

COURSE DESCRIPTION

Department and Course Number **CS 410
(formerly CS 426)** Course Coordinator **Zhang**

Course Title **Database Management Systems** Total Credits **3**

Current Catalog Description

Relational model of databases, structured query language, normalized structure of database management systems based on relational model, and security and integrity of databases.

Textbooks

A First Course in Database Systems. 2nd ed., by Jeffrey D. Ullman and Jennifer Widom. Prentice Hall, 2001.

Course Goals

To introduce the student to the relational database model, the SQL data manipulation language, DBMS architecture and utilities, database design and issues of security and integrity.

Prerequisites by Topic

Algorithms and Data Structures with “C” or better

Major Topics Covered in the Course

Database System Architecture

Relational Databases

SQL DDL and DML statements

The Relational Model; Relational Algebra; Relational Calculus

Database Integrity

Views

Functional Dependencies

Normalization: 1NF, 2NF, 3NF, BCNF, 4NF, 5NF

Semantic Modeling

Transaction Management: Recovery and Concurrency

Database Security

Optimization

Missing Information

Object Databases

Laboratory projects (specify number of weeks on each)

There are five laboratory assignments using Oracle, approximately two weeks is given for each assignment.

Estimate CSAB Category Content

	CORE	ADVANCED		CORE	ADVANCED
Data Structures	_____	<u>10</u>	Computer Organization and Architecture	_____	_____
Algorithms Software Design	_____	<u>10</u>	Concepts of Programming Languages	_____	_____

Oral and Written Communications

None

Social and Ethical Issues

Approximately one hour is spent on discussing issues of database privacy, particularly those issues which involve the Internet. Data encryption is discussed. Exam questions are used to assess this area.

Theoretical Content

The theory of the relational database model (4 hours)

Problem Analysis

Students are given five homework assignments focusing on database design, SQL DDL and DML statements, semantic modeling, and normalization.

Solution Design

See Problem Analysis above.