**Carleton University**

**School of Computer Science**

**COMP 5305**: **Advanced Database Systems**   
Fall 2017

**Instructor:**

Mengchi Liu  
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**Lectures:** W: 11:35-2:25 Room CB 2400

**Office Hours:** TR: 1:30-2:30 HP 5364

**Course Description:**

The database field has experienced a rapid and incessant growth since the development of relational databases. The progress in database systems and applications has produced a diverse landscape of specialized technology areas that have often become the exclusive domain of research specialists. This course provides a systematic introduction to and an in-depth study on several important developments in database systems, especially

1. Nested relational databases
2. Object-oriented database
3. Object-relational databases
4. XML databases
5. INM databasess
6. NoSQL databases

It examines their data structures and query languages.

**Prerequisites:**

An introductory course on database systems

**Course Information**

All important information, such as announcements, assignments, solutions, etc. will be available on [culearn](mailto:https://carleton.ca/culearn/). It is the student's responsibility to check for new information.

**Textbooks: (not required)**

1. **Complex Value Databases**:

*Foundations of Databases,* S. Abiteboul, R. Hull, and V. Vianu, Addison-Wesley, 1995.

1. **Object-Oriented Databases**:

B*uilding an Object-Oriented Database System*: The Story of O2, Francois Bancilhon, Claude Delobel, and Paris Kanellakis, Morgan Kaufmann, 1992.

*Object-Oriented Database Management,* A. Kemper and G. Moerkotte, Prentice Hall, 1994.

[*Object Database Standard ODMG 3.0*](http://www.mkp.com/books_catalog/catalog.asp?ISBN=1-55860-647-5), R.G.G. Cattell, et al., Morgan Kaufmann, 2000.

1. **XML databases**:

*An Introduction to XML and Web Technologies*Anders Moller and Michael Schwartzbach Addison-Wesley, 2006.

*XQuery*  
Priscilla Walmsley, O'Reilly, 2007.

*Foundation of Semantic Web Technologies*Pascal Hitzler, Markus Krotzsch and Sebastian Rudolph, CRC Press 2010.

1. **NoSQL databases: NoSQL, NewSQL and Big Data**

*Next Generation Databases*

Guy Harrison

Apress, 2015

**Marking Scheme:**

|  |  |  |
| --- | --- | --- |
| Assignments: Midterm Exam:  Presentation: Project: Attendance: |  | 20% 30% 10% 40% -10% |

**Notes:**

1. Copying of assignments is strictly disallowed. If found, all students involved will be given a mark of 0 and the case will be reported to the Dean for further action.
2. Posting assignment solutions on discussion boards before the due date and time is prohibited and the student involved will be given a mark of 0 for the assignment.
3. Assignments must be submitted to *culearn* in order to be marked. Assignments are allowed to be submitted one day late with 10% penalty.
4. Students *must* pass the midterm exam in order to pass the course.

**University Policies**

**Student Academic Integrity Policy.** Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties which range from a reprimand to receiving a grade of F in the course or even being expelled from the program or University. Some examples of offences are: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found in the Undergraduate Calendar.

**Plagiarism.** As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean of Science.

**Unauthorized Co-operation or Collaboration.** Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis". Please refer to the course outline statement or the instructor concerning this issue.

**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) at <http://www2.carleton.ca/pmc/new-and-current-students/dates-and-deadlines>

**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/>

**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/>

**Medical Certificate.** The following is a link to the official medical certificate accepted by Carleton University for the deferral of final examinations or assignments in undergraduate courses. To access the form, please go to <http://www.carleton.ca/registrar/form>