COMP 3005 A&B Winter 2026 Database Management Systems

COMP 3005 (A,B) Database Management Systems

COURSE OUTLINE

Lectures	Official Class Times: Section A: Wed. Fri. 1:00pm - 2:30pm Section B: Tue. Thu. 11:30pm - 1:00pm Online (Blended Delivery) You are required to be available during class times for online course quizzes. Lecture content and assignments will be asynchronous.
Instructor	Louis Nel ldnel@cunet.carleton.ca (mailto:ldnel@cunet.carleton.ca) Homepage: https://people.scs.carleton.ca/~ldnel/ (https://people.scs.carleton.ca/~ldnel/)
TA Co-ordinator	Lars Doyle LarsDoyle@cunet.carleton.ca (mailto:LarsDoyle@cunet.carleton.ca)

Calendar Description:

COMP 3005 [0.5 credit]
Database Management Systems
Introduces students to concepts of database management systems, database design and file structures. Topics include: entity-relationship modeling and object oriented database design, data models (relational, network and object oriented), the relational algebra, SQL, normalization theory, physical data organization, object oriented databases and OQL. Precludes additional credit for BUSI 3400. Prerequisite(s): COMP 1805 with a minimum grade of C-, and either COMP 2402 or (SYSC 2004 and SYSC 2100).

Course Description:

The course will be a blended course with lecture content being delivered asynchronously by posted videos and powerpoints. The official class times will be used to hold quizzes synchronously on brightspace -tests to be done in a scheduled time window for a prescribed duration. There will also be synchronous office hours and question and answer sessions using an online platform (Zoom).

There will be three online platforms involved in this course: the course content website, the brightspace account where you will hand in assignments and do quizzes and where we will host our Q/A forum. Finally, Zoom for online TA office hours.

The course covers the principles involved in the design and implementation of relational databases and applications that use them. The assignments will provide practice in the specification, design, and implementation of a relational databases and applications that makes use them, as well as theory of relational table design (normalization theory). Course topics include:

- Introduction to relational and other database models
- Entity-Relationship modeling
- Query models including Relational Algebra and Relational Calculus
- Relational database design and normalization
- The SQL query langauge
- Using SQLite from command line interface
- Using a relational database with simple web applications and RESTful API servers
- Physical Database Organization and Implementation Issues
- Data structures (B+ Trees) used in database indexing
- Optional Topics (Time permitting):
  Transaction Processing Concepts
  Concurrency Control Concepts

Textbook:

The course will be taught through online videos of lecture powerpoint slides and demonstration code made available to students on the course website. The course notes are based largely on the recommended text mentioned below.

Note: course notes will be updated as the course progresses so check revision numbers from time to time to see that you have the latest versions.

The recommended textbook is: Elmasri and Navathe, "Fundamentals of Database Systems" 7th edition, Addison Wesley (earlier, or later, editions of the book are fine also for this course).

Some recommended texts or materials will be provided in the resources section of the course web site. The resources section will be updated as the course proceeds and students are encouraged to contribute to the resources list.

Course Material Copyright Notice:

We remind you that lecture and course materials, including power point presentations, outlines, videos, code examples, and similar materials, are protected by copyright. The professor is typically the exclusive owner of copyright and intellectual property of the course materials unless otherwise noted. You may take notes and make copies of course materials for your own private (educational) use. You may not, however, reproduce or distribute lecture notes and course materials publicly or use them for commercial purposes without my express written consent.

This notice has been added, in part, because course content has ended up on public sites like OneClass, Course Hero and GitHub without permission. Many students are eager to post work on GitHub but you have to be careful not to include copyrighted work of others.

Software:

You will need the following software for doing course assignments. All software should be freely available and should run on Windows, Mac OS, and Linux. Classroom demos may be Windows 10, Mac OSX, or Linux. Assignments MUST be submitted in the format specified in the assignment. Assignments in other formats will not

graded.

	Software SQLite http://www.sqlite.org/ (https://www.sqlite.org/index.html)
Relational Database:	SQLite will be our course SQL database. See resources section of course website for more details. All your assignment work submitted must use this database.
App Development Platform	The project assignment will require you to access the SQLite database through a web browser or other programmed interface of your choosing. You can use whatever technology you like for this but we will likely use, or demonstrate, some web technologies of COMP 2406 to wrap our SQLite databases in an client-server web app. It is not expected that you have taken COMP 2406 but you will be expected to learn the required technology based on demonstration code we provide. It will be up to you this term to choose your own interface technology.

	Many of the assignments will require design work presented as a report and these must be submitted as .pdf files (not word, html, xml, etc). Don't assume that the markers have specific word processing apps or programming development environments.
Written Design Assignments	You will need diagraming tools for ER diagrams and word processing for design exercise. You can use whatever you want but assignment submissions MUST be in .pdf .pdf scans of handwritten or handdrawn work will not be accepted -your work must look professional. Important: this is a large class and we will adopt adopt a zero-tolerence policy for work not submitted in the requested format. Submissions that do not comply will not be graded.
YouTube demonstrations	Your project assignment and at least one term assignment will require you to demonstrate your work by making a short screen capture video, with sound, and posting that on YouTube. I will use YouTube for posting all my course lecture content and you will use YouTube for any work requiring demonstrations. Your videos should be posted as "unlisted" (just like my video lectures will be). You need to be able to make a screen capture video that records your computer's microphone as well. There should be free software available on all the platforms that can do that.
Compression	only .zip accepted (not rar, or tar, etc.)

Assignments Submission:

We will be using electronic submission of assignments using Carleton's brightspace (https://brightspace.carleton.ca) system. Electronic submission enforces strict deadlines. Only assignments submitted to brightspace will be graded. No assignments will be accepted late or directly by email or in other forms. TA's are NOT allowed to accept assignments directly.

Teaching Assistants:

A schedule for TAs will be posted on brightspace along with a Zoom link for accessing online office hours. Please use the Q/A forums on Brightspace to ask questions and not direct emails.

Marking Scheme:

deliverable	value	comment
Assignments	50%	5 course term assignments equally weighted All assigments are individual work. Count All but one, that is, count 4/5. You will work on some of your project assignment parts in the term assignments.
Project Assignment	15%	Our final assignment will be project database the you will implement throughout the term and demonstrate in a final submission and YouTube video. This assignment will count and cannot be dropped form the course deliverables. The requirements for the project assignment will be posted early in the course.
Tests	35%	There will be 6 quizzes, one every other week. There is no final exam. The quizzes will be accessed in brightspace. They are synchronous and need to be done during the specified time window in brightspace. The time window will overlap one of your offcial class times. (Count all but the worst mark, that is, count 5/6 tests)
Final Exam	0%	There will NOT be a final exam in this course.

Missed assignments and tests: You may miss 1 assignment and one test for medical, compassionate, or other reasons. If you miss more than that a mark of 0 will be used for the other missed assignments or tests when the final grade is computed. (We will not be collecting any doctor's notes or medical assessments for missed work, but if you miss more than the allowed number a mark of 0 will be used for any missed work). The final project assignment must be submitted and will count.

IMPORTANT: If you wish to appeal a mark (assignment, or quiz) you must make the appeal by the appeal deadline posted (typically 10 days after the mark being posted on brightspace). After that we will not be obliged to entertain appeals or change marks.

Collaboration is encouraged but cheating, or copying, is not allowed. You may work together and consult but any work you hand in must be your own and judged to be unique. Any two assignments judged to be too similar will both receive a grade of 0, and will be handled as a formal academic offence -see calendar for details.

Course Web Page:

Course content will be hosted both on brightspace and a dedicated course content website. The link to the course content website will be available in the brightspace course account. Lectures themselves will be hosted on YouTube. Course announcements will be emailed to students using the brightspace class list and email addresses.

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/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 Writing Tutorial Services.

IMPORTANT UNIVERSITY POLICIES

For information about Carleton's academic year, including registration and withdrawal dates, see Carleton's Academic Calendar (https://calendar.carleton.ca/academicyear/).

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 (https://carleton.ca/womensstudies/resources-and-links/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/ (https://carleton.ca/equity/focus/discrimination-harassment/religious-spiritual-observances/).

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 (mailto: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 (http://carleton.ca/pmc).

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 (http://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 (https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf).

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 (https://carleton.ca/registrar/academic-integrity/).

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 (https://science.carleton.ca/academic-integrity/).

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.