

**SCHOOL OF MATHEMATICS AND STATISTICS
CARLETON UNIVERSITY**

STAT 2606 E – BUSINESS STATISTICS I

2022 WINTER

CLASS SCHEDULE AND MODALITY	Lectures: Tuesdays (Asynchronous/Pre-recorded) and Thursdays (Asynchronous/Pre-recorded) (1:05 p.m. to 2:25 p.m.) Labs: E1 – Wednesdays (11:35 a.m. to 12:25 p.m.) (ONLINE) E2 – Tuesdays (3:35 p.m. to 4:25 p.m.) (ONLINE) E3 – Wednesdays (12:35 p.m. to 1:25 p.m.) (ONLINE) E4 – Tuesdays (10:35 am to 11:25 a.m.) (ONLINE)
INSTRUCTOR	Tanvir Quadir E-mail: tanvir.quadir@carleton.ca Brightspace at https://brightspace.carleton.ca
OFFICE HOURS	Thursdays (4:30 p.m. – 6:00 p.m.) (Availability: during office hours or via e-mail)
TEACHING ASSISTANTS	TBA

COURSE DESCRIPTION:

Introduction to statistical computing; probability concepts; descriptive statistics; estimation and testing of hypotheses. Emphasis on the development of an ability to interpret results of statistical analyses with applications from business.

Precludes additional credit for BIT 2000, BIT 2009, BIT 2100 (no longer offered), BIT 2300 (no longer offered), ECON 2201 (no longer offered), ECON 2210, ENST 2006, GEOG 2006, STAT 2507, and STAT 3502.

Prerequisite(s): MATH 1009.

The course consists of lectures 3 hours a week, and labs 1 hour a week. The laboratory sessions will give students hands-on experience of solving problems like assignments and topics covered in the classes. During the midterm and final exams, only non-programmable scientific calculators will be permitted. We reserve the right to disallow any calculator.

DATA ANALYSIS AND EXCEL: Students are required to use EXCEL for their assignments. Data used for assignment/examples are provided at Brightspace. To use EXCEL, you may need to download MS OFFICE (<https://carleton.ca/its/all-services/computers/site-licensed-software/>) at no cost or connect to VDI (Virtual Desktop Interface) through VMWare Horizon Client or HTML. <https://cudesktop.carleton.ca>

EVALUATION ITEM AND DATES:

Item	Chapters and Deadlines	Weight
Assignments	Assignment 1: Week 1 – 4 (Due on Thursday, February 17) Assignment 2: Week 5 - 6 (Due on Thursday, March 3) Assignment 3: Week 7 - 10 (Due on Thursday, April 7)	15%
Midterm Examination	Midterm: Sunday, March 6, 2022 (9 a.m. - 11 a.m.) (Week 1 – 6)	40%
Final Examination	Between April 14 - 28, 2022 (Week 7 – 12) (TBA by the Registrar's Office)	40%
Attendance		5%

TEXTBOOK:

There are NO REQUIRED textbooks. However, if you would like to order a reference book, we recommend any edition of either one of the following books:

1. *Business Statistics and Analytics in Practice* by Bowerman et al., Ninth edition, McGraw-Hill.
2. *Business Statistics for Contemporary Decision Making*, Canadian Edition, Black et al.

EVALUATION CRITERIA:

ATTENDANCE (5%): The recorded lecture **MUST** be watched within 24 hours of the scheduled class time weekly to earn 5% of the class attendance. Brightspace time stamps from the attempt logs of individuals will be used to assign weekly attendance marks.

MIDTERM EXAMINATION (40%): The 2-hour midterm examination will be held at Brightspace on Sunday, March 6, 2022, from 9 a.m. to 11 a.m.

ASSIGNMENT (15%) – DUE AT BRIGHTSPACE ON ASSIGNED DATES: There will be three assignments, each counting equally toward the term mark. No late assignments will be accepted. Students must work independently on assignments and write up his/her own assignment but may seek guidance/direction from TAs/professor.

FINAL EXAMINATION (40%): The 3-hour final examination will take place at Brightspace during the official final examination period of April 14 to 28, 2022, and is scheduled by the Registrar's Office. Please do not make travel plans prior to April 28, 2022.

ADDITIONAL COURSE POLICIES:

1. Concerns about grading on any assignment or exam must be brought to my attention within three business days of the completion of grading.
2. Students who need to miss an assignment submission or an exam for a valid reason must complete and submit the [self-declaration form](https://carleton.ca/registrar/wp-content/uploads/self-declaration.pdf) (<https://carleton.ca/registrar/wp-content/uploads/self-declaration.pdf>) prior to the assessment in order to receive accommodation. In the case of the final exam, you must apply for deferral. For a missed assignment or midterm, the weight of the evaluation component will be added to the weight of the final exam. In the case of a missing final exam for valid medical reason, you must apply online (<https://carleton.ca/registrar/deferral/>) with supporting documentation within three business days for obtaining approval to write the deferred final exam. Deferred final exam scheduling is at the discretion of the University. NOTE: You cannot defer a deferred exam.
3. Any student wishing to review their final exam must make an appointment within a two-week period 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.
4. **Students are required to obtain a minimum score of 40% on combined midterm and final exam.** Students who fail to do so will automatically be assigned a grade of F in the course. Exceptions to this rule may be made at the discretion of the instructors.
5. **Students are required to submit and obtain a minimum grade of 50% on at least two of the three assignments.** Students who fail to do so will automatically be assigned a grade of F in the course. Exceptions to this rule may be made at the discretion of the instructors.
6. You must use your Carleton email account for all email communications. I am unable to respond to non-Carleton emails due to FIPPA (Freedom of Information and Protection of Privacy Act).
7. All assignments and exams in the course will be submitted online. A document entitled Submission Instructions will be posted on the course page in Brightspace. Any submissions not following the Submission Instructions will not be accepted for credit.

TENTATIVE COURSE SCHEDULE (MAY BE ADJUSTED AS COURSE UNFOLDS):

<i>Week</i>	<i>Date</i>	<i>Topics</i>
1	Jan. 11, 13	Descriptive and Inferential Statistics. Population and Sample. Qualitative and Quantitative Data. Levels of Measurement. Graphical Displays. Measures of Central Tendency. Measures of Variability.
2	Jan. 18, 20	Percentiles. Box Plots. Identifying Outliers. Experiment and Sample Space. Assigning Probability to an Outcome. Events; Intersection, Union, and Complement. Venn Diagrams. Mutually Exclusive Events. Addition Rule.
3	Jan. 25, 27	The <i>mn</i> Rule. Combinations. Conditional Probability. Multiplication Rule. Independent Events. Law of Total Probability. Bayes' Theorem. Probability Trees.
4	Feb. 1, 3	Discrete Random Variables: Probability Distribution, Expected Value, and Variance. Binomial Probability Distribution. Poisson Probability Distribution. Continuous Random Variables. Exponential Probability Distribution.
5	Feb. 8, 10	Normal Probability Distribution. Normal Percentiles. Sampling Distribution of the Sample Mean and Sample Proportion. Central Limit Theorem. Point Estimation versus Interval Estimation.
6	Feb. 15, 17	Confidence Intervals for a Population Mean (known variance), and Sample Size Determination for a given Margin of Error. The Student's <i>t</i> Distribution. Confidence Intervals for a Population Mean (unknown variance). Confidence Intervals for a Population Proportion, and Sample Size Determination for a given Margin of Error.
	Feb 22 - 25	Winter Break, no classes.
7	Mar. 1, 3	Introduction to Hypothesis Testing using <i>p-values</i> . Test about a Population Mean (known and unknown variance). Test about a Population Proportion. Critical Values. Type I and Type II Errors.
8	Mar. 8, 10	Inference for Comparing Two Population Means (known variances, unequal unknown variances, equal unknown variances). Paired Experiments. Inference for Comparing Two Population Proportions.
9	Mar. 15, 17	Categorical Data Analysis. Goodness of Fit Test. Contingency Tables. Test for Independence. Test for Homogeneity.
10	Mar. 22, 24	Correlation. Simple Linear Regression. Least Squares Regression Line. Test about the Slope Parameter (or Population Correlation).
11	Mar. 29, 31	Confidence Interval for the Mean Response. Prediction Interval for a New Observation. Multiple Regression. Interpretation of the Regression Coefficients Testing the Significance of an Independent Variable. Regression Model Building.
12	Apr. 5, 7	Confidence Interval for the Mean Response. Prediction Interval for a New Observation. Introduction to Time Series. Time Series Components.
13	Apr. 12	Review for Final Exam

ADDITIONAL INFORMATION:

MATHEMATICS AND STATISTICS LEARNING ASSISTANCE PROGRAM (MS-LAP):

MS-LAP supports first year mathematics and statistics courses. This free-of-charge program helps students in achieving their goals. It provides learning support and solutions to homework questions through assistance videos.

MS-LAP gives students tools to succeed while explaining step-by-step strategies and associated theories for particular problem. The program is for anyone who wants to deepen their understanding at the own pace, and in the comfort and privacy of their home.

COURSE STANDING: Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

ACADEMIC INTEGRITY: Students should familiarize themselves with the Carleton University policy on Academic Integrity. This policy details those behaviours considered to be violations of academic integrity (e.g., cheating, plagiarism) and provides guidelines as to the imposition of various sanctions, including a reduction in grade, suspension, and expulsion. Also be aware of the academic integrity policy on the registrar website page at <https://carleton.ca/registrar/academic-integrity/>

IMPORTANT DEADLINES: January 24, 2022 is the last day to register for the course; January 31, 2022 is the last day to withdraw with a full fee adjustment; and April 12, 2022 is the last day to withdraw without academic penalty. The deferred examination will take place between May 20 – June 1, 2022.

STUDENTS REQUIRING SPECIAL ACCOMMODATION:

FOR STUDENTS WITH DISABILITIES: Students with disabilities requiring academic accommodations are encouraged to contact a coordinator at the Paul Menton Centre (PMC) for Students with Disabilities (613-520-6608) or pmc@carleton.ca to complete the necessary *letters of accommodation*. After registering with the Centre, please set up an appointment with the instructor to discuss your needs at least two weeks prior to the in-class mid-term examination.

FOR RELIGIOUS OBSERVANCE: Students requesting academic accommodation based on religious observance should make a formal, written request to their instructor for alternate dates and/or means of satisfying academic requirements. Such requests should be made during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist, but no later than two weeks before the compulsory academic event.

Students who have questions or want to confirm accommodation eligibility of a religious event or practice may refer to the Equity Services website for a list of holidays and Carleton's Academic Accommodation policies or may contact an Equity Services Advisor in the Equity Services Department for assistance (ext. 5622).

FOR PREGNANCY: Pregnant students requiring academic accommodations are encouraged to contact an Equity Advisor in Equity Services (ext. 5622) to complete a letter of accommodation. The student must then make an appointment to discuss her needs with the instructor at least two weeks prior to the first academic event in which it is anticipated the accommodation will be required.

FOR STUDENTS WITH DISABILITIES	Contact Paul Menton Centre (ext. 6608) to obtain letters of accommodations
FOR RELIGIOUS OBLIGATIONS	To be worked out on individual basis with instructor. Consult Equity Services Website or an Equity Advisor (ext. 5622) for Policy and list of holidays (www.carleton.ca/equity)
FOR PREGNANCY	Contact Equity Services (ext. 5622) to obtain letters of accommodations

ADDITIONAL STUDENT SUPPORT INFORMATION:

Carleton University offers additional support at the Writing Tutorial Service (215PA), Student Life Services (501 Unicentre), and the Student Academic Success Centre (302 Tory).