, DML, joins, views, SQL in program code	Kroenke: Chapter 7
6	Creating tables, indexes, single table queries, and joins using SQL Server	Bordoloi: Chapters 1,2,3, and 6
7	Characters, matching, null values, more complex select queries	Bordoloi: Chapter 4
8	Aggregate queries	Bordoloi: Chapter 5
9	Subqueries	Bordoloi: Chapter 7
10	Views, synonyms, data manipulation queries	Bordoloi: Chapters 8 and 9
11	Data manipulation, stored procedures	Bordoloi: Chapter 10 (first part) and Kroenke: Chapter 7 (second part)
12	Triggers, database redesign	Bordoloi: Chapter 10 ( second part), Kroenke: Chapter 8
13	Programmatic database access	Kroenke: Chapters 12 and 13
14	Programmatic database access and SQL Server administration	Bordoloi: Chapter 12, Kroenke Chapter 11
15	SQL Server administration, security	Bordoloi: Chapter 12