



We acknowledge that we are on the traditional, ancestral and unceded territory of the hən̓q̓əmiñəm speaking Musqueam people.

iSchool Mission: Through innovative research, education and design, our mission is to enhance humanity's capacity to engage information in effective, creative and diverse ways.

ARST/LIBR 554: Database Design (3)

Program:	MLIS, MAS, Dual MAS/LIS
Year:	Winter Session 2020/21 – Term 1
Course Schedule:	Tuesday from 2:00 pm to 4:50 pm
Location:	Online - Canvas
Instructor:	Dr. Richard Arias-Hernandez
Office location:	Online
Office hours:	By email appointment
E-mail address:	richard.arias@ubc.ca
Learning Management Site:	https://canvas.ubc.ca/

Course Goal: The goal of this course is to provide students with knowledge and skills necessary to produce a well-designed database that enables the timely delivery of accurate information in a useful form

FNCC specialization: The assignments in this course can serve the requirements of the First Nations Curriculum Concentration (FNCC). If students would like to take this course for FNCC credit, they are invited to contact the instructor to discuss this option.

Learning Outcomes:

Upon completion of this course students will be able to:

1. Explain basic database concepts and terminology [1.4, 2.1]*
2. Identify information needs within an organization [1.1, 3.1, 3.2, 5.3]*
3. Formulate user and organizational requirements for a database [1.1, 2.1, 3.2]*
4. Design a conceptual model that satisfies these needs and requirements using a relational data / entity relationship model [1.1, 1.2, 2.1, 3.2]*
5. Normalize this relational data / entity relationship model [1.2, 1.3, 2.1]*
6. Implement the corresponding logical model in a relational database management software (i.e. MySQL) [1.1, 1.2, 1.3, 3.1, 3.2, 5.3]*
7. Design SQL queries for a relational database to satisfy users' information needs [1.1, 1.2, 1.3, 3.1]*

* Course objectives are stated in terms of student learning outcomes and reference the iSchool Statement on Graduate Competencies: <https://ischool.ubc.ca/about/about-the-ischool/graduate-competencies/>



Course Topics:

- Overview of databases and database design
- Components of a DBMS
- Conceptual modeling and ER diagramming
- The relational model
- Normalization
- Logical modeling
- Creating a database
- Querying a database (SQL)
- Issues and Trends in DBMS

Prerequisites: MAS Students: Completion of the MAS Core, MAS students should enroll in ARST 554. MLIS Students: Completion of MLIS Core or permission of iSchool Graduate Advisor, MLIS students should enroll in LIBR 554. Dual Students: completion of the MAS Core or MLIS Core or permission of iSchool Graduate Advisor.

Format of the course: Online combination of synchronous (lectures, in-class exercises, group exercises, etc.) and asynchronous activities (videos of lectures, videos of walkthroughs, MySQL tutorials, SQL tutorials, readings, etc.). Participation in class activities and engagement with assigned readings and tutorials is required. Participation in synchronous sessions is encouraged (chat & audio). Our main learning online environment is Canvas, but we will also use other class participation tools (e.g. diagrams.net, mentimeter, padlet, etc.).

Estimated number of weekly hours students should dedicate to this class (preparation activities + class activities): 7-9 hours/week (4-6 hours for preparation + 3 hours of synchronous/asynchronous class activities)

Required and Recommended Reading:

Required:

- Watt, A. and Eng, N. (2019). Database Design. 2nd Edition. BCcampus. [[Freely available at BCcampus Open Education as an open textbook](#)] OR Coronel, C. and Morris, S. (2019). *DATABASE SYSTEMS: Design, Implementation, and Management*. 13th Edition. Cengage Learning. [[Available from the publisher as an eBook for CAD\\$74.95](#)]
- D.J. Solove (2004). The Rise of the Digital Dossier. In: *The Digital Person: Technology and Privacy in the Information Age*. New York: New York University Press. Chapter 2. Pp 13-26. [Available [online](#) or as an eBook from [UBC Library](#)]
- Misra, T. (2018). The Rise of 'Digital Poorhouses'. Bloomberg CityLab. Available at: <https://www.bloomberg.com/news/articles/2018-02-06/when-criminalizing-the-poor-goes-high-tech>

Recommended:

- Khan Academy's Unit: Intro to SQL Querying and managing data at <https://www.khanacademy.org/computing/computer-programming/sql>
- W3schools.com's "SQL Tutorial" at <https://www.w3schools.com/sql/>
- MySQL 8.0 Reference Manual at <https://dev.mysql.com/doc/refman/8.0/en/>
- MySQL Workbench Manual at <https://dev.mysql.com/doc/workbench/en/>



Course Assignments:

Assignment Name	Due Date	Weight
Review Questions (RQs)	Various dates	10%
Database Design Concepts Midterm	October 13 th	20%
Term Project – Part I (DB initial study & Conceptual Design)	October 27 th	20%
Peer Evaluations	November 3 rd	5%
Term Project – Part II (Logical Design)	November 17 th	10%
SQL Exam	November 24 th	20%
Term Project – Part III (SQL Queries & Physical Design)	December 1 st	10%
Online participation	Throughout	5%

Course Schedule [week-by-week]:

Session	Topic	Assigned Reading	Assignment
Session 1 Sep. 8 th	Introduction to Database Systems	Watt & Eng Ch. 1, 2, 3 & 14 or Coronel & Morris Ch. 1	RQ # 1
Session 2 Sep. 15 th	Database Design Process	Watt & Eng Ch. 13 or Coronel & Morris Ch. 9	
Session 3 Sep. 22 nd	Relational Database Model	Watt & Eng Ch. 4, 5, 6 & 7 or Coronel & Morris Ch. 2 & 3	RQ # 2
Session 4 Sep. 29 th	Conceptual Design: Entity Relationship Modeling (ERM)	Watt & Eng Ch 8, 9 & 10 Coronel & Morris Ch. 4	
Session 5 Oct. 6 th	Conceptual Design: Extended ERM & Normalization	Watt & Eng Ch 11 & 12 or Coronel & Morris Section 5-1 & Ch. 6	RQ # 3
Session 6 Oct. 13 th	Database Design Concepts Midterm		Database Design Concepts Midterm
Session 7 Oct. 20 th	Design Studio – Work on Term Project – Part I		
Session 8 Oct. 27 th	Logical Design: SQL queries (I) Database Definition	Watt & Eng Ch 15 or Coronel & Morris Sections 8-1 to 8-4 & 7-1 to 7-2	Term Project – Part I is due
Session 9 Nov. 3 rd	Logical Design: SQL queries (II) SELECT	Watt & Eng Ch 15 or Coronel & Morris Ch. 7: 7.3 to 7.6	Peer Evaluations
Session 10 Nov. 10 th	Logical Design: SQL queries (III) JOIN, Functions & GROUP BY	Watt & Eng Ch 15 or Coronel & Morris Sections 7-7, 7-9 to 7-11, 8-5 & 8-7	RQ # 4
Session 11 Nov. 17 th	Logical Design: SQL queries (IV) Relational operators, Views & Stored Procedures	Coronel & Morris Sections 7-10, 8-5 & 8-7	Term Project – Part II is due
Session 12 Nov. 24 th	Trends and Issues in DBMS	Coronel & Morris Ch.13 Misra (2018) Solove (2004)	SQL Exam
Session 13 Dec. 1 st	Online Showcase of Term Projects/Video Demos		Term Project – Part III is due



Attendance: Regular attendance is expected of students in all scheduled synchronous sessions. Students who neglect their academic work and assignments may be excluded from final examinations. Students who are unavoidably absent because of illness or disability should report to the instructor as soon as possible. Any request for academic concession must be clearly expressed (see Academic Concession below).

Evaluation: All assignments will be marked using the evaluative criteria given on the [iSchool web site](#). Assignments have to be delivered by the expected due date. Late assignments within a week of the expected deadline will be received and penalized with deduction of points as a late assignment penalty. After one week of the expected deadline, late assignments will not be accepted or graded unless you have been granted an explicit exception by the instructor.

Required Materials: There are no costs associated to required materials in this class, unless you decide to buy Coronel & Morris' eBook (CAD\$75). However, since there is an open content alternative to this eBook, it is up to students to decide if they want to pay for it. Software manuals and software applications used for this class are all freely available (i.e. open content and open source software). It is the responsibility of students to download and install MySQL and MySQL workbench, which is the required software for this class. Support for installation and troubleshooting of the required software is provided by the iSchool through the IOTA team and the Peer Technology Advisors.

Academic Concession: If you miss marked coursework for the first time (assignment, exam, presentation, participation in class) and the course is still in-progress, **speak with me immediately** to find a solution for your missed coursework. Any concessions that will result in a change to the student record (such as late withdrawal from the course) will be referred to the Faculty of Graduate and Postdoctoral Studies for evaluation. If this is not the first time you have requested concession or classes are over, please consult the [Faculty of Graduate and Postdoctoral Studies' webpage on academic concession](#), and then contact me where appropriate.

Policies and Resources to Support Student Success: UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available here (<https://senate.ubc.ca/policies-resources-support-student-success>)

Academic Integrity: The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply when the matter is referred to the Office of the Dean. Careful records are kept in order to monitor and prevent recurrences. A more detailed description of academic integrity, including the University's policies and procedures, may be found in the [UBC Calendar: Student Conduct and Discipline](#).



Academic Accommodation for Students with Disabilities: Academic accommodations help students with a disability or ongoing medical condition overcome challenges that may affect their academic success. Students requiring academic accommodations must register with the [Centre for Accessibility](#) (previously known as Access & Diversity). The Centre will determine that student's eligibility for accommodations in accordance with [Policy LR7: Accommodation for Students with Disabilities \(Joint Senate and Board Policy\)](#). Academic accommodations are not determined by your instructors, and instructors should not ask you about the nature of your disability or ongoing medical condition, or request copies of your disability documentation. However, your instructor may consult with the Centre for Accessibility should the accommodations affect the essential learning outcomes of a course.

Conflicting Responsibilities: UBC recognizes that students may occasionally have conflicting responsibilities that affect their ability to attend class or examinations. These may include: representing the University, the province or the country in a competition or performance; serving in the Canadian military; or observing a religious rite. They may also include a change in a student's situation that unexpectedly requires that student to work or take responsibility for the care of a family member, if these were not pre-existing situations at the start of term.

Students with conflicting responsibilities have a duty to arrange their course schedules so as to avoid, as much as possible, any conflicts with course requirements. As soon as conflicting responsibilities arise, students must notify either their instructor(s) or their Faculty Advising Office (e.g. Arts Academic Advising), and can request [academic concession](#). Instructors may not be able to comply with all such requests if the academic standards and integrity of the course or program would be compromised. Varsity student-athletes should discuss any anticipated and unavoidable regular-season absences with the instructor at the start of term, and provide notice of playoff or championship absences in writing as soon as dates are confirmed.

Religious observance may preclude attending classes or examinations at certain times. In accordance with the [UBC Policy on Religious Holidays](#), students who wish to be accommodated for religious reasons must notify their instructors in writing at least two weeks in advance. Instructors provide opportunity for such students to make up work or examinations missed without penalty.

Canvas: UBC's e-learning system <https://canvas.ubc.ca> will be used to organize class resources, slides, and additional material. It will also be used to manage assignments, grades, and in-class exercises. Make sure that you check the course space in Canvas constantly for announcements, resources, assignments, feedback and grades.