CSCI 4125

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University of New Orleans

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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
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 (Chapter 16: 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

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.