



School of Information Systems & Technology

Course Syllabus: IS302, Database Systems

Term: Fall 2009

Campus: Claremont

Location: ACB 211

Day(s) & Time: Mondays, 4:00PM-6:50PM

Instructor: Terry Ryan

Core Faculty Liaison: same

Contact Information:

Office Location: ACB 217A

Schedule of Office Hours: Mondays, 2:15PM-3:45PM

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Other contact info:

Course Description: Covers database concepts and practices emphasizing the relational model. Various techniques for the development and use of databases are covered. Topics include relational design, transaction processing, decision support, integrity, and security.

Prerequisites: none, IS313 recommended

Objectives for Student Learning (Course and Program):

Program Learning Outcomes

| Course Learning Outcomes | Graduates are prepared to be leaders in the IS field | Graduates have core IS knowledge | Graduates can integrate IS & business foundations | Graduates have perspective on business and real world | Graduates have communication, interpersonal, and team skills | Graduates are able to think analytically and creatively | Graduates have required career-specific skills |
|--|--|----------------------------------|---|---|--|---|--|
| Upon completion of IS302, students will understand: | | | | | | | |
| What a DBMS is | | X | | | | | X |
| The relational model | X | X | | | | | X |
| SQL as a data definition language | | X | | | | | X |
| SQL as a data manipulation language | | X | | | | | X |
| ER modeling for creating data models | X | X | X | | X | X | X |
| Designing databases | X | X | | | X | X | X |
| Implementing databases | | X | | X | X | X | X |
| Web server environments | | X | | X | | X | X |
| Data management with XML | | X | | | | | X |
| Transaction processing | | X | X | X | | | X |
| Database integrity | | X | X | | | | X |
| Database security | X | X | X | X | | | X |

Grading:

| Component | Points |
|----------------------------|---------------|
| 1. Class Participation | 50 |
| 2. Midterm Exam | 100 |
| 3. Final Exam | 100 |
| 4. Database Design Project | <u>250</u> |
| Total | 500 |

Books, Readings, and Materials:

Text: Kroenke, D.M., and Auer, D.J. (2010) *Database Processing: Fundamentals, Design, and Implementation*, 11th ed. Upper Saddle River, NJ: Pearson. (ISBN: 0-13-230267-5)

Software: Microsoft SQL Server 2008 Express Advanced. (Kroenke Ch 10, Installing SQL Server 2008, provides acquisition details.)

Course Requirements:

Class Participation:

Every student must attend class and participate actively. Active participation involves contributing to the community of learning for the course. Students can contribute by asking and answering questions related to the topics of the course. Online mechanisms for participation (e.g., blogs and wikis) will be made available and discussed in class.

Readings and Assignments:

Every student must read before class any assigned readings and submit at the start of class any assignment due. Points will be deducted for late submissions, and no assignment may be submitted more than one week late.

Each submission must have a cover sheet showing the student's name, the date, the name of the course, the instructor's name, and the title of the exercise. Pages of each submission should be stapled together. Do not use folders or binders. Correct grammar and spelling are required.

Midterm and Final Exams:

Exams will consist of questions and problems aimed at assessing student mastery of course topics. Conceptual questions may be in the form of essay or multiple-choice format. Problems will require the production of (or correction of) SQL code, data models, or similar output. Exams may be split into closed book and open-book sections at the instructor's discretion.

Database Design Project:

Students, in self-selected, 3-member teams, will design and implement small database applications. Team may choose any applications that are appropriate in size and complexity. The instructor will determine appropriateness. Although projects need not be development projects for real organizations, applications that address the concerns of such organizations are preferable.

All projects must be implemented with Microsoft SQL Server 2008 as the DBMS. Other development tools (e.g., ColdFusion) may be used to build the necessary user interface. Students must be able to run their projects in class on the day of project presentations.

The following deliverables for the database design project are due on specified days in the schedule:

Proposal: Each team must propose an application by submitting a 1-page explanation of it. Teams will present their proposals to the class. These presentations should average 5 minutes in length.

Analysis: Each team must submit a longer (3-5 page) narrative, detailing the preliminary analysis for the application, including its basic requirements. The narrative should focus on application functionality, rather than implementation details. If the application will support a "real" operation, the team should interview potential users to ascertain their needs. If the application is for a "made-up" scenario, any statement of user needs must be supported with acceptable reasoning. Teams will present their preliminary analyses to the class. These presentations should average 10 minutes in length.

Data Model: Each team must submit a data model for the application. The model should be sufficiently complete to serve as the basis for further development. Teams will present their data

models to the class. These presentations should average 10 minutes in length.

Database Design: Each team must submit a database design, including tables and relationships among tables. The tables and relationships should be essentially the same as will be used in the final application. Normalization to the level of BCNF is expected. Teams will present their database designs to the class. These presentations should average 10 minutes in length.

Demo: Each team must submit the application they develop. Teams will present their applications to the class. These presentations should average 20 minutes in length.

It is not necessary to provide a highly polished interface, but the application should provide all required functionality, including that needed to maintain data.

Better projects will make use of DBMS features to provide for data integrity and security. As appropriate, applications should make use of views, triggers, stored procedures, etc. Applications that show only weak evidence of understanding in these matters will receive poor marks.

Better presentations will demonstrate clearly what the application does and how the team accomplished the project. Applications that do not run will receive poor marks. Brief handouts (1-2 pages) for audience members are expected.

Projects must be done in teams. Team formation must occur before the proposal is submitted and membership will be considered fixed from that time – no switching teams allowed.

By submitting/presenting a project, team members attest that they all participated in the conceptualization and accomplishment of the project. It is incumbent on team members to assure that no one on the team “free rides” through the project. If problems arise during the term, upon consultation with team members, the instructor will remove non-participating team members from their teams. Individuals removed from teams will not receive points on the team assignment. Under all other circumstances, every team member will receive the score assigned to the team.

E-Portfolio Requirement: In order to improve its courses, SISAT tries to assess student learning directly. As part of this, and in view of our emphasis on using information technologies, we require that every student in every course must document some aspect of their learning in the course using an e-portfolio. E-portfolios must be done with the Claremont Conversation Online.

(For more details, see:

http://administration.cgu.edu/fac/ryant/use_the_CCO_for_eportfolios.htm.)

To satisfy this requirement, an entry in the student's e-portfolio must be created with the template page for this course, and it must address the learning objectives for the course and program. These are listed in the matrix above and in the CCO e-portfolio page template for this course.

The instructor will determine whether the entry suitably reflects course- and program-related learning. She/he may ask the student to revise and resubmit the entry. There are many possible suitable entries. Possible examples include the deliverables for a class project, a paper written as a result of the course, or a series of blog entries. Any entry is acceptable that demonstrates that the student knows more about the course content than she/he did at the beginning of the course. It is important that the entry be non-trivial, but it need not be a major new undertaking either. Entries are intended to be a representation of what was learned.

This is a special assignment. It is not used in calculation of your course grade; it is a requirement to get a grade. No final grade other than "Incomplete" (except "Unsatisfactory") will be assigned for the course until you have posted a suitable entry to your e-portfolio. Any e-portfolio entry intended to be used to satisfy the requirement for the course must remain in the student's CCO e-portfolio for at least one month following the course, to allow time for archival of pages to occur.

Because entries to an e-portfolio provide you with an opportunity to reflect on your learning, we encourage you to create more than the one required entry, to share your entries with your classmates, and to collect entries across your classes – in effect, creating an online collection of postings about what you have been learning. Such collections have value in expressing to yourself and others what you have learned in your degree program.

Policy on plagiarism: Plagiarism will not be tolerated. The minimum penalty for plagiarism is a zero for the assignment; more severe penalties can include failure in the course and expulsion from the program. To avoid plagiarism, do not take credit for the work of others. Obtain permission from the holders of rights to any intellectual property you use, including text, code, images, etc. Provide a full reference for each work used. See <http://www.cgu.edu/pages/903.asp> for additional information.

Schedule for Course:

| Date | Description | Read | Prepare/Present |
|-------------|---|-------------------------------|---|
| Aug 31 | Introduction Introduction to Structured Query Language | Kroenke 1, 2 | Ch 2: Marcia's Dry Cleaning |
| Sep 7 | Holiday – no meeting | (Catch up) | |
| Sep 14 | The Relational Model and Normalization Installing MS SQL Server Express Advanced | Kroenke 3, 10 (pp 351-379) | Project: Proposal Ch 3: Marcia's Dry Cleaning |
| Sep 21 | Database Design using Normalization | Kroenke 4 | Ch 4: Marcia's Dry Cleaning |
| Sep 28 | Data Modeling and the Entity- Relationship Model | Kroenke 5 | Ch 5: Marcia's Dry Cleaning |
| Oct 5 | Transforming Data Models into Database Designs | Kroenke 6 | Project: Analysis Ch 6: Marcia's Dry Cleaning |

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|--------|--|-------------------------|---|
| Oct 12 | SQL for Database Construction and Application Processing | Kroenke 7 | Ch 7: Marcia's Dry Cleaning |
| Oct 19 | | | Midterm Exam |
| Oct 26 | Database Redesign | Kroenke 8 | Ch 8: Marcia's Dry Cleaning |
| Nov 2 | Managing Multiuser Databases | Kroenke 9 | Project: Data Model Ch 9 : Marcia's Dry Cleaning |
| Nov 9 | Managing Databases with SQL Server 2008 | Kroenke 10 (pp 379-421) | Ch 10: Marcia's Dry Cleaning |
| Nov 16 | The Web Server Environment | Kroenke 11 | Project: Database Design Ch 11: Marcia's Dry Cleaning |
| Nov 23 | Database Processing with XML | Kroenke 12 | Ch 12: Marcia's Dry Cleaning |
| Nov 30 | Database Processing for Business Intelligence Systems | Kroenke 13 | Ch 13: Marcia's Dry Cleaning |
| Dec 7 | Project Presentations | | Project: Demo |
| Dec 14 | | | Final Exam |

Date of Last Revision: August 27, 2009