Carleton University
School of Mathematics and Statistics
STAT 2509 C - Computational Statistics (Statistical Modeling II)

Term: Winter 2021

Instructor: Agnes Benhin

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Office Hours: Wednesdays: 5:00pm to 6:00pm (via BigBlueButton)

Prerequisites: (i) STAT 2507 (or STAT 2606 or STAT 3502)
                        or permission of the School.

                   (If you are not sure about your prerequisites, please see me or the
                   Undergraduate Advisor Mr. Gary Bazdel in 4302C HP).

Text: (i)   "Introduction to Probability & Statistics", 12th edition (or 4th Canadian ed.), by
                         William Mendenhall, Robert J.Beaver and Barbara Beaver.

                   (ii) "Learning SAS Version 8", by Ann Woodside.

           Textbooks can be purchased from Carleton Bookstore:

           https://www.bkstr.com/carletonstore/search/keyword/textbooks

Lectures: Tuesdays and Thursdays: 13:05 – 14:25, using BigBlueButton (via CuLearn)

Lab: C1 – Wednesdays, 10:35am – 11:25am,
                   C2 – Fridays, 4:35pm – 5:25pm,
                   C3 – Tuesdays, 3:35pm – 4:25pm,
                   C4 – Fridays, 8:35am – 9:25am,
                   C5 – Thursdays, 10:35am – 11:25am,
                   (all the labs will be virtual and/or via BigBlueButton)

Grades: The course will be made up of 2 parts: Term Work (50%) and
                   Final Examination (50%).

- Term Work: 2 tests..........................………….. 15% each
                   4 assignments................................ ….5% each

                   Midterms will be held on Saturdays, ***February 27,*** *(10:00am to 11:30am)*
                                                            and
                                                      March 20, *(10:00am to 11:30am),*
`All dates and times are in Eastern Daylight Zone ETD (Time zone in Ottawa).`

Please note, your tests and final exam will be proctored using e-proctoring.

- *Final Examination:*   Consists of a three-hour closed book examination of the whole course covered during the term.
  In the case of the Deferred Final Examination, the final exam will be written in the Summer term of 2021 and it replaces only the final examination mark of the course grade.

Calculators: You may use any non-programmable calculator for the tests and final exam.

Review of Final Exams: If you wish to review your exam please email the instructor to set up a convenient time to review the exam. If the instructor is unavailable, contact the associate director to set up an appointment to review your exam. Exams are only available for 3 weeks after the exam has been written. If you wish to review your exam after the three weeks, you must formally request to view your exam from the Registrar office. For more information of this process go to
http://www.carleton.ca/registrar/

Academic Accommodations: Should you need special arrangements during the term in order to meet your academic obligations due to disability, pregnancy or religious obligations, please let me know in writing within the first two weeks of class. You may visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at http://carleton.ca/equity/accommodation

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), Multiple Comparisons, Non-parametric Tests.

- *Categorical Data:*   Pearson's Chi-square Statistic; the Chi-square Test of Independence and Homogeneity.

Important Notes:

1. If your final exam mark is less than 40% you will receive an F, regardless of your term mark.
   (Exceptions to this rule may be made at the discretion of the instructors)

2. Students who need to miss a test for a valid reason must inform me <u>prior to the test</u> and 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 added to the weight of the final exam. Failure to follow this procedure will result in a grade of 0% on the missed test.

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.

Academic Integrity:

Students are required to be familiar with the Academic Integrity Policy at Carleton University.
The complete policy is available at: http://carleton.ca/senate/wp-content/uploads/Academic-Integrity-Policy1.pdf.
Students who violate the standards of academic integrity relating to any coursework will be required to meet with the Associate Dean of Science.

Winter Break: **February 15th – 19th**.

- Last day to withdraw from the course is **April 14th.**

- Students with a disability who require academic accommodations, please feel free to discuss it with me. Students must also contact the Paul Menton Centre to complete the required forms by **March 19th.**

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.

Mathematics and Statistics Learning Assistance Program (MS-LAP): Math & Stats Learning Assistance Program (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 particular problem strategies and associated theory. The program is for anyone who wants to deepen their understanding at their own pace, and in the comfort and privacy of their home.