CS 631 Data Management System Design

Lecture 0

Syllabus – Summer 2011

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Course Abstract

This course covers the principles of database management systems design. Topics include data independence, entity-relationship (ER) model, enhanced entity-relationship (EER) model, relational data model, query languages, database design theory, physical implementation, storage structures, access methods, transaction management and concurrency control.
Course Workload

There will be 1 term project, 1 term paper, and a final exam.

Some (non-credit) home works will be given. They are used to prepare the exam.
Course Arrangement

Course Grade:
Term project – 50%, term paper – 20%, final exam – 30%.

Grading Scale:
A: 88% or above; B+: 84% or above; B: 78% or above; C+: 72% or above; C: 60% or above.
Project Details

• This project is to implement a database system. You define the schema using both ER diagrams and relational tables based on a domain or application you choose. Your design should follow the database design theory (e.g. the schema should be in the third normal form or a better normal form). You may set any reasonable limitations on the number of attributes, the size of arguments (e.g. 4 byte integers), the number of relations, etc. Please note that you have limited disk resources and may not get more space.

• Each project will be done on an individual basis.
• More details will be given in Moodle.
Project Grading

Grading of the implementation project will be based on the innovation of the application you choose and interesting queries you demonstrate and take into account the following features: Correctness, Completeness, Documentation, Modularization, and Testing. You need to include programs and screen shots in the project, demonstrating the input/output, testing and the running situation of your system.
Schedule

• Topic 1: Course Introduction and Overview
• Topic 2: ER Model
• Topic 3: EER Model
• Topic 4: Relational Data Model
• Topic 5: Query Languages
• Topic 6: SQL
• Topic 7: Functional Dependencies
Schedule (cont.)

- Topic 8: Normalization
- Topic 9: Database Design Theory
- Topic 10: Physical Design
- Topic 11: Index Structures
- Topic 12: Transaction Processing
Textbooks

• Oracle 10g Programming: A Primer, Rajshekhar Sunderraman, Addison Wesley.