

COURSE INFORMATION

Course title:	Database Applications in Business Systems		
Course code:	BAIT 580A	Credits:	1.5
Session, term, period:	2021W, Period 3	Class location:	HA 132
Section(s):	BA1	Class times:	Tues/Thu 10 AM – 12 PM (PST)
Course duration:	Jan 04 - Feb 05, 2022	Pre-requisites:	N/A
Division:	BAIT	Co-requisites:	N/A
Program:	MBAN		

INSTRUCTOR INFORMATION

Instructor:	Gittu George, Ph.D		
Phone:		Office location:	Virtual
Email:	ggeorg02@cs.ubc.ca	Office hours:	Wed 2 PM – 3 PM (Zoom)
Teaching assistant:	Daniel Ramandi, Colby DeLisle, Elisa Hu		
Office hours:	TBD		

COURSE DESCRIPTION

Good business decisions rest on well structured data and robust analytics. Increasingly, businesses are challenged with combining data produced in-house with external data, such as financial data, weather information or census reports, to fully account for a complex and evolving business landscape. This course will build on prior work with databases to help participants understand how decisions about database structure, and the questions we ask about data can inform business analytics.

The course will cover setting up various databases in cloud, interaction with cloud systems, data models, database optimization using indexes and query optimizers, to help speed-up business-critical analysis, data warehousing, and showcase analytic workflows that highlight the utility of databases in modern business applications. We will also explore other NoSQL databases like graph databases and document databases, and how such tools can be used to provide value in the world of business informatics and analysis.

COURSE FORMAT

This will be a face-to-face session during the scheduled class times. Class time will be used to work through examples and discuss issues and topics related to the weeks course material.

Courses will be delivered using written material with supplemental video examples, along with code examples.

LEARNING OBJECTIVES

By the end of this course, students will be able to:

- Explain key concepts with regards to databases in a business setting.
- Understanding cloud-based systems and being capable in using them for your project.

- Apply knowledge of SQL and database applications to connect to databases and perform basic analytics
- Evaluate database performance and data needs with regards to specific analytics questions
- Create analytic reports using data from multiple sources to clearly answer specific questions that are of interest from a business perspective
- Distinguish various NoSQL databases and ability to use it in your business setting.

ASSESSMENTS

Summary

Component	Weight
Assignments	50%
Group project	40%
Class participation	10%
Total	100%

Details of Assessments

Through the course of the class there will be three assignments for class participants to complete. Each assignment will be worth 10% of the total mark. A group project will be evaluated worth 40% of the course. This group assignment will assess the participants' ability to assess data suitability, define appropriate constraints and examine the role of indexing, while clearly documenting and presenting analytic workflows using the data resource. The group project will include an assessment for the overall group presentation, and individual team member participation.

There will be no midterm or final exam.

Class participation will be evaluated based on participation in class hours, online communication (through Canvas) and contributions to the course materials.

LEARNING MATERIALS

Required: Online reading materials and links will be provided.

Estimated cost of required materials: \$0

COURSE-SPECIFIC POLICIES AND RESOURCES

Missed or late assignments, and regrading of assessments

Late submissions will be accepted with penalty of up to 10% per day.

Academic Concessions

If extenuating circumstances arise, please contact the RHL Graduate School program office as early as reasonably possible, and submit an [Academic Concession Request & Declaration Form](#). If an academic

concession is granted during the course, the student will be provided options by RHL, or by the instructor in consultation with RHL, per [UBC's policy on Academic Concession](#).

Other Course Policies and Resources

A significant component of answer sets for this course relies on programmatic code. In some cases solutions to problems can be found online, using resources such as StackOverflow, Reddit or other online communities. It is expected that a participant cite the URL of the source if such code represents more than two lines of a course participant's submission. This citation can be placed as a comment in the code itself.

Failure to properly cite sources will be penalized based on the amount of code used without citation, and the importance of that code for the overall result.

Code Plagiarism

Code plagiarism falls under the UBC policy for Academic Misconduct. Students must correctly cite any code that has been authored by someone else or by the student themselves for other assignments.

Cases of "reuse" may include, but are not limited to:

- the reproduction (copying and pasting) of code with none or minimal reformatting (e.g., changing the name of the variables)
- the translation of an algorithm or a script from a language to another
- the generation of code by automatic code-generations software

An "adequate acknowledgement" requires a detailed identification of the (parts of the) code reused and a full citation of the original source code that has been reused.

Students are responsible for ensuring that any work submitted does not constitute plagiarism. Students who are in any doubt as to what constitutes plagiarism should consult their instructor before handing in any assignments.

POLICIES APPLICABLE TO COURSES IN THE ROBERT H. LEE GRADUATE SCHOOL

Attendance

Excepting extenuating circumstances, students are expected to attend 100% of their scheduled class hours. Absent students limit their own academic potential, and that of their classmates, and cause unnecessary disruption to the learning environment. Students missing more than 20% of the total scheduled class hours for a course (including classes held during the add/drop period) without having received an academic concession will be withdrawn from that course. Withdrawals, depending on timing, could result in a "W" or an "F" standing on the transcript.

COVID-19 Policies for Attendance & Academic Concessions:

If a student feels unwell, they should stay home and send a courtesy email to each impacted instructor and cc their program manager. The student should also submit an [Academic Concession Request & Declaration Form](#).

If a student suspects possible COVID-19 infection, they should use the BC Ministry of Health's [self-assessment tool](#), to help determine whether further assessment or testing for COVID-19 is recommended.

If a student is required to self-isolate (e.g., while waiting for test results), they should follow the steps above (stay home, email instructor(s) and program manager, submit an [Academic Concession Request & Declaration Form](#), and follow BC Health Guidance.

Students who are required to quarantine, should get in touch with their Program Manager to discuss the possibility of academic concessions for each impacted course. The Program Manager will work closely with your instructors to explore options for you to make up the missed learning.

COVID-19 Safety in the Classroom:

Masks: Masks are **required** for all indoor classes, as per the BC Public Health Officer orders. For our in-person meetings in this class, it is important that all of us feel as comfortable as possible engaging in class activities while sharing an indoor space. For the purposes of this order, the term "masks" refers to medical and non-medical masks that cover our noses and mouths. Masks are a primary tool to make it harder for COVID-19 to find a new host. You will need to wear a medical or non-medical mask for the duration of our class meetings, for your own protection, and the safety and comfort of everyone else in the class. You may be asked to remove your mask briefly for an ID check for an exam, but otherwise, your mask should cover your nose and mouth. Please do not eat in class. If you need to drink water/coffee/tea/etc, please keep your mask on between sips. Students who need special accommodation are asked to discuss this with the program office.

Seating in class: To reduce the risk of COVID-19 transmission, please sit in a consistent area of the classroom each day. This will minimize your contacts and will still allow for the pedagogical methods planned for this class to help your learning.

Visit the following website for the most recent updates regarding COVID-19 protocol on campus:
<https://students.ubc.ca/campus-life/returning-to-campus>

Punctuality

Students are expected to arrive for classes and activities on time and fully prepared to engage. Late arrivals may be refused entry at the discretion of the instructor or activity lead. Students arriving later than halfway through a scheduled class will be treated as absent for that class.

Electronic Devices

Devices such as laptops, tablets, and cell phones are not permitted to be used in class unless directed by the instructor for in-class activities. Students who do not follow the School's policy in this regard may be required to leave the room for the remainder of the class, so that they do not distract others. Research shows that students' use of laptops in class has negative implications for the learning environment, including reducing their own grades and the grades of those sitting around them.

Citation Style

Please use the American Psychological Association (APA) reference style to cite your sources.

Details of the above policies and other RHL Policies are available at:

<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,199,506,1625>

UNIVERSITY POLICIES AND RESOURCES

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 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 on the UBC Senate website at <https://senate.ubc.ca/policies-resources-support-student-success>.

Respect for Equity, Diversity, and Inclusion

The UBC Sauder School of Business strives to promote an intellectual community that is enhanced by diversity along various dimensions including status as a First Nation, Metis, Inuit, or Indigenous person, race, ethnicity, gender identity, sexual orientation, religion, political beliefs, social class, and/or disability. It is critical that students from diverse backgrounds and perspectives be valued in and well-served by their courses. Furthermore, the diversity that students bring to the classroom should be viewed as a resource, benefit, and source of strength for your learning experience. It is expected that all students and members of our community conduct themselves with empathy and respect for others.

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 if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

COPYRIGHT

All materials of this course (course handouts, lecture slides, assessments, course readings, etc.) are the intellectual property of the instructor or licensed to be used in this course by the copyright owner. Redistribution of these materials by any means without permission of the copyright holder(s)

constitutes a breach of copyright and may lead to academic discipline and could be subject to legal action. Any lecture recordings are for the sole use of the instructor and students enrolled in the class. In no case may the lecture recording or part of the recording be used by students for any other purpose, either personal or commercial. Further, audio or video recording of classes are not permitted without the prior consent of the instructor. Students may not share class Zoom links or invite others who are not registered to view sessions.

ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the x^wməθk^wəyəm (Musqueam) people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.

COURSE SCHEDULE

(Subject to change with class consultation)

Class	Synchronous Or Asynchronous	Date	Topic	Readings or Activities	Assessments due
1	Synchronous	January 4	Introduction to Big Data Analytics	Setting up AWS and databases	
2	Synchronous	January 6	Introduction to cloud computing	Linking Jupyter to RDS (Postgres) (assignment)	
3	Synchronous	January 11	Data Modeling for Business Applications	Setting up schema and tables	
4	Synchronous	January 13	SQL for Visualization, constraints & cleaning	From question to data to answers	Setting up AWS & Linking Jupyter to RDS (Postgres)
5	Synchronous	January 18	Faster SQL for Visualization	Indexes and Explain	
6	Synchronous	January 20	(de)Normalization & Data Warehousing	Time trials and considerations for BI	
7	Synchronous	January 25	Introduction to NoSQL and Graph Databases	Making Connections with Twitter	Data pipelines with Postgres (DDL)
8	Synchronous	January 27	Querying Graph Databases	Asking Graph Questions	
9	Synchronous	February 1	Modeling Data with Graphs	Asking Graph Questions	
10	Synchronous	February 3	Class Conclusions/Special Topics	TBA	Setting up & asking questions to Graph Database