Commerce 3KD3
Database Design and Management
Winter 2026 Course Outline

Information Systems Area
DeGroote School of Business
McMaster University

INSTRUCTOR AND CONTACT INFORMATION

Instructor	Sections	Emails	Office	Office Phone Extension
Yufei Yuan	C01-C03	yuanyuf@mcmaster.ca	DSB A204	23982

Office Hours: To be arranged or make an appointment

Students TAs	Emails	Office	Office Phone Extension
Emad Deilam Salehi	deilamse@mcmaster.ca		

TA Hours: To be arranged or make an appointment.

Course website: http://avenue.mcmaster.ca
Office hour and TA hours will be offered online through Zoom meeting:

MEETING DETAILS

Section	Date & Time	Class Location
C01	Wednesdays, 2:30 PM - 5:20 PM	please check A2L
C02	Tuesdays, 2:30 PM - 5:20 PM	please check A2L
C03	Mondays, 11:30 AM - 2:20 PM	please check A2L

COURSE ELEMENTS

Credit Value:	3	Leadership:	Yes	IT skills:	Yes	Global view:	Yes
A2L:	Yes	Ethics:	Yes	Numeracy:	No	Written skills:	Yes
Participation:	Yes	Innovation:	Yes	Group work:	Yes	Oral skills:	Yes
Evidence-based:	Yes	Experiential:	Yes	Final Exam:	Yes	Guest speaker(s):	No

COURSE INFORMATION

Course Delivery Mode: In-person. The classes will consist of weekly 3-hour in-person meetings. Punctuality is the sign of a true professional and shows self-discipline and respect for others. Please make whatever arrangements are necessary to come to class on time. Class time will be dedicated to lectures, discussions, and exercises. Students will be provided with one short break during each session.

Course Description: This course is designed to introduce the basic concepts of database and data warehouse. Data modeling and database access through SQL are emphasized. Current trends in data warehouse and data mining will be discussed. Students will learn how to design database through three assignments and gain first-hand experience through developing a database for real-world e-commerce application in a term project. Basic knowledge of information systems and computer programming is required for taking this course.

IMPORTANT LINKS

- Mosaic
- Avenue to Learn
- Student Accessibility Services - Accommodations
- McMaster University Library
- eReserves

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LEARNING OUTCOMES

Upon successful completion of this course, students will be able to complete the following key tasks:

- Understand the database planning and database development process
- Build data model for database applications
- Learn SQL for database definition and manipulation
- Understand transaction processing, security, and database administration
- Understand the basic concept of data warehouse and business intelligence
- Learn data warehouse modeling

COURSE MATERIALS AND READINGS

Required:

[Y] Yufei Yuan, **3KD3 Lecture Notes**, Available on Avenue To Learn http://avenue.mcmaster.ca. Free.

[J] Nenad Jukic, **Database Systems: Introduction to Databases and Data Warehouses, Edition 3.0**, Prospect Press, Copyright 2026

eTextbooks:
ISBN: 978-1-958303-28-3
Student Price: $65.80
Available directly from VitalSource: https://www.vitalsource.com/products/database-systems-introduction-to-databases-and-nenad-jukic-v9781958303283

Paperbacks:
ISBN: 978-1-958303-29-0
List price: $114.30
Starting in December 2025, paperbacks will be available from most online stores where students buy books.

Online References and Tutorial:

[W1] Data Modelling Tutorial http://www.tutorialspoint.com/dbms/index.htm
[W2] Microsoft SQL Tutorial
https://www.tutorialspoint.com/ms_sql_server/ms_sql_server_overview.htm
[W3] Microsoft SQL Server http://www.microsoft.com/sqlserver/en/us/product-info.aspx
[W4] Learn SQL in 1 Hour – SQL Basics for Beginners
https://www.youtube.com/watch?v=9Pzj7Aj25lw
[W5] Database Normalization in SQL https://www.youtube.com/watch?v=l5DCnCzDb8g
[W6] Data warehouse tutorial https://www.youtube.com/playlist?list=PL99-DcFspRUoWh6w2E1gI-SR54Oq3M2lt

[W7] Dimensional modeling (star schema)https://www.youtube.com/watch?v=cwpL-3rkRYQ&list=PLrbIyvYCdg0iAUQoxG5vI_yKqzZ2AcgGe&index=1

COURSE EVALUATION

Learning in this course results primarily from reading, in-class discussion, assignments, projects, and quizzes. Assignments should be done individually, and project can be done in group in which group members will share the same grade adjusted by peer evaluation. Missed tests/exams will receive a grade of zero unless the student has submitted and been approved for a Notification of Absence or MSAF. Late assignments will be penalized 10% for each day they are late. Your final grade will be calculated as follows:

Grading Components and Weights

EVALUATIONS	WEIGHT	DESCRIPTION
Participation	10%	Attendance (5%) and engagement (5%) for all classes in entire term
Team project	20%	Submission of team project proposal (3%), Progress report Part A (3%), Progress report Part B (3%), Project presentation (10 %), and peer evaluation (1%)
Individual Assignment	30%	Submission of 3 assignments to Avenue by the due date and time; 10% each.
Final Exam	40%	Comprehensive close-book exam with True/False, Multiple Choice and Short Answer Questions

COURSE DELIVERABLES

Participation and Engagement (10%)

Students are required to attend all classes, tutorials and actively participate in class discussion. Students are encouraged to engage actively in class discussions related to the material being presented by the instructor or TA. The instructor and the TA will feel free to cold-call on anyone at any time. Hence, it is very important that you prepare for each and every class and tutorials as appropriate. Participation marks will be based on your class attendance (5%) and engagement (5%). Student class participation will be recorded by signing a class attendance sheet during each class. Make sure you sign it in each class you attend. Missing a class without appropriate reason or notification to instructor will deduct 0.5 mark (0.5% of the course grade) up to 5 marks (5%). Opportunities for in-class participation and engagement include taking part in discussions during the lectures by: 1) Engaging in class exercises 2) Asking questions 3) Responding to questions posed by the instructor or other students 4) Making relevant comments on material covered and 5) Join an online forum on Avenue to Learn for weekly discussions at least 3 times in the entire term. Mere attendance in all classes without

engagement activities does not earn you any engagement marks. You need to report your class attendance and engagement activities in your final participation and engagement report at the end of the term. The grade is based on your self-report.

Team Project (20%)
The team project is used for student teams to learn how to design and implement a database for an e-business application and learn how to work together as a team. Students will be randomly assigned to form teams. Each team consists of up-to five members. Representative e-business applications are recommended to student teams. Student teams need to: 1) submit project proposal (3%), 2) make project-in-progress report part A (3%) and Part B (3%) to get feedback from instructors and TAs, 3) make project presentation (10%) and 4) provide peer review of other team's project presentations (1%).

Assignment #1 – Database modeling (10%)
This assignment is used for students to learn how to design a database for an online flower store using an E-R diagram and convert it to relational tables and check the normalization form of the tables.

Assignment #2 – Database implementation using SQL (10%)
This assignment is used for students to learn how to use Microsoft SQL server to create tables, enter data, and run queries to search the database and generate reports.

Assignment #3 – Data warehouse modeling (10%)
This assignment is used for students to learn how to model a data warehouse for an automobile insurance company for risk analysis.

Final Exam (40%)
The final exam is designed to test students' full understanding of the database and data warehouse concepts, technology, and applications learned from the course. It is a closed book exam and cover the entire course lectures. It consists true/false and multiple-choice questions and short-answer questions.

LATE ASSIGNMENTS

If relevant, please describe any policies regarding late submissions.

Make sure you submit any assignments, project proposal, project reports, project presentation evaluation reports, class participation report and so on to the avenue drop box before the due date specified in course outline or drop box. The submission delay penalty is 10%-mark deduction per day.

COMMUNICATION AND FEEDBACK

Students who wish to correspond with instructors or TAs directly via email must send messages that originate from their official McMaster University email account. This protects the confidentiality and sensitivity of information as well as confirms the identity of the student. Emails regarding course issues should NOT be sent to the Area Administrative Assistants. Instructors are required to provide evaluation feedback for at least 10% of the final grade to students prior to the final date by which a student may cancel the course without failure by default. Instructors may solicit feedback via an informal course review with students by Week #4 to allow time for modifications in curriculum delivery.

REQUESTING RELIEF FOR MISSED ACADEMIC WORK

In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work" and the link below;

http://ug.degroote.mcmaster.ca/forms-and-resources/missed-course-work-policy/

COURSE MODIFICATION

From time to time there may be a need to remove/add topics or to change the schedule or the delivery format. If these are necessary, you will be given as much advance notice as possible.

GENERATIVE AI

There are three approved statements on the use of AI in the classroom. Please choose the one that best fits your policy

SOME USE PERMITTED

Information on Copilot can be found in the following article: Microsoft Copilot for McMaster Community

Students may use generative AI in this course in accordance with the guidelines outlined for each assessment, and so long as the use of generative AI is referenced and cited following citation instructions given in the syllabus. Use of generative AI outside assessment guidelines or without citation will constitute academic dishonesty. It is the student's responsibility to be clear on the limitations for use for each assessment and to be clear on the expectations for citation and reference and to do so appropriately.

General writing. In principle you may submit material that contains AI-generated content, or is based on or derived from it, as long as this use is properly documented. This includes for example drafting an outline, preparing individual sections, combining elements and removing redundant parts, and compiling and annotating references. Your documentation must make the process transparent – the submission itself must meet our standards of attribution and validation.

Computer Code. In principle you may submit AI-generated code, or code that is based on or derived from AI-generated code, as long as this use is properly documented in the comments: you need to include the prompt and the significant parts of the response. AI tools may help you avoid syntax errors, but there is no guarantee that the generated code is correct. It is your responsibility to identify errors in program logic through comprehensive, documented testing. Moreover, generated code, even if syntactically correct, may have significant scope for improvement, in particular regarding separation of concerns and avoiding repetitions. The submission itself must meet our standards of attribution and validation.

ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. **It is your responsibility to understand what constitutes academic dishonesty.**

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

For information on the various types of academic dishonesty please refer to the *Academic Integrity Policy,* located at https://secretariat.mcmaster.ca/university-policies-procedures- guidelines/

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations

AUTHENTICITY/PLAGIARISM DETECTION

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.)

using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. **All submitted work is subject to normal verification that standards of academic integrity have been upheld** (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to www.mcmaster.ca/academicintegrity.

COURSES WITH AN ON-LINE ELEMENT

Some courses may use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course.

The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

ONLINE PROCTORING

Some courses may use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the *Code of Student Rights & Responsibilities* (the "Code"). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms.

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's *Academic Accommodation of Students with Disabilities* policy.

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students should submit their request to their Faculty Office ***normally within 10 working days*** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

COPYRIGHT AND RECORDING

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors.

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

EXTREME CIRCUMSTANCES

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

ACKNOWLEDGEMENT OF COURSE POLICIES

Your enrolment in Commerce 3KD3 will be considered to be an implicit acknowledgement of the course policies outlined above, or of any other that may be announced during lecture and/or on A2L. **It is your responsibility to read this course outline, to familiarize yourself with the course policies and to act accordingly.**

Lack of awareness of the course policies **cannot be invoked** at any point during this course for failure to meet them. It is your responsibility to ask for clarification on any policies that you do not understand.

COURSE SCHEDULE

COMMERCE 3KD3 Database Design and Management

Course Schedule

Week	Date	Topic	Readings/Assignment
1	Jan. 5-9	Introduction to database approach, database planning and development process	Self-study: [J] Ch.1, Lecture Note 1
2	Jan. 12-16	Entity-Relationship model	Self-study: [J] Ch.2, Lecture Note 2

			[W1] Data Modelling Tutorial http://www.tutorialspoint.com/dbms/index.htm
3	Jan. 19-23	Relational data model	Self-study: [J] Ch.3, Lecture Note 3 **Project proposal due Jan. 25**
4	Jan. 26- 30	Normalization theory	Self-study: [J] Ch. 4, Lecture Note 4 [W5] Database Normalization in SQL https://www.youtube.com/watch?v=l5DCnCzDb8g **Assignment 1 due Feb. 1**
5	Feb. 2-6	Data Definition in SQL	Self-study: [J] Ch. 5, 6 Lecture Note 5 [W4] SQL Tutorial http://www.w3schools.com/sql/default.asp **Class participation initial report due Feb. 8**
6	Feb. 9-13	Data Manipulation in SQL	Self-study: [J] Ch. 5, Lecture Note 7 [W3] MicroSoft SQL Server http://www.microsoft.com/sqlserver/en/us/product-info.aspx **Project part A due Feb. 15**
7	Feb. 16-20	Winter break	
8	Feb. 23-27	SQL practice (Part 2 - Hands-on Tutorial)	Self-study: Lecture Note 8 **Assignment 2 due Mar. 1**
9	Mar. 2-6	Transaction Processing, security, and database administration	Self-study: [J] Ch. 11, Lecture Note 9 **Project part B due Mar. 8**
10	Mar. 9-13	Data warehouse and star schema	Self-study: [J] Ch. 7, 8; [C] Ch. 13, Lecture Note 11 [W6] Data warehouse tutorial https://www.youtube.com/playlist?list=PL99-DcFspRUoWh6w2E1gI-SR54Oq3M2lt

			Project presentation PPT due Mar. 15
11	Mar. 16-20	Team Project Presentation	Student project presentation **Project peer evaluation due Mar. 22**
12	Mar. 23-27	OLAP and multi-dimensional analysis	Self-study: [J] Ch. 9; [C] Ch.13, Lecture Note 12 [W7] Dimensional modelling (star schema) https://www.youtube.com/watch?v=cwpL-3rkRYQ&list=PLrbIyvYCdg0iAUQoxG5vl_yKqzZ2AcgGe&index=1 **Assignment 3 due Mar. 29**
13	Mar. 30-Apr. 3	Big data and NoSQL	Self-study: [J] Ch. 10, Lecture Note 13 **Class participation final report due Apr. 5**