Carleton University

Department of Systems and Computer Engineering

SYSC 5703 Integrated Database Systems Fall 2013

Course Outline

Instructor*: Samuel A. Ajila, PhD, P.Eng*

Course Description and Objectives: Database definitions, applications, and architectures. Conceptual design based on entity-relationship and object oriented models. Relational data model: relational algebra and calculus, normal forms, data definitions and manipulation languages. Database Management: transaction management, recovery, and concurrency control. Current trends in DB systems: object-oriented, knowledge-based (semantic DB), and distributed databases.

Prerequisites: OCIECE, OCICS, OCIBM, ISS, and TIM graduate students

Textbooks

1. Michael Kifer, Arthur Bernstein, and Philip M. Lewis, Database Systems: An Application-Oriented Approach, 2nd Edition, Addison-Wesley, ISBN 0- 321-26845-8, 2006 (**Recommended)**
2. Ramakrishna, R. and Gehrke, J., Database Management Systems, 3rd ed., McGraw-Hill, ISBN 0-07-246563-8, 2003 (**Referenced)**

Attendance: Students are expected to attend all classes. Requests to accommodate missed exam, assignment and term paper due dates, etc. because of conflicts with jobs or personal plans will not be considered.

Grading Scheme and Schedule:

	Assignments		**Term Paper**	**Term Exam**
Weight	10%	10%	40% (out of which 10% is for in-class Presentations)	40%
Date Out	Sept. 17	Oct. 22	Proposal: Sept. 19 to Oct. 3	Dec. 03
Date Due	Oct. 01	Nov. 05	Term paper submission = Dec. 05	Dec. 03
			In-Class Presentations (TBD)	

To pass this course, a student must show an in-depth understanding of the subject matter through the term paper and the term exam. **A grade of B or higher in both the term paper and exam is required to pass the course.**

Late hand-in of **assignments** and **term paper** will be accepted with the penalty as follows:

1. 1.0 mark a day for weekdays for assignments
2. 0.65 mark a day for weekends and holidays for assignments, and
3. 1.50 marks a day (for both weekdays and weekends) for term paper.

Note that 0.65, 1.0, 1.5 marks correspond to 0.65%, 1.0%, 1.5% of your grade, since every mark equals 1% of the overall grade.

Term Exam and Term paper: *Are for the evaluation purposes only and will not be returned to the student.*

A term in-class exam will be held at the end of classes in December. Students who miss the term exam may be granted permission to write a special/deferred exam (see section 9.2 of the graduate Calendar for regulations on deferred/special exams - https://currcalendar.carleton.ca/grad/gradregulations/administrationoftheregulations/#9).

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website
http://www2.carleton.ca/equity/accommodation/academic/students/

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website
http://www2.carleton.ca/equity/accommodation/academic/students/

Academic Accommodations for Students with Disabilities
The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your ***Letter of Accommodation*** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (*if applicable*).

Tentative Course Outline (last five topics are subject to time availability)

1. **Introduction to Database - Self study (Part One of the recommended book)**
2. **The relational data model – Self study**
3. Conceptual Modeling with Entity-Relationship model **(Review only)**
4. Relational Algebra, SQL, Triggers, and Active Databases **(Review only)**
5. Database Design with Normalization Theory
6. SQL in the Real World - Static & Dynamic SQL, JDBC, SQLJ, & ODBC
7. Overview of Physical Data Organization
8. Overview of Query Processing and Optimization
9. Overview of Transaction Processing
10. An Introduction to Distributed Databases
11. Object Oriented Databases - Object Model, ODMG, Object SQL (OQL), and CORBA (or JDO)
12. Introduction to OLAP, Data Warehouses, and Data Mining
13. Logic and Deductive Databases and NoSQL
14. **Semi-Structured Data: XML and Web Data,**
15. **Architecture of Transaction Processing Systems**
16. **Web Services**
17. **Security and Electronic Commerce**

Some of this topic corresponds to specific chapters in the recommended/referenced textbook or any other textbook. I expect that you will read the relevant chapters in preparation for classes.