

**SCHOOL OF MATHEMATICS AND STATISTICS
CARLETON UNIVERSITY**

STAT 2607 A – BUSINESS STATISTICS II

2021 WINTER

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| CLASS SCHEDULE AND MODALITY (HYBRID) | Lectures: Wednesdays (Asynchronous/Pre-recorded) and Fridays (Synchronous/Live at Zoom) (10:05 to 11:25 a.m.) Labs: A1 - Tuesdays (8:35 to 9:25 a.m.) A2 – Tuesdays (11:35 a.m. to 12:25 p.m.) A3 – Wednesdays (2:35 to 3:25 p.m.) A4 – Tuesdays (2:35 to 3:25 p.m.) A5 – Tuesdays (3:35 to 4:25 p.m.) A6 – Mondays (3:35 to 4:25 p.m.) (Synchronous) |
| INSTRUCTOR | Tanvir Quadir E-mail: tanvir.quadir@carleton.ca cuLearn at www.carleton.ca/cuLearn |
| OFFICE HOURS | Fridays (at the beginning of the class) (Availability: during office hours or via e-mail) |
| TEACHING ASSISTANTS | TBA |

COURSE DESCRIPTION:

Experimental design, multiple regression and correlation analysis, covariance analysis, and introductory time series. Use of computer packages.

Precludes additional credit for STAT 2509, ECON 2202, ECON 2220.

Prerequisite(s): STAT 2606.

The course consists of lectures 3 hours a week, and labs 1 hour a week. The tutorial sessions will give students hands-on experience of solving problems based on the topics covered in the classes. **The meeting links of lectures and tutorials (Zoom/BBB) will be available at the course website at cuLearn. Attendance at the first class on Wednesday, January 13 is mandatory.**

DATA ANALYSIS AND MINITAB: Students are required to use statistical software MINITAB for their assignments. Data used for assignment/examples are provided at cuLearn. You need to use MINITAB by connecting to VDI (Virtual Desktop Interface) through VMWare Horizon Client or HTML.

<https://cudesktop.carleton.ca>

EVALUATION ITEM AND DATES:

| Item | Chapters and Deadlines | Weight |
|------------------------------|---|---------------|
| Quizzes (Three) | Quiz 1: Due on Sunday, February 7, 2021 (Weeks of 1 – 3) Quiz 2: Due on Sunday, February 28, 2021 (Weeks of 4 – 5) Quiz 3: Due on Sunday, March 21, 2021 (Weeks of 6 – 8) | 15% |
| Assignments (Two) | Assignment 1: Due on Sunday, March 7, 2021 (Weeks of 1 – 5) Assignment 2: Due on Sunday, March 28, 2021 (Weeks of 6 – 9) | 10% |
| Midterm Examination (One) | Midterm: Sunday, March 14, 2021 (2 - 4 pm) (Weeks of 1 – 5) | 25% |
| Final Examination | Between April 16 - 27, 2021 (TBA by the Registrar’s Office) | 50% |

REQUIRED TEXTBOOK:

Business Statistics and Analytics in Practice by Bowerman et al., Ninth edition, McGraw-Hill.

EVALUATION CRITERIA:

QUIZZES (15%) - DUE AT CULEARN ON ASSIGNED DATES: The three quizzes will be counted towards the course total where each quiz is equally weighted. All quizzes will take place at cuLearn.

MIDTERM EXAMINATION (25%): Midterm examination will be held at cuLearn on Sunday, March 14, 2021 from 2 p.m. to 4 p.m. There is no deferred midterm. If you miss a midterm exam and provide a self-declaration form (<https://carleton.ca/registrar/wp-content/uploads/self-declaration.pdf>) within one week of the missed exam, the assigned weight (of 25%) will be added to your final exam; otherwise a mark of zero is assigned. Students will need to fill out the form “Consent to Release Information to a Third Party” (which is available at cuLearn) when they submit a medical note.

ASSIGNMENT (10%) – DUE AT CULEARN ON ASSIGNED DATES: There will be two assignments, each counting equally toward the term mark. No late assignments will be accepted. Students may wish to work together on assignments, but each student must write up his/her assignment independently.

FINAL EXAMINATION (50%): The 3-hour final examination will take place at cuLearn during the official final examination period of April 16 to 27, 2021, and is scheduled by the Registrar’s Office. Please do not make travel plans prior to April 27, 2021. If you miss the final examination, please contact the Registrar’s Office as soon as possible after the missed exam to qualify for a deferred exam next semester.

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

| <i>Week</i> | <i>Date</i> | <i>Topics</i> | <i>Chapters</i> |
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| 1 | Jan. 13/15 | Statistical Inference for One and Two Population Variances, Experimental Design and One-way ANOVA | Chapters 10 (10.6 – 10.7), 11 (11.4 – 11.5) and 12 (12.1 – 12.2) |
| 2 | Jan. 20/22 | Kruskal Wallis Test (nonparametric test for one-way ANOVA), Randomized Block Design, Friedman Test (nonparametric test for randomized block design) | Chapter 18 (18.4) and Chapter 12 (12.3) |
| 3 | Jan. 27/29 | Ch-square Goodness-of-Fit Tests, Test of Independence | Chapter 13 (13.1 – 13.2) |
| 4 | Feb. 3/5 | Correlation, Testing the Significance of Population Correlation Coefficient, Simple Linear Regression (SLR) Model | Chapter 14 (14.1 – 14.2, 14.6) |
| 5 | Feb. 10/12 | SLR Model Assumptions and the Standard Error, Testing the Significance of Regression Model, Confidence and Prediction Intervals. | Chapter 14 (14.3 – 14.5) |
| NA | Feb. 15 – 19 | Winter Break (No class) | |
| 6 | Feb. 24/26 | Residual Analysis to Check SLR Model Assumptions. | Chapter 14 (14.7) |
| 7 | Mar. 3/5 | Multiple Regression Model, R^2 and Adjusted R^2 , Model Assumptions and the Standard Error, The Overall F Test, Testing the Significance of an Independent Variable | Chapter 15 (15.1 – 15.5) |
| 8 | Mar. 10/12 | Confidence and Prediction Intervals, Dummy Variables, Quadratic Regression Model, Partial F Test. Midterm Exam Review (Weeks of 1 – 5). | Chapter 15 (15.6 – 15.9) |
| 9 | Mar. 17/19 | Multicollinearity, Model Building and Model Validation, Residual Analysis, Outliers, and Influential Observations | Chapter 15 (15.10 - 15.11) |
| 10 | Mar. 24/26 | Time Series Components, Time Series Regression | Chapter 17 (17.1 – 17.2) |
| 11 | Mar. 31/ Apr. 2 (No Class) | Multiplicative Decomposition, Simple Exponential Smoothing | Chapter 17 (17.3 – 17.4) |
| 12 | Apr. 7/9 | Holt-Winter's Models, Box-Jenkins Methodology, Forecast Error Comparisons | Chapter 17 (17.5 – 11.7) |
| 13 | Apr. 14 | Final Exam Review (Weeks of 6 - 12) | Chapters (15 – 17) |

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. These services are available on cuLearn.

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 25, 2021 is the last day to register for the course; January 31, 2021 is the last day to withdraw with a full fee adjustment; and April 14, 2021 is the last day to withdraw without academic penalty.

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 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 on the basis of 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.

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| 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).