



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 (3) Database Design

<b>Program:</b>	MLIS, MAS, Dual MAS/LIS
<b>Term:</b>	Winter Session 2022/23 Term 1
<b>Course Schedule:</b>	Thursday from 2:00 pm to 4:50 pm
<b>Location:</b>	Terrace Lab
<b>Instructor:</b>	Dr. Richard Arias-Hernandez (He/Him/His)
<b>Office location:</b>	Zoom or IKBLC 484
<b>Office hours:</b>	By email appointment
<b>E-mail address:</b>	<a href="mailto:richard.arias@ubc.ca">richard.arias@ubc.ca</a>
<b>Learning Management Site:</b>	<a href="https://canvas.ubc.ca/">https://canvas.ubc.ca/</a>

**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.

### Course Learning Outcomes (CLOs):

#### 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:** Combination of lectures, exercises, group exercises, etc. and outside of class activities (e.g., videos of walkthroughs, exercises, MySQL tutorials, SQL tutorials, readings, etc.). Participation in class activities and engagement with assigned readings and tutorials is required. Individual completion of class exercises is also required. Our main learning online environment is Canvas, but we will also use other class participation tools (e.g., diagrams.net, Google spreadsheets, 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 class activities)

## Required and Recommended Reading:

### Required:

- Coronel, C. and Morris, S. (2022, 2018, 2016, 2014, 2011). *DATABASE SYSTEMS: Design, Implementation, and Management*. 14<sup>th</sup>, 13<sup>th</sup>, 12<sup>th</sup>, 11<sup>th</sup>, or 10<sup>th</sup> Edition. Cengage Learning. Any of these editions work for this course. There is no need to buy the expensive latest edition of the book since multiple options for free access are available. Several copies of the book are available outside of the instructor's office (IKBLC 484) for local consultation only, please do not remove these copies from the iSchool. There is also one copy of the 13<sup>th</sup> and one of the 10<sup>th</sup> Edition of the book on reserve at the MAA Library at the Barber Centre.
- Supernant, K. (2020). Developing a Culturally Appropriate Digital Archive for Métis Archaeological Heritage. YouTube Video. 50:50 minutes. November 13th, 2020. Available at: <https://www.youtube.com/watch?v=m7eAzRlxCES&feature=youtu.be>. Part of the UBC "Working Tools Seminar Series: Community-Facing Data Management Platforms for Indigenous-University Partnerships." [<https://indigenousscience.ubc.ca/working-tools>]

### 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	CLOs
Review Questions (RQs)	Various dates	10%	1, 7
Database Design Concepts Midterm	October 13 <sup>th</sup>	20%	1, 3, 4,5
Term Project – Part I (DB initial study & Conceptual Design)	October 20 <sup>th</sup>	20%	2, 3, 4
Peer evaluations	October 27 <sup>th</sup>	2.5%	4
Term Project – Part II (Logical Design)	November 17 <sup>th</sup>	10%	4, 5, 6
SQL Exam	November 24 <sup>th</sup>	20%	7
Term Project – Part III (SQL Queries & Physical Design)	December 1 <sup>st</sup>	10%	7
Online participation – In-class exercises	Throughout	7.5%	All

**Course Schedule [week-by-week]:**

Week	Date	Topic	Assigned Reading	Assignment
1	Sep. 8 <sup>th</sup>	Introduction to Database Systems	Coronel & Morris Ch. 1 or Watt & Eng Ch. 1, 2, 3 & 14	<b>RQ # 1</b>
2	Sep. 15 <sup>th</sup>	Database Design Process	Coronel & Morris Ch. 9 (PDF available on Canvas)	
3	Sep. 22 <sup>nd</sup>	Relational Database Model	Coronel & Morris Ch. 2 & 3 or Watt & Eng Ch. Ch 4, 5, 7, 8, 9 & 10	<b>RQ # 2</b>
4	Sep. 29 <sup>th</sup>	Conceptual Design: Entity Relationship Modeling (ERM)	Coronel & Morris Ch. 4 (PDF available on Canvas)	
5	Oct. 6 <sup>th</sup>	Conceptual Design: Extended ERM & Normalization	Coronel & Morris Section 5-1 & Ch. 6 or Watt & Eng Ch 11 & 12	<b>RQ # 3</b>
6	Oct. 13 <sup>th</sup>	Database Design Concepts Midterm		<b>Database Design Concepts Midterm</b>
7	Oct. 20 <sup>th</sup>	Logical Design: SQL queries (I) Database Definition	Coronel & Morris Sections 7-1 & 8-1 to 8-4 or Watt & Eng Ch 15	<b>Term Project – Part I is due</b>
8	Oct. 27 <sup>th</sup>	<b>ONLINE CLASS:</b> Logical Design: SQL queries (II) SELECT	Coronel & Morris Sections 7-2 to 7-4 & 7-5 to 7-7 or Watt & Eng Ch 16	<b>Peer Evaluations</b>
9	Nov. 3 <sup>rd</sup>	Logical Design: SQL queries (III) JOIN & Functions	Coronel & Morris Sections 7-4, 7-9 & 7-11 or Watt & Eng Ch 16	<b>RQ # 4</b>
10	Nov. 10 <sup>th</sup>	<b>Midterm Break Nov. 9<sup>th</sup> – 11<sup>th</sup></b>		
11	Nov. 17 <sup>th</sup>	Logical Design: SQL queries (IV) UNION, Views & Stored Procedures	Coronel & Morris Sections 7-10, 8-5 & 8-7b	<b>Term Project – Part II is due</b>
12	Nov. 24 <sup>th</sup>	Trends and Issues in DBMS	Supernant, K. (2020)	<b>SQL Exam</b>
13	Dec. 1 <sup>st</sup>	Online Showcase of Term Projects		<b>Term Project – Part III is due</b>



**Attendance:** Regular attendance is expected of students in all scheduled 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 section 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 (About CAD\$75). However, the instructor has provided plenty of options for accessing the book freely at UBC. 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 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.

Religious observances of any student and cultural traditions of First Nations, Métis, and Inuit students may preclude attending classes or examinations at certain times. In accordance with the [UBC Policy on Religious Observances and for the Cultural Observances of First Nations, Métis, and Inuit Students](#), students who wish to be accommodated for these 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.

**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



THE UNIVERSITY OF BRITISH COLUMBIA

School of Information  
Faculty of Arts

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 misconduct includes cheating, plagiarism, and self-plagiarism <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,959> (§7)

**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.

**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.