

COURSE INFORMATION

Course title:	Applications of Statistics in Management		
Course code:	BABS 550	Credits:	1.5
Session, term, period:	2022S1	Class location:	HA 132
Section(s):	DD1, DD2	Class times:	DD1 Tue/Thu 2-4pm DD2 Tue/Thu 4-6pm DDT Thu 12:30-2pm (optional)
Course duration:	June 6 – July 15, 2022		
Division:	Operations and Logistics		
Program:	MM Dual		

INSTRUCTOR INFORMATION

Instructor:	Julia Yan		
Phone:	604 822 0322	Office location:	HA 468
Email:	julia.yan@sauder.ubc.ca	Office hours:	By appointment

Teaching assistant: DD1 Cindy Chen, DD2 Julia Peng
 Email: cindy.chen@sauder.ubc.ca, xizipeng0525@gmail.com

COURSE DESCRIPTION

We live in an increasingly data-rich world. This course will discuss how to use data to make good business decisions, involving some of the more common statistical models you may encounter in your careers. The emphasis will be on (i) being a critical and informed consumer of statistics, and (ii) applying the material in managerial settings. All models will be illustrated with applications and real data when possible.

COURSE FORMAT

The course is structured as ten lectures. Some lectures require you to think about and complete a review question prior to the class.

There is an optional tutorial on Thursdays at lunchtime, led by the TAs.

There are several assessments to help you practice the material prior to the exam.

LEARNING OBJECTIVES

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

1. Identify which statistical tools are appropriate for various real-world scenarios, and recognize the limitations of these tools.
2. Apply basic statistical tools (including hypothesis tests, confidence intervals, and regression models) to interpret data and reach reasonable conclusions.

ASSESSMENTS

Summary

<u>Component</u>	<u>Weight</u>
Prep Questions (4)	10%
Clicker Questions (10)	5%
Homework (3)	35%
Final Exam	45%
Attendance/Participation	<u>5%</u>
Total	<u>100%</u>

Details of Assessments

Prep Questions:

A number of lectures have a brief question due at the beginning of class (posted and submitted on Canvas), which are intended to help you review the material that will be needed for class. They must be completed individually.

Clicker Questions:

A number of lectures will have a brief multiple-choice question at the beginning of class and another at the end of class. Any form of participation will receive half credit, and the correct answer will receive full credit.

Homework:

There are three homework assignments, each of which will be posted at least one week prior to the due date on Canvas. You are encouraged to work with classmates to enhance your learning experience. This means you may discuss problems and solution approaches. *However, your answers must represent your own work and must be in your own words.*

Exam:

The final exam (date/time TBD) covers all material from class: lecture notes, prep questions, clicker questions, and homework. Students must take the exam at the scheduled time unless arrangements have been made with the RHL Office.

Attendance and Participation:

Students who display repeated tardiness and/or absences will lose 0.5% for each late arrival and 1% for each missed class.

LEARNING MATERIALS

Slides will be posted on Canvas.

There is a free, optional textbook available at this link: <https://www.openintro.org/book/os/>

Most computations can be done in Excel using the Analysis Toolpak. See Canvas for Excel instructions.

COURSE-SPECIFIC POLICIES AND RESOURCES

Missed or late assignments, and regrading of assessments

Late submissions will not be accepted and will receive a grade of zero.

Regrade requests should be submitted within 72 hours of grades being posted, by email to the instructor. Grades can go up or down following a regrade request.

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](#).

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	Date	Topic	Optional Readings	Assessments due
1	June 7	Introduction. Fundamentals of data (types, visualization, summary statistics) and probability (Normal distribution, z-scores).	OpenIntro Ch 1.1, 1.2, 2.1, 2.2, 3.1, 3.5, 4.1	
2	June 9	Confidence Intervals. Central limit theorem. One- and two-sample confidence intervals. Sample size.	OpenIntro Ch 1.3, 3.3, 5.1, 5.2, 6.1	Prep Q1 due at beginning of class
3	June 14	Hypothesis Tests (Proportions). One-sample and two-sample z-tests.	OpenIntro Ch 5.3, 6.1, 6.2	Prep Q2 due at beginning of class
4	June 16	Hypothesis Tests (Means). One-sample and two-sample t-tests. Challenges of hypothesis testing.	OpenIntro Ch 7.1, 7.2, 7.3, 7.5	Prep Q3 due at beginning of class HW1 due Sunday, June 19, at 11:00pm
5	June 21	Simple Linear Regression. Quantitative response variables. Correlation, interpretability, residuals, R-squared.	OpenIntro Ch 8.1, 8.2, 8.4	
6	June 23	Multiple Linear Regression. Parsimony, multicollinearity, overfitting. Hypothesis testing for regression and variable selection.	OpenIntro Ch 8.4, 9.1, 9.2	HW2 due Sunday, June 26, at 11:00pm
7	June 28	More Regression. Variable transformations. Introduction to logistic regression.	OpenIntro Ch 8.3, 9.3	
8	June 30	Logistic Regression. Binary response variables. Interpretability, accuracy.	OpenIntro Ch 9.5	Prep Q4 due at beginning of class
9	July 5	Statistics in Practice. Ethics and case study.		
10	July 7	Review Session. Review problems, questions & answers.		HW3 due Friday , July 8 at 11:00pm
Exam	TBD			Exam