THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number: ACS-3902-001
Course Name: Database Systems
Course Webpage: https://nexus.uwinnipeg.ca/d2l/home/39255

Instructor Information

Instructor: **Ron McFadyen**
E-mail: r.mcfadyen@uwinnipeg.ca

Office Hours:	Tuesdays	10:00 am - 11:00 am via Zoom
Class meeting time:	Tuesdays/Thursdays	1:00 pm - 2:15 pm via Zoom/Nexus See details under *Remote Learning*

Meeting info for office hours, class time and lab sessions will be posted on Nexus.

Important Dates

1.	First Class:		Tuesday, September 7, 2021
2.	Reading Week (no classes):		October 10-16
3.	Midterm Tests:		Tuesday, October 5, 2021 Tuesday, Nov 2, 2021
4.	Final Withdrawal Date w/o academic penalty*:		Tuesday, November 16, 2021
5.	Last Class:		Wednesday, December 8, 2021
6.	Final Exam:		TBD
7.	University closures:	Truth and Reconciliation Day	Thursday, September 30, 2021
		Thanksgiving Day	Monday, October 11, 2021
		Remembrance Day	Thursday, November 11, 2021

*A minimum of 20% of the work on which the final grade is based will be evaluated and available to the student before the voluntary withdrawal date.

Course Objectives / Learning Outcomes

- Introduce theory of relational model.
- Provide the foundation for database design required by systems analysts, designers, programmers and data modelers.
- Introduce techniques utilized in the various stages of a database software development cycle.

- Cover EERDs, database languages, functional dependencies, normalization, physical data storage.

Remote Learning

All course material including lecture notes, slides and videos, sample code, and assignment details will be available on Nexus.

This section is Hybrid/Online, which means some classes are online via Zoom at prescribed days/times; students will must be available via Zoom for the following lecture times.

Tues Sept 7 (first class),
Tues Sept 28,
Tues Oct 5 (test 1),
Tues Oct 26,
Tues Nov 2 (test 2)
Wed Dec 8 (last class)

Materials (videos, etc.) will be available on Nexus for self-study and review. Students are expected to work through this material.

You may contact your instructor via email, and as necessary zoom time can be arranged for individual assistance.

Students must be available via Zoom during the above lecture times.

Students must display their real/full name
Use of video is required for tests/exams
Participants must be muted when not speaking
Students may interact via chat, voice or gestures

Students can find answers to frequently asked questions related to remote learning here: https://www.uwinnipeg.ca/covid-19/remote-learning-faq.html.

Note: A permitted or necessary change in mode of delivery may require adjustments to important aspects of course outlines, like class schedule and the number, nature, and weighting of assignments and/or exams.

Evaluation Criteria

1. **Assignments**: 20%
   All assignments are to be completed individually.
   There will be 4 assignments worth 5% each and due by midnight on due dates.
   Late assignments are accepted, up to 1 day, with 20% off.
   Assignments typically involve programming.
   Multiple submissions are permitted. Students may submit a partially completed assignment, and receive credit for those attempted problems.
   Students are responsible to review their assignments before submission to make sure the correct files are attached to the email.
   As required, *.java, *.js, *.json, or *.sql files must be submitted for programming questions. Non-programming questions must be submitted as aPDF files.
   All work is to be submitted electronically via Nexus.
   Further details and submission procedure will be stated in each assignment.
   Students are responsible for backing up and protecting their lab and assignment work.
2. **Midterm Tests** (Test 1 15%, Test 2 15%).
   During the regular class time (see Important Dates).
3. **Final Exam** (50%).
   Cumulative.
   Date, time to be announced.

Students should contact the instructor as soon as possible if extenuating circumstances require missing a lab, assignment, test or examination. A medical certificate from a practicing physician may be required before any adjustments are considered.

Test / Exam Requirements

- Photo ID is required for midterm tests and the final exam.
- Midterm tests and the final exam will be delivered via Nexus and proctored via Zoom. Students must have video capability, and video must be turned on for the duration of the test/exam for proctoring.
- Midterm and final exams are open book.
  - Students are permitted to view only the following authorized course material:
    - Class notes, slides, recordings, sample code, assignment descriptions and solutions posted by the instructor
    - Course textbook
    - Student's own course notes and assignment submissions
  - Students may use an external tool such as a text editor or IDE to write answers to questions before entering them into the exam
  - Students may contact the instructor to ask questions
  - External resources (or any material not listed above) are NOT PERMITTED
  - Communication with others (except the instructor) is NOT PERMITTED
  - All work must be entirely the students' own. Collaboration or sharing of work is NOT PERMITTED.

Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams (e.g., private space) or during lectures/laboratories (e.g., note-takers) are encouraged to contact Accessibility Services (AS) at 204-786-9771 or accessibilityservices@uwinnipeg.ca to discuss appropriate options. All information about a student's disability or medical condition remains confidential.
https://www.uwinnipeg.ca/accessibility-services.

Students may choose not to attend classes or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work examinations without penalty. A list of religious holidays can be found in the 2019-20 Undergraduate Academic Calendar online at http://uwinnipeg.ca/academics/calendar/docs/important-notes.pdf

Final Letter Grade Assignment

Historically, numerical percentages have been converted to letter grades using the following scale. However, instructors can deviate from these values based on pedagogical nuances of a particular class, and final grades are subject to approval by the Department Review Committee.

A+	90 – 100%	B+	75 – 79%	C	60 – 64%
A	85 – 89 %	B	70 – 74%	D	50 – 59%
A-	80 – 84%	C+	65 – 69%	F	below 50%

Required Textbook / Reading List

- Elmasri/Navathe, Fundamentals of Database Systems, 7th edition, Addison-Wesley, ISBN# 978-0-133970777
- Class Notes will be available on Nexus

Prerequisite Information

- ACS-2913 (or the former ACS-2911 and ACS-2912) and ACS-2814 (or the former ACS-2914) with a minimum grade of C.

Regulations, Policies, and Academic Integrity

Academic dishonesty is a very serious offense and will be dealt in accordance with the University's policies.

Avoiding Academic Misconduct: Students are encouraged to familiarize themselves with the Academic Regulations and Policies found in the University Academic Calendar at:
https://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf
Particular attention should be given to subsections 8 (Student Discipline), 9 (Senate Appeals) and 10 (Grade Appeals). Please note, in particular, the subsection of Student Discipline pertaining to plagiarism and other forms of cheating.

Detailed information can be found at the following:

- Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-procedures.pdf
- UW Library video tutorial "Avoiding Plagiarism" https://www.youtube.com/watch?v=UvFdxRU9a8g

Uploading essays and other assignments to essay vendor or trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) involves "aiding and abetting" plagiarism. Students who do this can be charged with Academic Misconduct.

Non-academic misconduct. Students are expected to conduct themselves in a respectful manner on campus and in the learning environment irrespective of platform being used. Behaviour, communication, or acts that are inconsistent with a number of UW policies could be considered "non-academic" misconduct. More detailed information can be found here:

- Respectful Working and Learning Environment Policy https://www.uwinnipeg.ca/respect/respect-policy.html,
- Acceptable Use of Information Technology Policy https://www.uwinnipeg.ca/institutional-analysis/docs/policies/acceptable-use-of-information-technology-policy.pdf
- Non-Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-procedures.pdf.

Copyright and Intellectual Property. Course materials are the property of the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides—irrespective of format. Students who upload these materials to filesharing sites, or in any other way share these materials with others

outside the class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also seek prior permission of the instructor/presenter before, for example, photographing, recording, or taking screenshots of slides, presentations, lectures, and notes on the board. Students found to be in violation of an instructor's intellectual property rights could face serious consequences pursuant to the Academic Misconduct or Non-Academic Misconduct Policy; such consequences could possibly involve legal sanction under the Copyright Policy
https://copyright.uwinnipeg.ca/docs/copyright_policy_2017.pdf

Privacy

Students have rights in relation of the collecting of personal data the University of Winnipeg: https://www.uwinnipeg.ca/privacy/admissions-privacy-notice.html.

More information:

- Zoom and Privacy: https://www.uwinnipeg.ca/privacy/zoom-privacy-notice.html
- Testing/Proctoring: https://www.uwinnipeg.ca/privacy/zoom-test-and-exam-proctoring.html.

Class Cancellation, Correspondence with Students and Withdrawing from Course

When it is necessary to cancel a class due to exceptional circumstances, the course instructor will make every effort to inform students via uwinnipeg email and Nexus.

Students are reminded that they have a responsibility to regularly check their uwinnipeg e-mail addresses to ensure timely receipt of correspondence from the University and/or the course instructor.

Please let course instructor know if you plan on withdrawing from the course. Note that withdrawing before the VW date does not necessarily result in a fee refund.

Topics to be covered (tentative)

Ch 5 The relational data model and relational database constraints
Ch 6 Basic SQL
Ch 7 More SQL: complex queries, triggers, views, and schema modification
Ch 8 The relational algebra
Ch 3 Data modeling using the entity-relationship (ER) model
Ch 4 The enhanced entity-relationship (EER) model.
Ch 9 Relational database design by ER- and EER-to-relational mapping
Ch 14 Basics of functional dependencies & normalization
Ch 16, 17 file structures: hashing, indexing

As time permits topics such as NOSQL Databases (MongoDB), Graph Databases (Neo4j) and Data warehousing may be covered.