

Carleton University
School of Computer Science
COMP 5305 W
Advanced Database Systems
Winter 2021

Instructor: Mengchi Liu mengchi@scs.carleton.ca

Lectures: Monday: 11:35AM - 2:25PM
Synchronous online course via BigBlueBottonBN on [culearn](#)

Office Hours: Online Monday: 2:30-3:30PM or by appointment

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 (day 2)
2. Object-oriented database (day 3)
3. Object-relational databases (day 4)
4. XML databases (day 5)
5. INM databases (day 6)
6. NoSQL databases (day 6)

It examines their data definition, data manipulation, 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](#). 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:	20%
Midterm Exam:	40%
Project:	35%
Attendance:	5%

Notes:

1. Assignments must be submitted to culearn in order to be marked. Assignments are allowed to be submitted one day late with 10% penalty. After one day, 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 in your assessments, and requires the use of webcams, microphones, and smart phones.
3. Students **must pass** the midterm exam in order to pass the course.

University Policy on Cheating and Plagiarism

Plagiarism - As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas or work of others as one's own".

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.

[Student Academic Integrity Policy](#)

The information on this policy may be found in the Undergraduate Calendar.

The following are some examples of things you can or cannot do:

- You are not allowed to copy or edit any portion of another student's work such as code, diagram etc, nor from any websites, but you may use those from the course notes.
- You are not allowed to give your solution (or portions of it) to another student.
- You are not allowed to work on your assignment with other students, with friends, with parents, with relatives, etc.
- You are not allowed to post full or partial assignment solutions on discussion boards or websites such as facebook, etc.

You must work on every assignment on your own without collaboration with other students. If you need help, see a TA or the instructor. Your assignment will be compared with others in the course and if you are believed to be involved in a plagiarism case in any way, the offence will be sent to the office of the Dean.

Penalties for violations of Academic Integrity will normally be applied as follows:

- First offence, first-year students (< 4.0 credits completed): No credit for assessment(s) in question, or a final grade reduction of one full letter grade (e.g., A- becomes B-), whichever is a greater reduction
- First offence (anyone else): A grade of F in the course
- Second offence (anyone): A grade of F in the course and a one-term suspension from studies
- Third offence: Expulsion from the University

Note: while these are the standard penalties, more severe penalties may be applied when warranted. See <https://science.carleton.ca/academic-integrity/>.

Undergraduate Academic Advisor

The Undergraduate Advisor for the School of Computer Science is available in Room 5302C HP, by telephone at 520-2600, ext. 4364 or by email at undergraduate_advisor@scs.carleton.ca. The undergraduate advisor can assist with information about prerequisites and preclusions, course substitutions or equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisor will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and the Writing Tutorial Services.

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>