

## CIS 422: Physical Design and Implementation with DBMS

Spring 2020  
TR  
5:00-6:15 PM  
Room: Dailey 205

Professor: Dr. Anthony Scime'  
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**Course Description:** Covers information systems design and implementation within a database management system environment. Requires students to design and construct a physical system using database software to implement the logical design. Stresses basic knowledge of normalization of data modeling, database methods, database design, and the use of databases in business. Prerequisite: CSC205.

**Attendance:** Attendance in every class and every group meeting is critical to the learning of each student. Each student will help and support the learning of the entire class. If a class is missed, the student is responsible for the material covered, assignments given, and any announcements made regarding changes in policy, the schedule, or the conduct of the course. Absence from class is not an excuse for missing information, quizzes or examinations.

**Texts:** Database Systems: An Application-Oriented Approach, Introductory Version, 2/E by Michael Kifer, Arthur Bernstein, and Philip M. Lewis, ISBN-10: 0321228383, ISBN-13: 9780321228383, Addison Wesley, 2005

**Learning Outcomes:** A student who has successfully completed the course CIS 422 has the ability to:

1. Able to analyze data needs of an organization from written problem statements, or existing forms and reports.
2. Able to identify the entities, and the types of relationships between them.
3. Able to express the entities and relationships using some standard modeling language.
4. Able to transform ER diagrams into a system of relations in a relational database design.
5. Able to apply transformations to redesign tables into 3NF, BCNF, 4NF.
6. Able to implement the database design on the computer using database management system software.
7. Able to implement a wide range of queries in SQL.
8. Able to design and implement reports and input forms using SQL.
9. Able to write application programs that connect to and manipulate a remotely located database.
10. Able to function as a member or leader of a group that develops a substantial database application.

**Class Procedures:** Classes will follow a lecture, practice, quiz format. In class, the current topic will be discussed and homework assignments reviewed.

**E-mails to the Professor:** All e-mails to the professor must contain on the subject line "CIS422" (no spaces, uppercase as shown) as appropriate. Do not send attachments; they will not be opened. Beware some email clients create the email in rich text format this

causes the email to arrive on my client as an attachment. Hotmail does this. It is best to use the Brockport email system. All e-mails should contain a signature - first and last name at the bottom.

**Homework:** Homework will be distributed on Blackboard. Homework is due as indicated on the schedule below, which may be as soon as the next class. Work will generally be collected and graded. Late work is not accepted.

**Project:** The class will be divided into teams of 3-4 students. The team will follow a case study throughout the course. In the process of following the case, the team will design and implement a database.

**Database:** The project and homework will be done using mySQL on The College's server.

**Reports:** The case study analysis and design reports will be typed using MS Word. PowerPoint diagrams and slides, spreadsheets, databases, graphs, etc. will be imported/inserted into the Word document. See the CIS Documentation Standard on Blackboard for instructions on how to format reports.

**Presentations:** Each team will make two presentations. Presentations are to be professional done. The presenter's attitude, demeanor, appearance, and general professionalism are of equal importance to the content of the presentation. PowerPoint slides will be used as appropriate. Presentations should be 20 minutes in length.

**Quizzes:** There will be a quiz in nearly every class. Quizzes are cumulative, but will typically cover material from the class immediately prior to the quiz and the corresponding material in the text book. There are no make-up quizzes. Missed quizzes receive a grade of 0.

**Exams:** There will be one closed book/closed notes final examination during exam week. There are no make-up exams. Missed exams receive a grade of 0.

**Returning Student Work:** Student homework, quizzes and other assignments will be brought to class once to be returned. Work not picked up at that time must be retrieved from the professor in his office. Reports are not returned to students. These may be used in the future as examples of student work.

**Course Evaluation:**

<b>Graded Item</b>	<b>Percent</b>
Quizzes	20
Final Exam	20
Design Report & Presentation	20
Implementation Report & Presentation	20
Homework	20

No incompletes (I) will be given.

**Cancelled Classes:** If it becomes necessary to cancel a class, the class may be scheduled for a make-up class on a Friday after 3:30 pm.

**Schedule:** This schedule provides the order of topics and dates for the exams. Topics may be added or deleted as necessary to best complete the course objectives. Students are responsible for all material in textbook chapters listed, whether discussed in class or not.

Week	Topic	Chap	Notes
0R	Introduction to Course Data Elements	1 & 2	
1T	Introduction to Relational Databases	2	
1R	The Relational Model	3	
2T	Integrity Constraints	3	
2R	SQL – Data Definition Language	3	
3T	Foreign Keys and SQL	3	
3R	Triggers Views Access	3	
4T	Database Design	4	
4R	Design Constraints	4	
5T	Design to SQL	4	
5R	ERD – Relational Model – Database Schema	4	
6T	ERD – Relational Model – Database Schema Exercise	4	
6R	Relational Algebra	5	
7T	Cartesian Product	5	
7R	Relational Algebra and SQL	5	
8T	<i>No Class</i>		
8R	<i>No Class</i>		
9T	Aggregation and Grouping	5	
9R	Views and Modifications	5	
10T	<b>Design Presentations</b>		<b>DUE: Design Report</b>
10R	<b>Design Presentations</b>		
11T	<b>Design Presentations</b>		
11R	Normalization and Functional Dependency	6	<b>DUE: SQL Queries</b>
12T	1NF 2NF 3NF	6	
12R	BCNF 4NF	6	
13T	Triggers	7	
13R	Embedded SQL and JDBC	8	
14T	<b>Implementation Presentations</b>		<b>DUE: Trigger Assignment DUE: Implementation Report</b>
14R	<b>Implementation Presentations</b>		<b>DUE: JDBC Assignment</b>
15T	<b>Implementation Presentations</b>		
16	<b>Final Exam</b>		