Syllabus and Information
for
ComS 461/561 Principles and Internals of Database Systems
Fall 2010

Instructor

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Best way to contact me: email

Want to see me in person? Feel free to visit my office during my office hours or send me email to set up an appointment at least one day in advance.

Office Hours: To be announced in the first week of class
Teaching Assistant: To be announced

Class Time:

Lecture sessions: M W F 1:10pm-2:00pm
Recitation: T 4:10pm - 5:00pm
First day of class: Monday August 23, 2010
Final exam week: December 13-17, 2010

Holidays/breaks:
University holiday: Monday September 6, 2010
Thanksgiving break: November 22-26, 2010

Current Catalog Description

ComS 461: (3-1) Cr. 3. F. Prereq: 311, Engl 250, Sp Cm 212 and Com S 363. Models for structures and semistructured data. Algebraic, first-order and user-oriented query languages, Database schema design. Physical storage, access methods, and query processing. Transaction management, concurrency control and crash recovery. Database security. Information Integration using data warehouses, mediators, wrappers, and data mining. Parallel and distributed databases, and special purpose databases. Oral and written reports. Nonmajor graduate credit

Course Outcomes

- Have understanding of good database design techniques and database theories, including conceptual database designs, and functional dependencies and normalization.
- Have understanding of designs of important components of large-scale database management software, including indexing, query evaluation and optimization, and transaction management.
- Have experience working with commercial database systems such as Oracle and MySQL.
- Have an ability to apply knowledge in database design and database application development to address real-world needs for efficient data storage and retrieval.
• Have experience working in a team project to improve communication skills, project management skills, and software development skills. Projects must serve a local community or the society at large, or a scientific community.
• Have understanding of a few advanced topics in databases for continuing professional development.

Major Topics

• Conceptual database design
• Relational data model, functional dependencies, and normalization
• Database application development and database security
• Relational algebra and calculus
• Query optimization
• Indexing including spatial indexing
• Transaction processing
• Advanced topics:
  o Introduction to parallel and distributed databases
  o Introduction to multimedia databases

Course Materials:

• Lecture notes (available for downloading)
• Supplemental in-class materials

Course Evaluation

• In-class participation  5%
• Exam 1  15%
• Exam 2  15%
• Homework assignment  30% (approximately three assignments)
  o Each assignment has both written and programming elements.
• Team project  35%
  o Team of 2 or 3 students
  o Oral presentations, written project proposal, and written project report required

Course Policies

• Academic Dishonesty Policy
  o Homework and exams are individual work. Students who plagiarize work of others in any part of assignments/exams will receive an automatic F for this course. Additionally, the instructor will follow the university policies regarding academic dishonesty.

  “A student found responsible for academic dishonesty or academic misconduct is therefore subject to appropriate academic penalty; to be determined by the instructor of the course, as well as sanctions under the university Student Disciplinary Regulations.” [Iowa State Academic Regulations (http://www.public.iastate.edu/~catalog/2009-2011/geninfo/dishonesty.html)].
• **Late Policy**
  
  o At most two late or incomplete assignments will be graded. There is no deduction in the score if the assignment is submitted within 24 hours after the due date/time. After that, for every 24 hours, the maximum score of the assignment will be deducted by 25% of the original score. After two late submissions, subsequent late assignment(s) will not be graded.

  o Students are welcome to discuss your graded assignments and exams with the instructor. However, the discussion must be within one week after you receive your graded assignment/exam back. This is to ensure fair grading for other students.

• **Disabilities:** Any student with documented disability should inform the instructor in the first week of class or as soon as you become aware of the disability. More resources for students with disabilities can be found at [http://www.dso.iastate.edu/dr/](http://www.dso.iastate.edu/dr/).