CMPT 354 - D200 Database Systems I

Instructor(s): Ouldooz Baghban Karimi
SFU Surrey

Calendar Objective/Description:
Logical representations of data records. Data models. Studies of some popular file and database systems. Document retrieval. Other related issues such as database administration, data dictionary and security.

Instructor's Objectives:
Starting with discussions on data-intensive applications and relevance of relational databases, this course will cover basic theoretical foundation and an introduction to practical tools, and the language for relational databases usage, design, implementation, management, and optimization.

Prerequisites:
CMPT 225, and (MACM 101 or (ENSC 251 and ENSC 252)).

Topics:
- Introduction: Relational Database Definition, History, Applications, and Trends
- Relational Data Model, and Relational Algebra (and Calculus)
- Introduction to SQL: Create, Modify, and Query Relational Databases
- Database Design: Steps and Procedures
- Entity Relationship Model: E/R Diagram Design and Translation to Relational Databases
- Design Theory: Functional Dependencies, Normalization (1NF, 2NF, 3NF, BCNF)
- Constraints and Triggers
- Views and Indexes
- Query Processing and Optimization
- Transaction Processing: Anomalies, ACID properties, Concurrency Control
- Database Applications: SLI, CLI
- Discussions: RDBs and Data-Intensive Systems, OLAP, OLTP, NoSQL, NewSQL, Consistency, DWHs and Lakes

Grading:
Assignments (30%) Quizzes (10%) Midterm (20%) Final (40%)

Recommended Books:

Reference Books:
Academic Honesty Statement:

Academic honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty will be handled in accordance with the SFU Academic Honesty and Student Conduct Policies (http://www.sfu.ca/policies/gazette/student.html).