

Carleton University
School of Mathematics and Statistics
STAT 2606 E – Business Statistics I – WINTER 2020

Lectures: Tue & Thu 10:05 a.m. – 11:25 a.m. **Room:** Mackenzie Building 3380

Instructor: Dr. S. Sinha, sinha@math.carleton.ca

Office Hours: Tue & Thu 11:30 a.m. – 12:30 p.m. in HP 5221.

Textbook: *Business Statistics in Practice*, Third Canadian Edition 2014, Bowerman and others.

Computer Labs: Times and locations vary depending upon your lab section.

Prerequisites: Either (1) MATH 1009 with a grade of C- or better and either an OAC in Algebra and Geometry or MATH 0107, or (2) BUSI 1703 with a grade of C- or better, or BUSI 1704 and BUSI 1705 with an average grade of C- or better or equivalents.

Description:

This subject is designed to help students develop foundational statistical skills that are necessary for everyday business analysis. The objectives of this subject are to (a) provide a basic knowledge of the application of mathematics and statistics to business disciplines; (b) develop the ability to analyse and interpret data in a meaningful way to assist in making management decisions; and (c) develop an ability to apply modern tools to data analysis in a business context.

Learning Outcomes:

1. Produce appropriate graphical and numerical descriptive statistics for various types of data.
2. Apply concepts of probability theory relating to discrete and continuous random variables to answer questions within a business context.
3. Demonstrate knowledge of the Central Limit Theorem (CLT) and its applications.
4. Conduct hypothesis tests, construct confidence intervals and interpret the results to aid decision making in a business context.
5. Use a statistical package frequently used by practitioners to analyse the data.

Assignments: There will be **five** assignments, each counting equally toward the term mark. Written assignments are due prior to the start of class on the assigned due date.

Midterm: The midterm exam will be held on **Saturday, February 29** from **10:00 a.m.–1:00 p.m.** Locations and seating arrangements will be announced in class. Students who miss the midterm for legitimate and documented reasons will write an alternate midterm approximately one week after the original midterm.

Final Exam: There will be a **three-hour** final exam scheduled by the university. The exam period runs from April 13 to April 25.

Marking Scheme: Assignments: 20% Midterm: 40% Final Exam: 40%

Calculators: Only non-programmable calculators are allowed for tests and the final exam.

Withdrawal: The last day for academic withdrawal is April 7, 2020.

Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (if applicable).

NOTES: Any student wishing to review their final exam must make an appointment within two weeks following the submission of the final grades. These appointments are solely for educational purposes and are not to be treated as an opportunity to debate your grade. Students are required to obtain a minimum score of 50% on both the midterm exam and final exam. Exceptions to this rule may be made at the discretion of the instructor.

TENTATIVE LECTURE SCHEDULE

WEEK	DATES	SECTIONS	TOPICS
1	Jan 6 – 10	1.1 – 1.6	Introduction, Populations and Samples, Levels of Measurement, Survey Sampling
2	Jan 13 – 17	2.1 – 2.5	Describing the Shape of a Distribution, Graphs for Quantitative and Qualitative Data, Measures of Central Tendency, Measures of Variation, Percentiles
3	Jan 20 – 24	3.1 – 3.3	Sample Spaces, Events, Elementary Probability Rules
4	Jan 27 – 31	3.4 – 3.5	Conditional Probability, Independence, Bayes' Theorem, Counting Rules
5	Feb 3 – 7	4.1 – 4.5	Discrete Random Variables, The Binomial Distribution, The Poisson Distribution, The Hypergeometric Distribution
6	Feb 10 – 14	5.1 – 5.5	Continuous Random Variables, The Uniform Distribution, The Normal Distribution, The Normal Approximation to the Binomial Distribution, The Exponential Distribution
7	Feb 17 – 21	N/A	WINTER BREAK
8	Feb 24 – 28	6.1 – 6.2	Sampling Distributions, The Central Limit Theorem
9	Mar 2 – 6	7.1 – 7.3	Introduction to Hypothesis Testing, Type I and Type II Errors, Tests about a Population Mean (σ known), Tests for a Population Proportion
10	Mar 9 – 13	7.4 – 7.6	Tests for Two Population Means (σ known) and Proportions, Sample Size Determination
11	Mar 16 – 20	8.1 – 8.4	Tests about a Population Mean (σ unknown), Hypothesis Tests for Comparing Two Populations (variances unknown)
12	Mar 23 – 27	9.1 – 9.4	Confidence Intervals for a (i) Population Mean and (ii) Population Proportion, Sample Size Determination
13	Mar 30 – April 3	9.5 – 9.8	Confidence Intervals for Comparing Two Populations
14	April 7	N/A	REVIEW