MATH 423–FALL 2020 Applied Regression (3 credits)

Instructor: Yi Yang (Burnside 1241)
Email: yi.yang6@mcgill.ca
Website: www.math.mcgill.ca/yyang/
Lecture meeting time: Tu, Thu 8:35am-9:55am on Zoom. Live lectures offered on Zoom at official scheduled time (and recorded): there will be a break at 45 minutes (3 hours/week)
Office Hour: Tu, Thu 10:00am-11:00am on Zoom

TA: TBA TA email: TBA TA office hour: TBA

Prerequisites: MATH 323 and MATH 324 or MATH 356 and MATH 357 or equivalent, and MATH 223 (or equivalent course in linear algebra).

Textbook: Introduction to Linear Regression Analysis, 5th edition 2012, D. C. Montgomery, E. A. Peck, and G. G. Vining.

Software: Software R, Version 3.1.0 or later and Rstudio.

Course Website: the course website will be hosted on

http://www.math.mcgill.ca/yyang/regression.html

You will be able to access all online course material through this website. If you encounter any problems, please ask the course instructor.

Overview

Mathematics & Statistics (Sci) : Multiple regression estimators and their properties. Hypothesis tests and confidence intervals. Analysis of variance. Prediction and prediction intervals. Model diagnostics. Model selection. Introduction to weighted least squares. Basic contingency table analysis. Introduction to logistic and Poisson regression. Applications to experimental and observational data.

Evaluation

Note Due to the current conditions, instructors are expected to be flexible with accommodating potential extreme circumstances.

The final mark for the course will be calculated as the larger of

50% assignments + 20% midterm + 30% final exam

and

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50\% assignments + 50\% final exam.
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Coursework:	Five assignments, each assignment must be compiled as a single PDF file
	using R Markdown and submitted on myCourses.
Midterm exam:	48 hours, covers materials from the first half of the course.
Final exam:	72 hours, covers all material covered in the course. To be held in the final exam period.
	Date and venue to be confirmed: the scheduling of the final exam is
	not under the control of the instructor.

- Five homework assignments will be handed out. Late submission policy:
 - ≤ 15 mins, no penalty.
 - > 15 mins and ≤ 24 hours, 10% penalty.
 - $-\,>24$ hours, not accepted.

Assignments are to be submitted electronically via myCourses. All queries concerning homework grading should be addressed to the course instructor.

- For the questions that involve R computation, you need to use Rmarkdown to compile your solutions, plots and tables and R source code into a single PDF file. Also submit your Rmarkdown source code file (the .rmd file).
- For the questions without any R computation, you could choose to hand-write them. But you need to merge the handwritten part and the Rmarkdown part into a single PDF file.
- If you submit multiple copies without any indication, only the last one will be marked.
- The homework will not be graded, if you just zipped random images of plots with an erroneous .rmd file without providing a final PDF file.
- You will lose points if the solution just includes R code without proper reasoning, comments and conclusions.

MCGILL UNIVERSITY POLICY STATEMENTS

The following three statements are included in this course outline, in keeping with Senate resolutions:

1. McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures. For more information, see

www.mcgill.ca/students/srr/honest/

[Approved by Senate on 29 January 2003]

2. In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

[Approved by Senate on 21 January 2009]

3. Instructors who may adopt the use of text-matching software to verify the originality of students' written course work must register for use of the software with Educational Technologies and must inform their students before the drop/add deadline, in writing, of the use of text-matching software in a course.

[Approved by Senate on 1 December 2004]

If you have a disability and need special arrangements, please contact the Office for Students with Disabilities at 514–398–6009.