REQUIRED TEXTBOOK / READING
ISBN: 0-07-232206-3
URL: http://www.cs.wisc.edu/~dbbook

COURSE OBJECTIVES AND CONTENT
In this course, we go "under the hood" to learn how a relational database management system is built. Students will learn the issues involved in designing efficient database systems, and the strategies, data-structures, and algorithms used in the implementation of such systems.

The course is designed in three parts: the physical database, query processing and query optimization. Specific contents include the following.

**The Physical Database**
- File organizations
- Indexes
  - Tree-structured indexing
  - Hash-based indexes
- External sorting

**Query Processing**
- Evaluation of relational operators
  - Selection
  - Projection
  - Joins (the many ways)
  - Set operations
  - Aggregate operations
- Physical database design and tuning

**Query Optimization**
- Rewrite optimization
  - Semantic query optimization
  - Magic sets
  - The COUNT bug
Cost optimization
- Cost model
- Selectivity estimation

New paradigms in query optimization

GRADING CRITERIA / COURSE REQUIREMENTS
Report or Project – 30%
Presentation – 30%
Take-home Final Exam – 40%

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/
- York University’s Policies on Gender/LGBTQ*/Positive Space - http://rights.info.yorku.ca/lgbtq/

LAND ACKNOWLEDGEMENT
- We acknowledge our presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been care taken by the Anishinabek Nation, the Haudenosaunee Confederacy, the Huron-Wendat, and the Métis. It is now home to many Indigenous Peoples. We acknowledge the current treaty holders, the Mississaugas of the New Credit First Nation. This territory is subject of the Dish With One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lakes region.
- The Indigenous Framework for York University: A Guide to Action can be found here: http://indigenous.info.yorku.ca/
- Meaning of a land acknowledgement: http://healthydebate.ca/opinions/indigenous-land-acknowledgements

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