

Carleton University
School of Computer Science
COMP 5305 F 2022
Advanced Database Systems

Instructor: Mengchi Liu
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Office: HP 5364
Lectures: Tuesday: 8:35AM - 11:25PM
Classroom: DT 1006
Course Website: <http://brightspace.carleton.ca/d2l/home>

Course Description:

The database field has experienced a rapid and incessant growth since the development of the 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. Semantic Relationship databases
6. NoSQL databases

Prerequisites:

An introductory course on database systems

Course Information

All important information, such as announcements, assignments, midterm, etc. will be posted on [Brightspace](#). 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. Chapter 20 (**Available online**)
2. **Object-Oriented Databases:**
Building 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, R.G.G. Cattell, et al., Morgan Kaufmann, 2000. (**Available online**)
3. **XML databases:**
An Introduction to XML and Web Technologies
Anders Moller and Michael Schwartzbach Addison-Wesley, 2006.
XQuery
Priscilla Walmsley, O'Reilly, 2007.
4. **NoSQL databases:**
Next Generation Databases: NoSQL, NewSQL, and Big Data
Guy Harrison, Apress, 2015. (**Available online**)

Marking Scheme:

Assignments	25%
Midterm (Nov.1 class time)	40%
Project	35%

Notes:

1. Assignments must be submitted to [Brightspace](#) in order to be marked. Late assignments are allowed to be submitted with 10% penalty per day for 3 days. After 3 days, no submission will be accepted. Never email any assignment to the instructor.
2. For the midterm exam, the Carleton University e-Proctoring system will be used, and requires the use of webcams, microphones, and smart phones.
3. Students **must pass** the midterm exam in order to pass the course.

Important note for Ottawa University students after registration:

Ottawa U students taking courses at Carleton will automatically have access to Brightspace. For more information on Brightspace, see <https://gradstudents.carleton.ca/faculty-of-graduate-and-postdoctoral-affairs-access-to-brightspace/>.

Even though both universities use Brightspace, course access is kept separate. Students need to log into Carleton's Brightspace to access Carleton Courses and Ottawa's Brightspace for Ottawa courses

University Policies

For information about Carleton's academic year, including registration and withdrawal dates, see [Carleton's Academic Calendar](#).

Pregnancy Obligation. Please contact your instructor 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 [Equity Services](#).

Religious Obligation. Please contact your instructor 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 <https://carleton.ca/equity/focus/discrimination-harassment/religious-spiritual-observances/>.

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Academic Accommodations for Students with Disabilities If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608

or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC 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 your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the [Paul Menton Centre](#) website.

Survivors of Sexual Violence. As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support.

Accommodation for Student Activities. Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor 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, see [the policy](#).

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. Examples of punishable offences include: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found [here](#).

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. Standard penalty guidelines can be found [here](#).

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.

Special Information

It is important to remember that COVID is still present in Ottawa. The situation can change at any time and the risks of new variants and outbreaks are very real. There are number of actions you can take to lower your risk and the risk you pose to those around you including being vaccinated, wearing a mask, staying home when you're sick, washing your hands and maintaining proper respiratory and cough etiquette.

Feeling sick? Remaining vigilant and not attending work or school when sick or with symptoms is critically important. If you feel ill or exhibit COVID-19 symptoms do not come to class or campus. If you feel ill or exhibit symptoms while on campus or in class, please

leave campus immediately. In all situations, you must follow Carleton's symptom reporting protocols.

Masks: Carleton has paused the COVID-19 Mask policy, but continues to strongly recommend masking when indoors, particularly if physical distancing cannot be maintained. It may become necessary to quickly reinstate the mask requirement if pandemic circumstances were to change.

Vaccines: While proof of vaccination is no longer required as of May 1 to attend campus or in-person activity, it may become necessary for the University to bring back proof of vaccination requirements on short notice if the situation and public health advice changes. Students are strongly encouraged to get a full course of vaccination, including booster doses as soon as they are eligible, and submit their booster dose information in cuScreen as soon as possible. Please note that Carleton cannot guarantee that it will be able to offer virtual or hybrid learning options for those who are unable to attend the campus.

All members of the Carleton community are required to follow requirements and guidelines regarding health and safety which may change from time to time. For the most recent information about Carleton's COVID-19 website and review the Frequently Asked Questions (FAQs). Should you have additional questions after reviewing, please contact covidinfo@carleton.ca.

Doctor's note or medical certificate: in effect for Fall 2022 term. In place of a doctor's note or medical certificate, students are advised to complete the [self-declaration form](#) available on the Registrar's Office website to request academic accommodation for missed course work including exams and assignments. Students should also discuss with the course instructor the required accommodations arising from the COVID-19 situation.