

Computer Science Department  
CSCI 332 Database Concepts  
Fall, 2020

**Instructor** George J. Pothering (potheringg@cofc.edu)

**Office** Room 327, Harbor Walk East (HWE)

**Office Hours** MW 1:00pm -2:00pm  
Other hours by appointment

**Telephone** 953-8156 (office)  
884-4583 (home)

**Section Meetings** TR 8:30 am – 9:45 am in Room 213 of Harbor Walk West (Section 1)  
TR 9:55 am – 11:10 am in Room 213 of Harbor Walk West (Section 2)

**Course Description** A course that introduces the student to the basic concepts, organization and implementation models of databases, with an emphasis on the relational model. Among the topics covered are data models, query languages, relational database design using normal forms and database programming, and information assurance and security. Problems will be assigned using a relational DBMS and SQL. Lectures three hours per week. *Prerequisite(s)*: CSCI 221 with a grade of C- or better and MATH 207.

**Textbook** Connolly and Begg. *Database Systems - A Practical Approach to Design, Implementation, and Management* (6th edition). Pearson Education, Inc. ISBN-13: 978-0-13-294326-0; ISBN-10: 0-13-294326-3

**Important Dates for This Course:**

|                |  |
|----------------|--|
| August 25      | First class -- virtual   |
| September 15   | Switch to in-class mode  |
| November 3     | No class - Election Day  |
| November 24-   | Last day of in-class instruction   |
| November 26    | no class - Thanksgiving holiday  |
| December 1 & 3 | classes resume with online instruction -- <b>don't come to campus</b>    |
| December 8     | Final Exams Section 1 (10:30 am – 12:30 pm) and Section 2 (8:00 - 10:00) |
| December 16    | Final grades due at 5:00 pm.   |

**Class Policies**

- I. **Missed Classes:** Attendance will be taken each day for the first few classes after which no record of attendance will be kept. You are responsible for all work done or required for any class that you miss, i.e. doing the preparatory work for class, getting notes, turning in assignments, etc. On average you should expect to work six to nine hours *outside of class* each week on this course.
- II. **Exams:** You will take one mid-semester examination and a comprehensive final examination. The date of the mid-semester exam is:

Tuesday, October 6

The final examination is currently scheduled for:

Thursday, December 5 from 8:00 am to 10:00 am (Section 2).

Thursday, December 5 from 10:30 am to 12:30 pm (Section 1).

- III. **Assignments, etc.:** Written homework or programming assignments will be issued throughout the semester and a due date will be associated with the assignment. Unless otherwise indicated, your work on these assignments must be submitted via OAKS. After the due date solutions to the assignment will be posted on OAKS.

The solutions will give you an opportunity to compare your work to what I have posted and to see me if there is any clarification or other related question you want to ask me. I will examine your effort on the problems on each assignment and rate and evaluate each problem on a 0-3 scale. I will also assign an overall rating to the assignment. The problem ratings should be interpreted as follows:

|   |   |
|---|---|
| 3 | You made a serious attempt at the problem (and, for multi-part problems, all of the parts) and generally solved it, although there may be minor errors (for example an arithmetic error) that caused you to get an incorrect answer. All of the work was your own.  |
| 2 | You made a serious attempt at the problem (and, for multi-part problems, all of its parts) but your work revealed some significant misunderstandings or errors. If I had assigned point values to the parts showing misunderstanding you would probably have received no more than 60% of the points on them. All of the attempts clearly reflect your own work, however. |
| 1 | You did not attempt some of the parts of the problem, or gave minimal effort on the problem as a whole.   |
| 0 | You did not submit anything for the problem, or appear to have copied some, or all, of the solution from the Internet or from the textbook's solutions manual.  |

To get a 3 on an assignment overall you must generally earn a 3 on all of the problems, although you can earn a 3 if there were a lot of problems and one or two of them earned no worse than a 2. To get a 2 overall you must earn at least a 2 on all of the problems, although you can earn a 2 if there were a lot of problems and one or two of them earned no worse than a 1. Generally, you will only earn a 0 for an assignment if you do not attempt some at least some of the problems on the assignment.

I will not post the solutions earlier than 11:59pm on the assignment due date. You have until I actually post the solutions to submit your work, however, but no work will be accepted after the solutions have been posted. If you do not understand something about a posted solution you may come to see me in my office and I will gladly explain anything you do not understand. **I will not explain the solutions via e-mail.** If it seems appropriate, I will also try to find a time and a room where I can work them on the board in detail for the class as a whole.

At the end of the semester I will take the accumulated results of your efforts and incorporate them into a score that will count as  $\frac{1}{2}$  of your mid-term toward determining your semester grade.

- IV. **Grading Scale:** On tests I do not use a strict grading scale such as the 10-point scale (90-100, 80-89, etc) commonly used by other instructors. Instead, scales derived from clusters of student performance will be given for each test. Your status after every test can be determined by adding the boundaries of the individual scales and finding where your accumulated scores lie within these intervals. The exact way this works will become clear after the first test.

- V. **Course Grades:** Students who complete every assignment and are awarded an overall effort score of 2 or more for each of those efforts will have their better exam grade counted again in determining their course grade. Your efforts in the course will be weighted as follows:

|                   |     |                             |
|-------------------|-----|-----------------------------|
| Mid-term exam     | 2/7 | (2/9 for those who qualify) |
| Final Examination | 4/7 | (4/9 for those who qualify) |
| Assignments       | 1/7 | (1/9 for those who qualify) |
| Better Exam Grade |     | (2/9 for those who qualify) |

- VI. ***Classroom Behavior:*** To maintain a classroom environment that is conducive to learning, I expect certain behavior of students in my classes. Students who, during class, check and send e-mail or text messages, browse the Web, Tweet, giggle, sleep, yawn audibly, whisper, whine, groan, arrive late, leave early, or come unprepared are disrupting to me and detract from their fellow students' learning experiences. At the end of the semester you may be just below the cut-off for a higher grade. If the impression of you that comes to mind is of someone who is uninterested, disruptive, rude or otherwise lacking in classroom etiquette and deportment, do you really think anyone is going to reward you for this?
- VII. ***Honor Code and Academic Integrity:*** Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each instance is examined to determine the degree of deception involved.

Incidents where the professor believes the student's actions are clearly related more to ignorance, miscommunication, or uncertainty, can be addressed by consultation with the student. We will craft a written resolution designed to help prevent the student from repeating the error in the future. The resolution, submitted by form and signed by both the professor and the student, is forwarded to the Dean of Students and remains on file.

Cases of suspected academic dishonesty will be reported directly to the Dean of Students. **A student found responsible for academic dishonesty will receive a XF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the student may petition for the X to be expunged.** The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

It is important for students to remember that unauthorized collaboration--working together without permission--is a form of cheating. Unless a professor specifies that students can work together on an assignment and/or test, no collaboration is permitted. Other forms of cheating include possessing or using an unauthorized study aid (such as a PDA), copying from another's exam, fabricating data, and giving unauthorized assistance.

Remember, research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the professor.

Students can find a complete version of the Honor Code and all related processes in the Student Handbook at [http://www.cofc.edu/studentaffairs/general\\_info/studenthandbook.html](http://www.cofc.edu/studentaffairs/general_info/studenthandbook.html).

- VIII. ***Disability:*** Accommodation: Any student who feels he or she may need an accommodation based on the impact of a disability should contact me individually to discuss your specific needs. Also, please contact the College of Charleston, Center for Disability Services <http://www.cofc.edu/~cds/> for additional help.

## **Course Outcomes**

The order is intended to be "logical", and does not imply "chronological".

### **Course Outcomes**

1. Define the fundamental terminology used in the relational data model.
2. Write queries in relational algebra
3. Write queries in tuple calculus.
4. Write queries in SQL and demonstrate them using a DBMS
5. Create conceptual data models (including ER) to describe a database structure.
6. Generate a relational schema from a conceptual model developed using the ER model.
7. Use SQL to create a relational database schema on a DBMS.
8. Write programs that use embedded SQL to access data from a remote database server.
9. Understand the SQL Injection problem.
10. Determine a potential functional dependency between two or more attributes that are a subset of a relation.
11. Identify the normal form (1NF, 2NF, 3NF or BCNF) of a relation.
12. Normalize a 1NF relation into a set of BCNF relations and denormalize a relational schema.
13. Understand the basic concepts of transaction management and concurrency control.