Introduction to Database Systems

COURSE CALENDAR DESCRIPTION

Concepts, approaches and techniques in database management systems (DBMS). Logical model of relational databases. An introduction to relational database design. Other topics such as query languages, crash recovery and concurrency control. Prerequisites: General prerequisite; LE/EECS 2030 3.00 or LE/EECS 1030 3.00; Course credit exclusions: LE/CSE 3421 3.00, AK/AS/SC/CSE 3421 3.00, AP/ITEC 3220 3.00.

NOTE: The General Prerequisite is a cumulative GPA of 4.50 or better over all major EECS courses. EECS courses with the second digit "5" are not major courses.

INSTRUCTOR(S)

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<th>Name</th>
<th>Section / Format / Term</th>
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<td>Gryz, Jarek</td>
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LIST OF LEARNING OUTCOMES AND EXAMPLES OF COURSE OBJECTIVES

Students will become proficient at modeling databases at a conceptual and physical level of design. Students will be able to develop database schemas that enforce data integrity. Students will also become knowledgeable in the creation, altering, and manipulation of tables, indexes, and views using relational algebra and SQL.

Specific topics to be covered include:
- Relational Model
- Relational Algebra and Calculus
- The SQL Query Language
- Conceptual Design and the ER Model
- Transaction Management, Concurrency Control, and Recovery

This corresponds to the following chapters from the textbook: 1, 2, 3, 4, 5, 6, 7, 17, 18 and possibly 5 and 10.

LEARNING OUTCOMES

After successful completion of the course, students are expected to be able to:
- Model databases proficiently at conceptual and logical levels of design. Use entity relationships (ER) models and ER diagrams with extension.
- Develop relational database schemas which respect and enforce data integrity represented in ER models.
- Implement a relational database schema using structured query language (SQL): create and manipulate tables, indexes, and views
- Create and use complex queries in SQL
- Write database application programs with an understanding of transaction management, concurrency control, and crash recovery.

GRADED ASSESSMENT
GRADING CRITERIA/COURSE REQUIREMENTS

Midterm - 20%
Final - 40%
Project - 30%
Homework - 10%

The grading policy is a standard one. The instructor will grade the exams. The TA will grade the projects. Homeworks will not be graded; you get credit for simply submitting the answers to homework questions. Projects and homeworks late no more than 24 hours will receive half of the credit. After 24 hour delay, no assignments will be accepted.

York University's rules for academic honesty and plagiarism always remain in effect. Discussion is fine on the projects. However, collaboration is not. The work must be your own. Exams, of course, must be done on your own.

If you miss a test for good reason (e.g., illness with a medical document), your Final Exam grade will count for both the final exam and the missed test.

ADDITIONAL INFORMATION

REQUIRED TEXTBOOK/READING

Database Systems: The Complete Book
Garcia-Molina, J.D. Ullman, & J. Widom
2nd edition, 2009
Pearson / Prentice Hall

Other Useful Books/Reading
Understanding the New SQL: A Complete Guide
Jim Melton and Alan R. Simon.
Morgan Kaufmann Publishers.

Using the New DB2: IBM's Object-Relational Database System
Don Chamberlin
Morgan Kaufmann Publishers.

USEFUL ONLINE INFORMATION

- DB2: Getting-started instructions (These notes are specific for us!)
- DB2: Getting-started instructions (version prepared by our tech staff)

SQL

- IBM: SQL, Getting Started (for DB2)
- IBM: SQL Reference
DB2: Lots more DB2 documentation

IBM DB2 Universal Database: Online Information
- Hosted locally here at York.

ACADEMIC INTEGRITY LINKS
- Senate Policy on Academic Honesty - http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/
- Academic Integrity - http://lassonde.yorku.ca/academic-integrity

STUDENT LINKS
- Student Rights and Responsibilities - http://oscr.students.uit.yorku.ca/student-conduct
- Religious Observance - https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/wa/regobs
- Counselling and Disability Services - http://cds.info.yorku.ca/

Many courses utilize Moodle, York University’s course website system. If your course is using Moodle, click here to access it.
Moodle @ York University