EE 568 / CS 560 – Database Systems
Spring 2016

Instructor
Dr. Melike Erol-Kantarci
merolkan@clarkson.edu

Lecture Hours
MoWeFri 10:00am-10:50am

Office Hours @ CA2204
Monday 11am-12:00pm, Wednesday 11am-12:00pm, Thursday 1pm-3pm
Rest by appointment

Textbook

Course Objectives
• Students will gain an appreciation for the role database technology and applications play in contemporary organizations.
• Students will gain experience in data modeling.
• Students will gain experience in developing database designs using appropriate normalization techniques.
• Students will learn SQL and gain experience using SQL.
• Students will gain experience working as a member of a team in the design and development of a significant design project.

Learning Outcomes
1. Course Objective 1: Students will demonstrate that they understand some of the roles the role database technology and applications play in contemporary organizations. (Outcome to be assessed using homework performance, examinations, and the design project.)
2. Course Objective 2: Students will represent relationships among data in applications using appropriate data models. (Outcome to be assessed using homework performance, examinations, and the design project.)
3. Course Objective 3: Students will develop and document database designs using appropriate normalization techniques. (Outcome to be assessed using the design project.)
4. Course Objective 4: Students will gain facility with SQL by using it throughout the course. (Outcome to be assessed using homework performance, examinations, and the design project.)
5. Course Objective 5: Students will gain experience working as a member of a team in the design and development of a significant design project. (Outcome to be assessed using the design project.)

Tentative List of Topics
• Introduction; historical perspectives, future directions
• Levels of Abstraction; Relational Model
• First order logic, relational model queries, domain calculus, tuple calculus
• Introduction to SQL and MySQL
• Relational Algebra and SQL; aggregates and expressions
• Complex queries; grouping results; subqueries
• Dealing with Null; Database design; ER modeling
• UML; Intra-relation integrity constraints; functional dependencies
• Transformation to BCNF and 3NF
• Application Development
• Intro to XML; Triggers; Query transformation
• Query optimization; File structures and organization; indexes
• B-tree family Indexes; Multiple key access; hashing
• Static vs. dynamic hashing; Indexes in SQL.

Course Evaluation
• Assignments, Presentation and Class Participation: 15%
• Two Midterms: 20% + 20% - Dates: 1st Midterm: week of February 29th and 2nd Midterm: week of April 4th
• Final: 25% - Date: TBA
• Design Project: 20% - Project report due on the last of the class

Policies
• There will be two 50 minute examinations and a comprehensive final examination in this course. All students will be required to take the final examination.
• A portion of the course grade is dependent on class participation. It is therefore required that students attend class on a regular basis.
• There will be a required design project in which each student will work with other students to investigate design and implementation issues in more depth.
• Plagiarism software may be used for checking assignments, exams and projects. Students should follow Clarkson University’s code of student conduct (http://www.clarkson.edu/studentaffairs/regulations/v.html.)
• If you have copied another classmates’ work, all involved will get a zero. If you have copied anything from the Internet without proper citation you will get a zero.
• Students must make up all work missed due to absences of any kind. Arrangements to make up work missed must be made prior to the date the work is due. In the event that illness or other unforeseen circumstances such as a death in the family, arrangements to make up work must be made within two days of the due date. Students must therefore consult promptly with the instructor to make these arrangements.

Accommodation needs
Clarkson University assures equal educational opportunities by providing accommodations and services for qualified students with documented disabilities in accordance with Federal Law, specifically the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. Any student who requires an accommodation based on the impact of a disability should contact the instructor.