

CSCI 320 – Database Design Spring 2016

Instructor Information

Dr. Deepti Joshi **Office:** TH 224 **Email:** djoshi@citadel.edu
Office Hours: MWF 12:30 pm – 2:30 pm, *Also by appointment.*

Class Schedule

Class Time: MWF, 11:00 am – 11:50 am
Class Location: Thomson Hall 315

Course Description

Required for B. S. degree in computer science, and a Minor in Management Information Systems (MIS)

This course provides an introduction to the logical and physical structures of computer database systems. Topics include data models, query languages, relational database design, database constraints, and file structure. Students will be required to complete a project involving database design and implementation. In addition, we will also be studying database security principles, issues and models.

Prerequisites: CSCI 202 or CSCI 216

Course Objectives

- Understand the conceptual, logical, and physical models of relational databases
- Apply the concepts of keys, foreign keys, and referential integrity
- Be able to write SQL statements to create, query, and update a relational database
- Have experience in the design and implementation of relational databases
- Understand and implement database security issues.
- Understand database security models
- Learn about alternatives for relational databases – flat, network, object-based, object-oriented, and NoSQL
- Learn about common database vulnerabilities, especially SQL Injections.

Textbook

Required:

Modern Database Management

Jeffrey A. Hoffer, V. Ramesh and Heikki Topi
(Twelfth Edition), Prentice Hall, 2016

Reference:

Database Security (Recommended Second Textbook)

Alfred Basta and Melissa Zgola
Cengage Learning, 2012

Fundamentals of Database Systems

Elmasari and Navathe
Seventh Edition, Pearson 2016

Also: Course Notes and Handouts

Required Work

Homework: Assignments will be assigned periodically with due dates and points specified on each assignment. Each assignment will be posted online on the course website.

Term Project: A database project will be completed by teams of two or three, and all team members will receive the same grade for the project. Further details will be discussed in class. See daily schedule for due dates.

Midterm Examinations: There will be three Midterm Exams during the semester. See the daily schedule for dates and topics covered.

Comprehensive Final Examination: **The Final Examination is from 1:00 PM – 4:00 PM on Monday, May 2nd.** The Final Examination is comprehensive. No Final Examination can be given early, except as required by The Citadel Policy.

Grading

The grading scale will be no higher than the following. It may be lower at the discretion of the instructor.

Grade	Percentage
A	90+
B	80-89
C	70-79
D	60-69
F	Otherwise

Expectations

- With the exception of the database project, students are required to work individually on all work done outside of class that will be turned in for a grade. **Unless explicitly authorized, joint work is forbidden.** Assistance from anyone other than the instructor, a librarian, a member of the academic support center, or a team member (on the database project only) is also forbidden.
 - Do not miss the assigned tests without a valid excuse! Missing an assigned test without a valid excuse will result in a grade of zero for that test. The instructor gets to determine whether or not an excuse is valid.
 - Show up for class on time and prepared. That means that you have read the appropriate sections from the book plus any handouts, and you have worked all assigned homework. If a test has been assigned, you should be prepared to take the test. If you were late to class or absent from the previous class meeting, you are responsible for getting class notes and assignments from another student in the class or from the instructor.
 - Take care of any personal needs outside of class time. Except for emergencies, you should not need to go to the bathroom, get a drink of water, etc. If you need to leave the room at any time while class is in session, you should ask for permission.
 - Cell phones must be kept in book bags and programmed in a silent or vibrate setting during class.
 - You should respect the property of your college. No eating, drinking (other than water), smoking, dipping, chewing tobacco, etc. in the classrooms.
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Tentative Schedule

Week Of	Monday	Wednesday	Friday
Jan 11	No Class	Introduction to DBMS	Introduction to DBMS
Jan 18	Introduction to Databases (Database Project – Phase 1)	Introduction to alternative database models	ER-Modeling
Jan 25	ER-Modeling	ER-Modeling	EER - Modeling
Feb 1	EER – Modeling (Database Project – Phase 2-1)	Logical Database Design	Logical Database Design
Feb 8	Test 1	Normalization	Normalization (Database Project – Phase 2-2)
Feb 15	Physical Database Design	Physical Database Design	Physical Database Design (SQL – DDL)
Feb 22	SQL - I	SQL - I	SQL – I (Database Project – Phase 3)
Feb 29	SQL - 1	Advanced SQL	Advanced SQL
Mar 7	Advanced SQL	Advanced SQL	Advanced SQL
Mar 14	Test 2	Database Administration	Database Administration
Mar 21	Database Administration	Database Security	Database Security
Mar 28	Spring Break		
Apr 4	Database Security	Database Security	Database Security
Apr 11	Database Security	SQL Injection – I (Assignment 8)	SQL Injection – I
Apr 18	SQL Injection - II	SQL Injection – II (Assignment 9)	Test 3
Apr 25	Last Class (Database Project – Phase 4)		

Final Exam: Group Project Presentations. Details provided later.