Commerce 3KD3
Database Design and Management
Fall 2019 Course Outline

Information Systems Area
DeGroote School of Business
McMaster University

COURSE OBJECTIVE

The growth of the Internet and electronic commerce has tremendously amplified the importance of database technology, knowledge, and skills. In this course, students will be able to learn the basic concepts of database and data warehouse and gain the first-hand experience through developing a database for a real-world e-commerce application.

INSTRUCTOR AND CONTACT INFORMATION

Section 1: Thu 11:30 - 14:20
Section 2: Mon 11:30 - 14:20
Section 3: Wed 11:30 - 14:20

Dr. Yufei Yuan
Instructor
yuanyuf@mcmaster.ca
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Office Hours: To be arranged
Tel: (905) 525-9140 x23982
Class Location: BSB 249

Student TA
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Course website: http://avenue.mcmaster.ca

COURSE ELEMENTS

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

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.

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 creation and access
- Understand Web-Database connection, XML
- Understand the basic concept of data warehouse and business intelligence
- Learn data warehouse modeling

COURSE MATERIALS AND READINGS

Required:

[Y] Yufei Yuan, 3KD3 Course Materials Are Available on Avenue To Learn
http://avenue.mcmaster.ca

[J] Nenad Jukic, Susan Vrbsky, and Svetlozar Nestorov (2017), Database Systems: Introduction to Databases and Data Warehouses, Prospect Press, eTextbook ISBN:978-1-943153-18-3, Paperback ISBN: 978-1-943153-19-0

Optional:

[C] Carlos Coronel and Steven, Morris (2019), Database Systems Design, Implementation, & Management, 13th Edition, Cengage, ISBN: 978-1-337-62790-9
Tale of Five Employees, Corporate Missions Inc.

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] My SQL tutorial http://www.php-mysql-tutorial.com/wikis/mysql-tutorials/default.aspx
[W7] ASP 101 http://www.asp101.com/samples/index.asp
[W8] XML Tutorial http://www.w3schools.com/xml/default.asp
[W9] Data warehouse information center http://www.dwinfocenter.org/
[W10] Data warehouse tutorial https://www.youtube.com/playlist?list=PL99-DcFspRUoWh6w2E1gI-SR54Oq3M2lt

EVALUATION

Learning in this course results primarily from reading, in-class discussion, assignments, projects, and exams. 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. Final exam is closed-book in the form of true-false, multiple choices and sort-answer questions. 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:

Components and Weights

Assignment 1 (week 3)	Database modeling (Individual)	10%
Assignment 2 (week 7)	SQL (Individual)	10%
Assignment 3 (week 12)	Data warehouse modeling (Individual)	10%
Proposal (week 2)	Project proposal (group)	5%
Presentation (week 8)	Project presentation (group)	10%
Report (week 9)	Project report (group)	10%
Final Exam	Closed book exam (individual)	45%
Total		**100%**

NOTE: The use of a McMaster standard calculator is allowed during examinations in this course. See McMaster calculator policy.

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 Week #9 in the term. Instructors may solicit feedback via an informal course review with students by Week #4 to allow time for modifications in curriculum delivery.

Course Deliverables

Assignment #1 – Database modeling
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 – SQL
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
This assignment is used for students to learn how to model a data warehouse for an automobile insurance company for risk analysis.

Team Project
The team project is used for student teams to learn how to design and implement a database for an e-business application. 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.

Final Exam
The final exam is closed-book and cover the entire course lectures. It is designed to test students the database and data warehouse concepts, technology, and applications learned from the course.

Participation
Students are required to attend all the classes and actively participate in class discussion. Name cards and class pictures are used to help give credit for your participation. You must have a name card with your **full first and last name** clearly written and displayed in front of you for every class.

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.

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.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the *Academic Integrity Policy*, located at:

www.mcmaster.ca/academicintegrity

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

In this course we will be using a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. Students will be expected to submit their work electronically either directly to Turnitin.com or via Avenue to Learn (A2L) plagiarism detection (a service supported by Turnitin.com) so can be checked for academic dishonesty. Students who do not wish to submit their work through A2L and/or Turnitin.com must still submit an electronic and/or hardcopy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com or A2L.

All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.). To see the Turnitin.com Policy, please go to;

www.mcmaster.ca/academicintegrity.

ONLINE COURSE COMPONENTS

In this course we will be using X*. Students should be aware that when they access the electronic components of this course, 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 this course will be deemed consent to this disclosure.

If you have any questions or concerns about such disclosure, please discuss this with the course instructor.

X* = e-mail, Avenue to Learn, LearnLink, web pages, capa, Moodle, ThinkingCap, etc

REQUESTING RELIEF FOR MISSED ACADEMIC WORK

Students may request relief from a regularly scheduled midterm, test, assignment or other course components. Please refer to the policy and procedure on the DeGroote website at the link below;

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

STUDENT ACCESSIBILITY SERVICES

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca.

For further information, consult McMaster University's Policy for Academic Accommodation of Students with Disabilities:

http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf

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 requiring a RISO accommodation should submit their request, including the dates/times needing to be accommodated and the courses which will be impacted, to their Faculty Office normally within 10 days of the beginning of term 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.

https://multifaith.mcmaster.ca/riso

POTENTIAL MODIFICATION TO THE COURSE

The instructor reserves the right to modify elements of the course during the term. There may be changes to the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

Research Using Human Subjects

All researchers conducting research that involves human participants, their records or their biological material are required to receive approval from one of McMaster's Research Ethics Boards before (a) they can recruit participants and (b) collect or access their data. Failure to comply with relevant policies is a research misconduct matter. Contact these boards for further information about your requirements and the application process.

McMaster Research Ethics Board (General board): https://reo.mcmaster.ca/

Hamilton Integrated Research Ethics Board (Medical board): http://www.hireb.ca/

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	Sep. 3-6	Introduction to database approach, database planning and development process	[J] Ch.1; [C] Ch. 1, 2
2	Sep. 9-13	Entity-Relationship model	[J] Ch.2; [C] Ch. 4, 5 [W1] Data Modelling Tutorial http://www.tutorialspoint.com/dbms/index.htm **Project proposal due Sep. 21**
3	Sep. 16-20	Relational data model and Normalization theory	[J] Ch.3 ; [C] Ch.3, 6 **Assignment 1 due Sep. 28**
4	Sep. 23-27	Structured Query Language (I) Data Definition in SQL	[J] Ch. 4; [C] Ch. 7, [W4] SQL Tutorial http://www.w3schools.com/sql/default.asp
5	Sep. 30- Oct. 4	Structured Query Language (II) Data Manipulation in SQL	[J] Ch. 5; [C] Ch. 8; [W3] MicroSoft SQL Server http://www.microsoft.com/sqlserver/en/us/product-info.aspx
6	Oct. 7-11	Transaction process Concurrency and Security Database administration	[C] Ch. 10, 16; **Assignment 2 due Oct. 26**
7	Oct. 14-18	Mid-term recess	
8	Oct. 21-25	Client-Server computing, Web-database access, XLM, Cloud computing	[C] Ch. 15 **Project presentation PPT due Nov. 2**

9	Oct. 28-Nov. 1	Project presentation	**Project report due Nov. 9**
10	Nov. 4-8	Data warehouse and business intelligence	[J] Ch. 7; [W12] Data warehouse information center http://www.dwinfocenter.org/
11	Nov. 11-15	Data warehouse modeling	[J] Ch. 8; [C] Ch. 13 **Assignment 3 due Nov. 23**
12	Nov. 18-22	OLAP and multi-dimensional analysis	[J] Ch. 9; [C] Ch.13.
13	Nov. 25-29	Big data and NoSQL	[C] Ch. 14; [W13] Guide to Data Mining http://www.data-mining-guide.net/