
BABS 550: Application of Statistics in Management
Master of Management (MM)
Course Outline

COURSE INFORMATION

Division: Operations & Logistics

Term/period: 2019W1 – Period 1

Instructor: Jonathan Berkowitz

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Office hours: TBD (see tutorial schedule below)

Section number: MM1

Course Duration: Sep. 3 - Oct. 12, 2019

Classroom location: HA 334 (Tutorials in HA 132)

Class meeting times: There is a make-up class on Fri. Sep. 27 to replace cancelled class on Tue. Oct. 1. All sessions run from 10 am to noon, in HA 334. Session dates are:

Week 1: Tue. Sep 3	Thu. Sep. 5
Week 2: Tue. Sep. 10	Thu. Sep. 12
Week 3: Tue. Sep. 17	Thu. Sep. 19
Week 4: Tue. Sep. 24	Thu. Sep. 26 (and Fri. Sep. 27, see Week 5)
Week 5: Fri. Sep. 27 (make-up class)	Thu. Oct. 3

Four optional tutorials: Thu. Sep. 12, 19, 26, Oct. 3: 12:00-1:30 pm (in HA 132).

Course website: Canvas

BRIEF COURSE DESCRIPTION

The objective of this course is to give you an understanding of how Statistics operates in Business and Commerce, and how essential the basic concepts are to modern business practice. You will learn thoroughly how to think about data, data analysis, statistical inference and model-building. This course will provide the knowledge necessary for you to apply the main techniques of statistics in a wide variety of circumstances, and will enable you to assess the legitimacy and significance of the wide variety of statistical reporting you will encounter in your career and life.

Emphasis will be on applying this material in managerial settings, rather than the underlying mathematics, so all techniques will be illustrated with applications. Computations will be done primarily with Microsoft Excel. As a consulting statistician in private practice, I will share many experiences and real-life examples. I will give you practical advice on which techniques really work and what shortcuts you can take.

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COURSE GOALS

To enhance comfort and competence with statistical principles.

To develop student expertise with concepts and tools of data utilization used in business decision-making.

To enhance student ability to communicate effectively about statistical analysis in a business context.

To introduce students to the principles of statistical modeling.

LEARNING OBJECTIVES

Students will be able to ...

- *Identify types of data*
- *Critically assess the validity of data sources*
- *Summarize data in tables and graphs*
- *Apply the principles of good graphing and appraise graphs in the literature*
- *Compute and interpret numerical summaries*
- *Assess bivariate relationships through scatterplots, correlation, crosstabs*
- *Use the normal curve to assess data distributions*
- *Use basic data transformations*
- *Construct and interpret basic confidence intervals*
- *Explain the logic of hypothesis testing and be able to interpret results*
- *Use one- and two-sample techniques of inference*
- *Recognize situations requiring statistical modeling*
- *Identify, build and validate regression models*
- *Choose the appropriate statistical tool from the collection of standard analytic methods*

COURSE MATERIALS & REQUIREMENTS

My notes will be posted on the course Canvas website.

Textbook: Sharpe NR, De Veaux RD, Velleman PF, **Berkowitz J.** *Business Statistics; A First Course, 2nd Cdn ed.*; Pearson (2019, 2015).

Technology Requirements:

Statistical Tools in Microsoft Excel should be sufficient for most of the calculations we will want to carry out. For the more ambitious among you, you may use Minitab, SPSS, Stata or R. Note: There are several online tutorials and books that teach the use of Microsoft Excel for data analysis.

Activity Fees: None

ASSESSMENT SUMMARY

Classroom Participation	5%
Assignments (three)	45% (15% each)
Final Exam	50%

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ASSESSMENT DESCRIPTION

Assignments (3) – 15% each = 45%: will each consist of short answer questions and data sets requiring analysis. The assignments (and Excel data spreadsheets) will be done on-line in Canvas.

Exam – 50%: This will also be done online in Canvas and is fully “open book, notes, and computer.” It will focus on concepts and interpretation of output. The exam combined with the “hands-on” data analysis in the assignments, will provide a comprehensive assessment of skill acquisition and ability to communicate results.

Participation – 5%: Statistics is not a “spectator” sport. Meeting the learning objectives will be enhanced by active learning through class participation. To earn the participation grade, be an active member of the class. Ask questions, offer answers, share experiences, etc.

TENTATIVE SCHEDULE – SUBJECT TO CHANGE

Class#	CLASS TOPICS	READINGS	WHAT'S DUE
Week 1 (Tue/Thu)	What is/are Statistics? Key concepts of statistical literacy; data types Describing and displaying univariate categorical and quantitative data Principles of good graphical and tabular displays. Bivariate descriptive statistics.	Ch. 1 Ch. 2 Ch. 3.1-3.5 Ch. 3.6-3.11 Ch. 4	Asst. 1 posted
Week 2* (Tue/Thu)	Random variables, probability distributions, Normal model, sampling distributions, principles of estimation, confidence intervals, sample size determination	Ch. 5.1, Ch. 6, Ch. 7 Ch. 8, Ch. 9, Ch. 11.1-11.2	Asst. 1 due date: Sep. 13
Week 3 (Tue/Thu)	Logic of hypothesis testing; one and two-sample hypothesis tests of means and proportions; independent and dependent samples	Ch. 10 Ch. 11 Ch. 12	Asst. 2 posted
Week 4 (Tue/Thu)	More on two-sample tests Power and sample size; communicating about inference Chi-square tests for count data Framework for statistical modelling	Ch. 12 Ch. 10.9, 10.10 Ch. 13 Ch. 16.1-16.2	Asst. 2 due date: Sep. 27 Asst. 3 posted
Week 5 (Fri/Thu) Note: Friday class at end of Week 4	Simple linear regression; inference in simple regression; residual analysis and diagnostics Multiple regression model-building The (statistical) world beyond!	Ch. 14 Ch. 15 Ch. 16.3-16.4	
Week 6 EXAM	Examination (date TBA)		Asst. 3 due date: Oct. 4

We cover a lot of material, quickly. Although some of it will be familiar to you, be open to learning it in a new and interesting way. Assignments require familiarity and some competence with Excel. In preparation for the course, please make sure you know how to use Excel functions, and are able to format, label, sort, and select rows and columns. The assignments can take time, especially if you are learning Excel while you are learning Statistics.

In preparation for the first class, please read the Preface to find out how to get the most out of the book. It's a good book – remember that I'm one of the authors. Class time will be more productive and enjoyable for all if you participate: ask questions, try out explanations, share your own experiences, etc. Come ready to learn and to laugh.

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COURSE AND INSTITUTIONAL POLICIES (reprinted from Graduate Programs Office)

Attendance: As per RHL policy on Professionalism, Attendance and Behaviour, students are expected to attend 100% of their scheduled classes. Students missing more than 20% of scheduled classes for reasons other than illness will be withdrawn from the course. Withdrawals, depending on timing, could result in a “W” or an “F” standing on a student’s transcript. Students must notify their instructors at the earliest opportunity if they are expected to miss a class due to illness. A medical note from a licensed, local doctor is required if more than 20% of scheduled classes for a course are missed due to illness. Students are required to notify the Student Experience Manager if they are absent from two or more classes due to illness.

Tardiness: As per RHL policy on Professionalism, Attendance and Behaviour, students are expected to arrive for classes and activities on time and fully prepared. Late arrivals may be refused entry at the discretion of the instructor or activity lead. Students arriving halfway through a scheduled class, or later, will be treated as absent for that class.

Electronic Devices: As per RHL policy on Professionalism, Attendance and Behaviour, laptops and other electronic devices (cellphones, tablets, personal technology, etc.) are not permitted in class unless required by the instructor for specific in-class activities or exercises. Cellphones and other personal electronic devices must be turned off during class and placed away from the desktop. Students who fail to abide by the RHL “lids down” policy will be asked to leave the room for the remainder of the class. Research has shown that multi-tasking on laptops in class has negative implications for the learning environment, including reducing student academic performance and the performance of those sitting around them.

ACADEMIC INTEGRITY (reprinted from Robert H. Lee Graduate School Office)

All UBC students are expected to behave as honest and responsible members of an academic community. Failure to follow appropriate policies, principles, rules and guidelines with respect to academic honesty at UBC may result in disciplinary action.

It is the student’s responsibility to review and uphold applicable standards of academic honesty. Instances of academic misconduct, such as cheating, plagiarism, resubmitting the same assignment, impersonating a candidate, or falsifying documents, will be strongly dealt with according to UBC’s procedures for Academic Misconduct. In addition to UBC’s Academic Misconduct procedures, students are responsible for reviewing and abiding by RHL’s policy on Academic Integrity.

STANDARD REFERENCE STYLE

The Robert H. Lee Graduate School uses American Psychological Association (APA) reference style as a standard. Please use this style to cite sources in your work unless directed to use a different style.

LATE ASSIGNMENTS (reprinted from Robert H. Lee Graduate School Office)

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

******* ENJOY THE COURSE! *******