University of New Orleans

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CSCI 4125

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University of New Orleans

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This is an older syllabus and should not be used as a substitute for the syllabus for a current semester course.

Instructor: Dr. Shengru Tu, Math-313-B, 504-280-7108, stu@uno.edu
Lecture time: 12:00-12:50 pm, Mon, Wed and Friday
Class location: Math-226
Office hours: 11:00 am – 12:00 pm, 1:00 – 3:00 pm, on Mon and Wednesday
                      11:00 am – 12:00 pm, on Mon and Wednesday
Textbook: A. Silberschatz, H. Korth, and S. Sudarshan, *Database System Concepts*, 6th
                      edition, McGraw-Hill, 2010 (required)
Prerequisite: CSCI 2125 – data structures
Course Goals:
   This course is designed to provide students with a set of knowledge and skills for future
   practice in information system development, database application development, and database
   maintenance. The course equally emphasizes the theories (conceptual models and concrete
   algorithms) and practical programming (SQL and JDBC). Advanced topics such as the
   concepts and simple algorithms of concurrency control will be studied.

Course Objectives: At the end of this course the students will be able to:
   1. carry out data modeling for information systems using the Entity-Relationship model,
   2. optimize the relational schemas using the normalization algorithms,
   3. implement complex queries using SQL,
   4. improve SQL statements guided by rule-based performance tuning techniques,
   5. understand and appreciate various concurrency control methods.

Topics:
   - Introduction to Database Systems (Chapter 1)
   - Introduction to Relational Model (Chapters 2)
   - Introduction to SQL (Chapter 3)
   - Database Design and Entity-Relationship Model (Chapter 7)
   - Formal Relational Query Languages (Chapter 6)
   - Intermediate SQL (Chapter 4)
   - Relational Database Design (Chapter 8)
   - Advanced SQL (Chapters 5: JDBC, prepared statements, metadata, recursive queries)
   - Query Processing and Optimization (Chapters 12 and 13, partially)
   - Transaction (Chapter 14)
   - Concurrency Control (Chapter 15)
   - Recovery System (Chapter16: 16.1 – 16.5, briefly)
   - Indexing and Hashing (Chapter 11, briefly)

Homework
   Written homework assignments for Chapters 2, 3, 4, 5, 6, 7 and 8 are selected from the
   textbook. The solution sets will be published after the due dates. Students' submission
   will be recorded.

Project
   Every student must participate and complete a group-project consisting of three parts: (1)

data modeling; (2) database schema design: optimization of the relational schema; (3) implementation of a database application using SQL, Java and JDBC. Three reports - a project proposal, a progress report, and a final report - are due in the fourth, eighth and eleventh week respectively. Details about the project will be given in the third week. Each group should have two students.

Oracle Account

An Oracle account will be given to every student. The final products of the database for the project must be placed in the Oracle database system hosted by the Department of Computer Science.

Assignments Policies

Every piece of the work must be produced by the student independently. Copying other people's work will result in an *F* grade in all the involved parties.

Grading

Final: 35%; Midterm: 30%; Project: 30%; Homework and attendance: 5%.

Attendance Policy

The class attendance will be checked in every class. A student has to explain the reason if being absent in up to three classes. Missing five or more classes will receive point reduction up to one percent of the course grade for each missing class.

Student Conduct

Be in class on time. Every student is strongly encouraged to ask questions, to participate in class discussions, and respect other students. Sleeping is not permitted in class and it will be treated as an absence.

Academic Integrity

Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the Student Code of Conduct for further information. The Code is available online at http://www.studentaffairs.uno.edu.

Students with Special Needs

It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities should contact the Office of Disability Services as well as their instructors to discuss their individual needs for accommodations. For more information, please go to http://www.ods.uno.edu.