

Databases I (Introduction to Databases)

COMPSCI 3319

Course Outline

1. Course Information

Course Information

- Course name: Databases I (Introduction to Databases)
- Course number: COMPSCI 3319 B
- Academic term: Winter 2026
- Time: Monday 2:30-3:30 pm and Wednesday 2:30-4:30 pm
 - o Monday 2:30-3:30 pm is for office hours only (no class). Wednesday 2:30-4:30 pm is for flipped-classroom sessions on selected weeks (see schedule). All lectures are recorded and posted on OWL.

List of Prerequisites

- Computer Science 2210A/B and Computer Science 2211A/B
- Antirequisite(s): AISE 3309A/B, Computer Science 3120A/B, Digital Humanities 3220A/B, and Software Engineering 3309A/B.

Unless you have either the prerequisites for this course or written special permission from the Department of Computer Science to enroll in it, you may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on your academic record. This decision may not be appealed.

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Dr. Mostafa Milani (Course Coordinator)	mostafa.milani@uwo.ca			Monday 2:30-3:30 PM
TA TBD				

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. Please use cs3319@uwo.ca for any course related questions and include the exact text “[CS 3319]” at the beginning of your email title; otherwise, your email will not be answered.

Office hours are online (in Zoom) and require completing a sign-up sheet as outlined in OWL.
TA’s office hours TBD.

3. Course Syllabus, Schedule, Delivery Mode

Databases I (Introduction to Databases) is a foundational course in database systems covering conceptual modeling, the relational data model, query languages, database design, transactions, basic query processing, and indexing, as well as an introduction to NoSQL systems.

Course-level learning outcomes:

- Model real-world data requirements using the Entity–Relationship (ER) model and translate them into a relational schema.
- Describe the relational data model, including attributes, domains, keys, foreign keys, referential integrity, and other constraints.
- Apply functional dependencies and normalization principles to design high-quality relational schemas.
- Express queries using relational algebra and relational calculus.
- Write correct and efficient SQL queries, including analytical queries with aggregation and window functions.
- Explain basic query evaluation and optimization techniques and how indexes improve performance.
- Describe the concepts of transactions and ACID properties.
- Compare relational and NoSQL database systems and identify scenarios appropriate for each.

The course will be delivered in a flipped classroom format. Lecture recordings will be posted online for students to watch on their own time. We will meet in person every two weeks for scheduled flipped classroom sessions to work on in-class practice exercises. Students must come to these sessions prepared (having watched the lecture recordings and completed any required quizzes). Attendance at these flipped classroom sessions will contribute to the final grade, but there are no regular in-person meetings outside of these scheduled dates.

Table of contents (tentative):

- Week 1: Introduction and ER Model
- Week 2: Relational Data Model
 - o **Flipped Classroom Session: Jan 14 (Wed)**
- Week 3: Database Design & Normalization
- Week 4: Relational Algebra and Relational Calculus
 - o **Flipped Classroom Session: Jan 28 (Wed)**
- Week 5: SQL (Core)
- Week 6: Advanced SQL & Analytical Queries
 - o **Flipped Classroom Session: Feb 11 (Wed)**
- Reading Week
- Week 7: Query Evaluation & Optimization
- Week 8: Transactions and ACID Properties
 - o **Flipped Classroom Session: Mar 4 (Wed)**
- Weeks 9 and 10: Storage & Indexing
 - o **Flipped Classroom Session: Mar 18 (Wed)**
- Weeks 11 and 12: NoSQL Databases
- Week 13: Course Review

Key Sessional Dates:

Classes begin: January 5, 2026

Spring Reading Week: February 14 – 22, 2026

Classes end: April 9, 2026

Exam period: April 12 – 30, 2026

4. Course Materials

Primary textbook (available online):

- *Fundamentals of Database Systems*, 7th Edition, by Ramez Elmasri and Shamkant Navathe.

Supplementary resources (also available online):

- *Database Management Systems*, 3rd Edition, by Raghu Ramakrishnan and Johannes Gehrke.
- *Database System Concepts*, 7th Edition, by Abraham Silberschatz, Henry Korth, and S. Sudarshan.
- *Database Systems: The Complete Book*, 2nd Edition, by Hector Garcia-Molina, Jeffrey Ullman, and Jennifer Widom.
- Additional online readings and materials posted on OWL.

Use of Personal Response Systems (“Clickers”):

This course will occasionally use virtual clickers (accessible via laptop, tablet, or smartphone) during in-person flipped classroom sessions for participation, polls, and quick quizzes. Students are expected to bring an internet-enabled device to these sessions.

Use of Kritik:

This course will use Kritik, an online peer-assessment platform, for selected assignments and project components. Students will submit work, review peers' submissions, and provide constructive feedback through the platform. Kritik is accessed via a web browser on a laptop, tablet, or smartphone. A course-specific sign-up link will be provided on OWL at the start of term.

Flipped Classroom Requirements:

Watch all assigned lecture recordings before the scheduled flipped classroom date. Complete the associated online quiz (on OWL) before the session. Attendance at all flipped classroom sessions is mandatory and will be recorded. Sessions will be in person and involve group work. Bring a laptop, tablet, or smartphone with internet access to participate in group activities and virtual clickers. Work actively with your assigned group to complete the in-class worksheet. Participate in the peer review process for another group's worksheet. Each session is worth 3% of your final grade: 1% for attendance and 2% for achieving $\geq 50\%$ on your group worksheet. Missing a session without Academic Consideration results in a grade of 0 for that session. With an approved Academic Consideration, the weight will be transferred to the final exam.

All course material will be posted to OWL: <https://westernu.brightspace.com/>

Students are responsible for checking the course OWL site (<https://westernu.brightspace.com/>) regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class.

If students need assistance with the course OWL site, they can seek support on the [OWL Brightspace Help](#) page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

5. Methods of Evaluation

Grading Scheme and Assessment Dates

The overall course grade will be calculated as listed below:

Assignments (3)	30%	(7% for each assignment submission and 3% for its peer-review)
Quizzes (5)	15%	
Flipped Classroom (5)	15%	
Final Exam	40%	

Tentative list of assessments and dates:

- Assignment 1: ER modeling and relational schema design
 - o Available: Jan 6, Submission deadline: Jan 27, Peer review: Feb 1 – Feb 5
- Assignment 2: SQL queries and analytical functions
 - o Available: Feb 3, Submission deadline: Feb 24, Peer review: Mar 1 – Mar 5
- Assignment 3: Database application
 - o Available: Mar 10, Submission deadline: Mar 31, Peer review: April 5 – Apr 2
- Quiz 1: Covers Weeks 1–2 topics
 - o Release: Jan 12, Complete by Jan 13, before Flipped Classroom Session #1
- Quiz 2: Covers Weeks 3–4 topics
 - o Release: Jan 26, Complete by Jan 27, before Flipped Classroom Session #2
- Quiz 3: Covers Weeks 5–6 topics
 - o Release: Feb 9, Complete by Feb 10, before Flipped Classroom Session #3
- Quiz 4: Covers Weeks 8–9 topics
 - o Release: Mar 2, Complete by Mar 3, before Flipped Classroom Session #4
- Quiz 5: Covers Weeks 10–11 topics
 - o Release: Mar 16, Complete by Mar 17, before Flipped Classroom Session #5
- Final exam: Weeks 1–12 (Date and time: TBD by Registrar)

General information about missed coursework

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs*, posted on the Academic Calendar:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf,

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](#).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage:

https://registrar.uwo.ca/academics/academic_considerations/

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows

students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

- Final exam
- Flipped classrooms
- Assignments

When a student *mistakenly* submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

Evaluation Scheme for Missed Assessments

If a student misses an assignment, a flipped classroom session, or the final exam without approved Academic Consideration, they will receive a mark of 0. Approved absences for these assessments will result in the weight being transferred to the final exam (or a Special Examination in the case of the final exam).

For quizzes, students may miss one quiz without requesting Academic Consideration; in this case, the quiz weight will be automatically transferred to the final exam. Missing more than one quiz requires approved Academic Consideration for each additional missed quiz; if approved, the weight of each missed quiz will be transferred to the final exam, otherwise a grade of 0 will be assigned.

Each assignment includes a short grace period to provide flexibility without requiring a formal request. Submissions made within 12 hours after the deadline will be accepted without penalty. After the grace period, a 20% per-day late penalty applies. Work is not accepted once the peer-review phase for that assignment begins. Extensions beyond this policy require an approved Academic Consideration.

When a student misses the Final Exam and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under [Special Examinations](#)), especially for those who miss multiple final exams within one examination period.

Essential Learning Requirements

Even when Academic Considerations are granted for missed coursework, the following are deemed essential to earn a passing grade. In order to earn a passing grade in this course, students must meet the following essential requirements, even when Academic Consideration is granted for missed coursework:

- Final exam requirement: To pass the course, students must achieve at least 30% of the final exam's mark and at least 60% in the overall course grade.
- Flipped classroom requirements: Students must successfully complete the initial course setup activities required for participation in flipped classroom sessions, including the Virtual Machine setup check to pass the course. These tasks have no direct grade weight but are mandatory to ensure students can participate in later graded work.

Coursework with Assessment Flexibility

By policy, instructors may deny Academic Consideration requests for the following assessments with built-in flexibility:

- **Flexible Completion – Quizzes:** This course has 5 quizzes, and all 5 will count towards your final grade. Students do not need to request Academic Consideration for the first missed quiz, as

its weight will automatically be transferred to the final exam. If more than one quiz is missed, students must request and receive approved Academic Consideration for each additional missed quiz; in all such cases, the weight of the missed quiz will be transferred to the final exam.

- **Deadline with a No-Late-Penalty Period – Assignments:** Students are expected to submit each of the assignments by the listed deadline. Should extenuating circumstances arise, students do not need to request Academic Consideration and are permitted to submit their assignment up to 12 hours past the deadline without a late penalty. Assignments submitted beyond 12 hours past the deadline will incur a late penalty of 20% per day.

6. Additional Statements

6.1 Religious Accommodation

When conflicts arise with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible, but not later than two weeks prior to the writing of the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays - <https://www.edi.uwo.ca>

6.2 Academic Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf.

6.3 General Academic Policies

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

Use of @uwo.ca email: In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf, the centrally administered e-mail account provided to students will be considered the individual's official university email address. It is the responsibility of the account holder to ensure that emails received from the University at their official university address are attended to in a timely manner.

Requests for Relief (formally known as "appeals")

Policy on Request for Relief from Academic Decision:

https://uwo.ca/univsec//pdf/academic_policies/appeals/requests_for_relief_from_academic_decisions.pdf

Procedures on Request for Relief from Academic Decision (Undergraduate):

https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_requests_for_relief_procedure.pdf

Procedures on Request for Relief from Academic Decision (Graduate):

https://uwo.ca/univsec//pdf/academic_policies/appeals/graduate_requests_for_relief_procedure.pdf

6.4 Scholastic Offences

Policy on Scholastic Offences:

https://uwo.ca/univsec//pdf/academic_policies/appeals/scholastic_offences.pdf

Procedures on Scholastic Offences (Undergraduate):

https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_scholastic_offence_procedure.pdf

Procedures on Scholastic Offences (Graduate):

https://uwo.ca/univsec//pdf/academic_policies/appeals/graduate_scholastic_offence_procedure.pdf

Use of Electronic Devices During Assessments

In courses offered by the Faculty of Science, the possession of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, and wireless earbuds or headphones.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at your desk, on your person, or within reach during an assessment will be treated as a *scholastic offence*, even if the device is not in use.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is your responsibility to review and comply with these expectations.

Use of Generative AI Tools

Unless otherwise stated, the use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is **not permitted** in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a **scholastic offence**.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is your responsibility to seek clarification before using any AI tools in academic work.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

6.5 Support Services

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, requests for relief, exam conflicts, and many other academic-related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

https://www.uwo.ca/health/student_support/survivor_support/get-help.html

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. If you have any questions regarding accommodations, you may also wish to contact Accessible Education at

http://academicsupport.uwo.ca/accessible_education/index.html

Learning-skills counsellors at Learning Development and Success (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.