

**Carleton University**  
**School of Mathematics and Statistics**  
**STAT2509 A – Introduction to Statistical Modeling II – Fall 2022**

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**Office:** 4348HP

**Lectures:** Tuesdays and Thursdays from 7:35pm – 8:55 pm in Tory Building 340.

**Tutorials:** Tutorial days and times differ. Please ensure you attend your own tutorial.

**Office Hours:** Tuesdays and Thursdays 5:30 pm – 6:30 pm in 4348HP

**Textbook:** Introduction to Probability and Statistics (4th Canadian Edition by Mendenhall, Beaver, Beaver, and Ahmed).

**Course description:** A data-driven approach to statistical modeling. Basics of experimental design, analysis of variance, simple linear regression and correlation, nonparametric procedures. SAS will be the statistical software package used.

**Prerequisites:** STAT 2507 or STAT 2606 or STAT 3502; or permission of the School.

**Evaluation:** Your final grade will be calculated as:

- Term Mark (50%)
  - Tests (40%)
  - Assignments (10 %)
- Final Examination Mark (50%)

### Assignments

There will be 5 assignments, each counting equally toward the term mark. Assignments due dates and times will be posted on Brightspace. No late assignments will be accepted.

**Tentative Assignments Schedule**

Assignment	Available	Due
Assignment 1	Tuesday, September 13 <sup>th</sup>	Tuesday, September 27 <sup>th</sup>
Assignment 2	Tuesday, September 27 <sup>th</sup>	Tuesday, October 11 <sup>th</sup>
Assignment 3	Tuesday, October 18 <sup>th</sup>	Tuesday, November 8 <sup>th</sup>
Assignment 4	Tuesday, November 8 <sup>th</sup>	Tuesday, November 22 <sup>nd</sup>
Assignment 5	Tuesday, November 29 <sup>th</sup>	Thursday, December 8 <sup>th</sup>

### Tests

There will be two tests on **Sunday, October 16<sup>th</sup>, 10am to 11:30am** and **Sunday, November 27<sup>th</sup>, 10:00am to 11:30am**. The higher of the two tests will be worth 25% and the lower of the two tests will be worth 15%.

**Final Exam:** The final exam will cover all of the material given during the term and it will be scheduled by the university. The exam period runs from **December 10-22**. It is the responsibility of each student to be available during the exam period. In particular, no travel plans should be made until the examination schedule is released.

**Note:** The two tests and final exam are in-person.

**Allowed Material:**

The following applies to assignments, tutorials, tests, and final exam.

- **Calculators:** Only non-programmable, non-graphing calculators are allowed.
- **Statistical Tables:** You are only permitted to use the statistical tables provided by the instructor. You can not use any other tables.
- **Statistical Software/Applications:** You will be using SAS in the tutorials. The use of any other applications including Excel is not permitted

**Intellectual property notice**

Classroom teaching and learning activities, including lectures, discussions, presentations, tests, exams, by instructors, guest presenters, and students, are copy protected and remain the intellectual property of the instructor or respective author(s). All course materials, including PowerPoint/pdf presentations, outlines, and other materials, are also protected by copyright and remain the intellectual property of their respective author(s).

Students registered in the course may take notes and make copies of course materials for their own educational use only. Students are not permitted to reproduce or distribute lecture notes and course materials publicly for commercial or non-commercial purposes without express written consent from the copyright holder(s). A student who publicly posts or sells an instructor's work, without the instructor's express consent, may be charged with misconduct under Carleton's Academic Integrity Policy and/or Code of Conduct, and may also face adverse legal consequences for infringement of intellectual property rights.

**Requests for Academic Accommodation**

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

**Pregnancy obligation**

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

**Religious obligation**

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

**Academic Accommodations for Students with Disabilities**

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. [carleton.ca/pmc](http://carleton.ca/pmc)

### **Survivors of Sexual Violence**

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and its survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: [carleton.ca/sexual-violence-support](http://carleton.ca/sexual-violence-support)

### **Accommodation for Student Activities**

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

**Academic Integrity:** Students are required to be familiar with the Academic Integrity Policy at Carleton University. The complete policy is available at: [Academic-Integrity-Policy-2021.pdf \(carleton.ca\)](#). Students who violate the standards of academic integrity relating to any coursework will be required to meet with the Associate Dean of Science.

### **Course Outline:**

- Simple Linear Regression: Method of Least Squares, Inference, Analysis of Variance (ANOVA), Correlation, Test for Lack of Fit and Residual Analysis, Data Transformation.
- Multiple Linear Regression: Least Squares, Inference, ANOVA, Residual Analysis, Multicollinearity, Variable Selection Procedures.
- Experimental Design: Completely Randomized Design (CRD), Randomized Block Design (RBD), Two-Way Experiments, Multiple Comparisons, Non-parametric Tests.
- Categorical Data: Pearson's Chi-square Statistic; the Chi-square Test of Independence and Homogeneity.

### **Important Dates**

- First day of classes: September 7
- Last for registration: September 20
- Last day to withdraw from fall term and fall/winter courses with a full fee adjustment. Withdrawals after this date will result in a permanent notation of WDN on the official transcript: September 30
- Statutory Holiday: October 10
- Fall Break (no classes): October 24 – 28

- November 15: Last day for academic withdrawal
- December 9: Last day of classes
- Final Exam period: December 10 -22

### **ADDITIONAL COURSE POLICIES:**

**1.** Concerns about grading on assignments or tests must be brought to my attention within three business day of these items being available for review.

**2. Missed Assignments:** You may miss 1 assignment for legitimate reasons (e.g. illness, death of a family member, etc.). The weight of your missed assignment will automatically be shifted to the final exam, and so there is no need to contact the instructor. **DO NOT MISS AN ASSIGNMENT UNLESS YOU ABSOLUTELY HAVE TO**, as any assignment missed past the one assignment will be an automatic zero.

**3. Missed Test:** Students who need to miss a test for a legitimate reason must complete [self-declaration](#) form within 3 business days of the test. Students who correctly follow this procedure will have the weight of the missed test shifted to the final exam. Failure to follow this procedure will result in a grade of 0% on the missed test.

**4.** 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.

**5. Students are required to obtain a minimum score of 40% on the 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.