

COURSE INFORMATION

Course title:	Database Applications in Business Systems		
Course code:	BAIT 580A	Credits:	1.5
Session, term, period:	2020W, T2, Period 3	Class location:	Virtual
Section(s):	BA1	Class times:	Tues/Thu 2 – 4 PM (PST)
Course duration:	March 8 – April 17, 2021	Pre-requisites:	N/A
Division:	BAIT	Co-requisites:	N/A
Program:	MBAN		

INSTRUCTOR INFORMATION

Instructor:	Simon Goring, Ph.D		
Phone:		Office location:	Virtual
Email:	goring@wisc.edu	Office hours:	Monday 11am – 12pm (Zoom)

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 data models, database optimization using indexes and query optimizers, to help speed-up business-critical analysis, data warehousing, and, combined with Python and R, showcase analytic workflows that highlight the utility of databases in modern business applications. We will also explore the use of big data tools such as Spark 2.0, and how such tools can be used to provide value in the world of business informatics and analysis.

COURSE FORMAT

We will use Zoom to have our classes 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:

- Understand key concepts with regards to databases in a business setting.
- Apply knowledge of SQL and database applications to connect to databases and perform basic analytics
- Analyze data needs with regards to business-critical questions and match these needs to existing (and openly available) data products
- 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.

ASSESSMENTS

Summary

<u>Component</u>	<u>Weight</u>
Assignments	50%
Group project	40%
Class participation	<u>10%</u>
Total	<u>100%</u>

Details of Assessments

Through the course of the class there will be four 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](https://webforms.sauder.ubc.ca/academic-concession-rhlee) <https://webforms.sauder.ubc.ca/academic-concession-rhlee>. 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.

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

During online lectures, students are not permitted to use any electronic devices other than the primary one used for attending the online lecture (e.g. laptop or desktop). Only Zoom should be open during the online lecture unless an instructor advises the use of another program/website for an in-class activity. Feedback from students indicates that personal devices are the number one distraction from effective learning and participation in the online learning environment.

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.

Academic Freedom and Students Studying from Outside Canada

During this pandemic, the shift to online learning has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but is not limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and historical or current geopolitical controversies. If you are a student living abroad, you will be subject to the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you. UBC is strongly committed to academic freedom, but has no control over foreign authorities (please visit <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0> for an articulation of the values of the University conveyed in the Senate Statement on Academic Freedom). Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a

course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses. For further information and support, please visit: <http://academic.ubc.ca/support-resources/freedom-expression>

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.

Online teaching tool & Requirements

This course will be taught using Zoom for synchronous classes and office hours.

For this course, you are required to use a Zoom account during synchronous classes and office hours. If you do not have a Zoom account, you can create one here: <https://zoom.us/signup>. Note: creating a Zoom account requires that you provide a first name, last name, and email address to Zoom. For privacy purposes, you may consent to using your existing email address and your real name. Alternatively, if you prefer, you may sign up using an alternative email address and an anonymized name that does not identify you (i.e. Jane Doe, jane.doe@email.com). If you have trouble creating an account, or accessing a Zoom session, please contact CLCHelp@sauder.ubc.ca. You will be required to provide the email address associated with your Zoom account in a Canvas quiz for identification purposes.

To help replicate the classroom experience, make sessions more dynamic and hold each person accountable, both students and instructors are required to have their cameras on during Zoom sessions. Students who require an accommodation with regard to the "camera on" requirement must contact their instructors in advance of the first class to discuss options. As professional graduate students, students are expected to conduct themselves professionally by joining sessions on time, muting mics when not speaking, refraining from using any other technology when in-session, attending in business casual dress (at a minimum), and participating from a quiet environment. Content from synchronous sessions will be selectively recorded per instructor discretion and made available to students on Canvas for a maximum duration of the course length. This is done to allow students the opportunity to return to lecture content to solidify learnings.

COURSE SCHEDULE

(Subject to change with class consultation)

Class	Synchronous Or Asynchronous	Date	Topic	Readings or Activities	Assessments due
1	Synchronous	March 9	Introduction to Big Data Analytics	Connecting analytics and databases	
2	Synchronous	March 11	Data Modeling for Business Applications	Linking Jupyter to Postgres (assignment)	
3	Synchronous	March 16	SQL for Visualization	From question to data to answers.	Linking Jupyter to Postgres
4	Synchronous	March 18	Constraints & Cleaning at Scale	Error, artifact and process	
5	Synchronous	March 23	Faster SQL for Visualization	Indexes and Explain	
6	Synchronous	March 25	(de)Normalization & Data Warehousing	Time trials and considerations for BI	Data pipelines with Postgres (DDL)
7	Synchronous	March 30	NoSQL and Graph Databases	Making Connections with Twitter	
8	Synchronous	April 1	Modeling Data with Graphs	Asking Graph Questions	Time Trials for Complex Data
9	Synchronous	April 6	Combining data resources	Using the Best Tool for the Job	
10	Synchronous	April 8	Ethics in Business Data Analytics	TBA	Six degrees of Sampling