

COURSE INFORMATION

Course title:	Application of Statistics in Management		
Course code:	BABS 550	Credits:	1.5
Session, term, period:	2021W2	Class location:	Zoom
Section(s):	821	Class times:	Shanghai time: 8am-2:30pm Vancouver time: 4pm-10:30pm
Course duration:	Shanghai time: Jan 8, 9, 15, 2022, Vancouver time: Jan 7, 8, 14, 2022,	Pre-requisites:	n/a
Division:	Operations and Logistics	Co-requisites:	n/a
Program:	IMBA		

INSTRUCTOR INFORMATION

Instructor:	Sha Liao, Ph.D.		
Phone:	604-822-0973	Office location:	Zoom
Email:	sha.liao@sauder.ubc.ca	Office hours:	Shanghai time: Jan 14, 10:00-11:00 pm Jan 22, 10:00-11:00 pm Vancouver time: Jan 13, 12:00-1:00 pm Jan 21, 12:00-1:00 pm

COURSE DESCRIPTION

This course covers basic descriptive and inferential statistic tools, the fundamental concepts and theories in statistics, the application of statistical tools in assisting business decisions, and the practical skills of analyzing real data using Microsoft Excel.

The emphasis will be on applying this material in managerial settings, not on the underlying mathematics. All techniques will be illustrated with applications. All computations can be done with Microsoft Excel.

This course has four main objectives:

- to bridge the gap from descriptive to inferential statistics
- to provide an overview of basic statistical inference
- to cover applied aspects of multiple regression techniques
- to learn effective communication of statistical analysis.

COURSE FORMAT

Before Class: Work on Preview Exercises 1-5

First, Second Day of Class: Attend Class; work on quiz; computer experiment

Third Day of Class: computer experiment, group presentation;

After Class: Finish Group Assignment and Finish Preview Exercise 1-5.

LEARNING OBJECTIVES

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

- Understand basic concepts and theories in Statistics;
- Learn descriptive and inferential statistic tools;
- Develop statistic models to analyze practical problems
- Analyze real data using statistic software such as Excel and R

ASSESSMENTS

Summary

<u>Component</u>	<u>Weight</u>
Preview Exercises	10%
In-class Quizzes	10%
Presentation	10%
Assignment	10%
Final exam	50%
Class participation	<u>10%</u>
Total	<u>100%</u>

Details of Assessments

The course evaluation will be based on five preview exercises on Canvas (10%), in-class quizzes (10%), in-class team presentation (10%), team-based post-lecture assignment, an open-book final exam (50%), and class participation (10%) (a total of 100%).

Preview Exercises: I have created five preview exercise sets on canvas. You are required to finish the five preview exercises before the final exam. That being said, it helps if you can start working on them before the class. You do not have to worry about making mistakes, because the grading will be based on whether you finished all exercises or not. The preview exercises are interactive with hints and solutions linked to the corresponding chapters in the textbook. You should fully utilize those resources which could be very helpful. My expectation is that you could try to finish most questions in Preview Exercises 1 and 2. For Preview Exercises 3-5, you can try to go over some of the easier questions.

Presentation: Each team presents one statistic problem related to your professional area. The team-based presentation will be on the last day and each team has no more than three members. The presentation must include:

- What information you want to infer from the data or what decision problem you face, i.e., background and motivation of the problem (~3 min)
- What data do you have or how would you collect the data? Your problem must have sufficient data. (~2 min)
- What statistical approaches you may think of to solve the question. This part does not have to contain all the details, just a rough idea. (~2 min)

Each team has 10 mins, including 8 mins presentation and 2 mins for questions and discussions.

Assignment: The assignment questions and accompanying Excel spreadsheet with the data sets will be posted on Canvas. You will have time until the next module to complete and hand in the work (at the

final exam in this course). You could form teams of no more three members and each team only need to submit one assignment (written or printed, no electronic version will be accepted) on the exam date.

Final exam: Final exam will be released on Jan 23rd 9 am (Shanghai time) and will be due in 2 hours, that is Jan 23rd 11 am (Shanghai time). The exam will be open notes and open book.

Students will be invigilated over Zoom.

Internet usage during the exam is not allowed except for (1) staying on Zoom for invigilation purpose (2) submitting the exam in the end through canvas. More details will be announced as the exam date approaches.

Participation: The participation grade is based on the instructor's evaluation of the quality of each student's progress and contribution during the course. Please be ready and willing to actively engage in the classroom learning experience. Students may be asked to explain concepts in class. The implicit assumption is that we all have something to contribute to the collective learning experience each day, and we all want to benefit from it. Class participation will be evaluated based on each student's comments and contributions to the class discussions. The participation grade will be assessed in the most objective way possible; I will keep track each of your contributions.

LEARNING MATERIALS

Reading Materials:

"Business Statistics" by Ken Black, Ignacio Castillo

Textbook, practice questions, and preview exercise are on UBC canvas.

Technology Requirements: Please use a computer with Excel installed. This course will use Microsoft Excel to illustrate topics using large data sets. We need the Data Analysis Toolpak in Excel. Both PC and Mac are adequate. Note that if you are using Excel 2011 on Mac, there is no Data Analysis Toolpak. All earlier and later versions of Excel (on PC and Mac) have the Data Analysis Toolpak. If you are using Excel 2011 on Mac, I suggest you update your Excel. Please refer the Appendix to load Data Analysis Toolpak in Excel.

As a UBC student, you can get the latest Office 365 free of charge through the following website
<https://it.ubc.ca/services/desktop-print-services/software-licensing/office-365-students>

Additional materials recommended but not required:

- Moore, DS & McCabe, GP. Introduction to the Practice of Statistics (any edition)
- Keller, Gerald (2012, 2009); Statistics for Management and Economics, 9th edition; South-Western Cengage Learning
- Statistics at Square One, Ninth Edition, T D V Swinscow, Revised by M J Campbell, University of Southampton, BMJ Publishing Group 1997
<http://resources.bmj.com/bmj/readers/statistics-at-square-one/>
- HyperStat Online Statistics Textbook:
<http://davidmlane.com/hyperstat/>

- Online Statistics: An Interactive Multimedia Course of Study
<http://onlinestatbook.com/>

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.

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>. 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.

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>

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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 encouraged to use a Zoom account during synchronous classes and office hours.

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)

Important: Please use a computer with Excel installed

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Class#	CLASS TOPICS	ACTIVITIES / READINGS	WHAT'S DUE
		Work on Preview Exercises	
Jan 8 (Shanghai time) Lecture 1	Introduction, Descriptive statistics		
Jan 8 (Shanghai time) Lecture 2	Central limit theorem, Confidence Interval		
Jan 9 (Shanghai time)	Hypothesis testing		

Lecture 3			
Jan 9 (Shanghai time) Lecture 4	Simple regression		
Jan 15 (Shanghai time) Lecture 5	Multiple regression		
Jan 15 (Shanghai time) Lecture 6	More regression, extension Group project		Group Presentation Slides
	Final Exam Shanghai time: Jan 23, 9-11 am Vancouver time: Jan 22, 5-7 pm		Preview Exercises

APPENDIX HOW TO LOAD THE ANALYSIS TOOLPAK IN EXCEL

The following instruction is from <https://support.office.com/en-us/article/load-the-analysis-toolpak-in-excel-6a63e598-cd6d-42e3-9317-6b40ba1a66b4>.

1. Click the File tab, click Options, and then click the Add-Ins category.

If you're using Excel 2007, click the Microsoft Office Button  , and then click Excel Options

2. In the Manage box, select Excel Add-ins and then click Go.

If you're using Excel for Mac, in the file menu go to Tools > Excel Add-ins.

3. In the Add-Ins box, check the Analysis ToolPak check box, and then click OK.

If Analysis ToolPak is not listed in the Add-Ins available box, click Browse to locate it.

If you are prompted that the Analysis ToolPak is not currently installed on your computer, click Yes to install it.