THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number: ACS-4904-001 / GACS-4904-001
Course Name: Data Warehousing
Course Webpage: https://courses.acs.uwinnipeg.ca/4904-001/

Instructor Information

Instructor:	Ron McFadyen			
E-mail:	ron.mcfadyen@gmail.com			
Office Hours:	Wed	10:00 – 11:00 am	Office:	3D21
Class meeting time:	Mon/Wed	11:30 - 12:45 pm	Room:	3D04
Course web page	https://courses.acs.uwinnipeg.ca/4904-001/			

Important Dates

1.	First Class:	Monday, January 6, 2020
2.	Midterm Test 1:	Wednesday, February 5, 2020
3.	Reading Week (no classes):	February 16-22, 2020
4.	Midterm Test 2:	Wednesday, March 4, 2020
5.	Final Withdrawal Date w/o academic penalty*:	Friday, March 13, 2020
6.	Last Class:	Wednesday, April 1, 2020
7.	Final Exam (Comprehensive):	Monday, April 20, 2020
8.	University closures: Louis Riel Day	Monday, February 17, 2020
	Good Friday	Friday, April 10, 2020

*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

This course introduces students to the architectural framework for data warehousing including extracting, cleansing, and transforming data (ETL), building and maintaining the warehouse, meta data, dimensional analysis and multidimensional modeling. Dimensional modeling is covered in detail (star schemas: fact tables, dimension tables, aggregation, snowflakes, slowly changing dimensions, bridge tables, recursive hierarchies, fact table types, etc.)

Evaluation Criteria

1. **Assignments**: 25%
   All assignments are to be completed individually.
   There will be 5 assignments worth 5% each.
   Due at 11:59:59 pm on due dates.
   No late assignment will be accepted, or under special circumstances accepted with 20% off for each late day.
   Assignment reports are only submitted by email as PDF files and code as appropriate.
   The details of submission procedure will be stated in each assignment.
   Multiple submissions are not permitted. Students may submit a partially completed assignment, and will 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.

   Assignment submissions:
   All work is to be submitted electronically. All coding is to be submitted in .java format, and any written work in PDF format. 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** (25%) (first -10%, second -15%)
   During the regular class time (see Important Dates)

3. **Final Exam** (50%)
   Cumulative
   3 hours duration

Students should contact the instructor as soon as possible if extenuating circumstances require missing an 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 the final exam.
- The use of computers, calculators, phones, or other electronic devices is not permitted on exams.
- Midterm and final exams are closed book.

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 Text Book / Reading List

~~Head first design patterns~~ ← wrong
Star Schema, the complete reference by Adamson ← correct

Prerequisite Information

A grade of at least C in all of: ACS-2913(3) (or the previous ACS-2911(3) and ACS-2912(3)), ACS-2947(3) and ACS-3902(3)

Services for Students

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.

All students, faculty and staff have the right to participate, learn, and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found online at https://www.uwinnipeg.ca/respect.

Misuse of Computer Facilities, Plagiarism, and Cheating

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

Avoiding Academic Misconduct and Non-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
- 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

Misuse of Filesharing Sites. 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.

Avoiding Copyright Violation. Course materials are owned by the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides. 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 photographing or recording slides, presentations, lectures, and notes on the board.

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/or using the preferred form of communication, as designated in this outline), as well as the Departmental Assistant and Chair/Dean so that class cancellation forms can be posted outside classrooms.

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 - some topics may not be covered or the order may differ)

Fundamentals
- Analytical databases and dimensional design
- Data warehouse architecture
- Stars and cubes

Multiple stars
- Fact table per process
- Conformed dimensions

Dimension design
- More on dimension tables
- Hierarchies and snowflakes
- More slow change techniques
- Multi-valued dimensions and bridges
- Recursive hierarchies and bridges

Fact table design
- Transactions, snapshots, and accumulating snapshots
- Factless fact tables
- Type-specific stars

Performance
- Derived schemas
- Aggregates

Tools and Documentation
- Design and business intelligence
- Design and ETL
- How to design

HOBI & Time-HOBI