SS 3860B Generalized Linear Models / SS 9155B Statistical Modelling II
Winter 2020 Course Syllabus

1. Course Information
Description: In this course we will use the R statistical software package to study both applied and theoretical aspects of different extensions to the linear regression model framework. Course topics include: logistic regression, Poisson log-linear models, contingency tables, multinomial regression, mixed effect models, and nonparametric regression. Additional topics may include generalized additive models, trees and neural networks as time allows.

Objectives: By the end of this course you should be able to:
1. Select an appropriate statistical method for analyzing data with a continuous, count, binomial, or multinomial response variable.
2. Explain maximum likelihood inference for the generalized linear model framework.
3. Conduct different analyses in R including computing parameter estimates and confidence intervals, conducting hypothesis tests, selecting variables, comparing competing models, and assessing goodness of fit.
4. Summarize and report your results for statistical and general audiences.

Hours and location:
Tuesday: 9:30 to 11:30 am, WSC 240
Wednesday: 10:30 to 11:30 am, WSC 240

Prerequisites for SS 3860B: SS 3859A/B with at least 60%
Prerequisites for SS 9155B: SS9159A

2. Instructor Information
Instructor: Camila P. E. de Souza
Department: Statistical & Actuarial Sciences
Office hours: Tuesdays, 1:30 to 2:30pm in WSC 225
Email: use OWL messages (contact “Instructor Role”) – not UWO email

3. Communicating with the instructor
Use the OWL messages (to “Instructor Role”) tool when asking a personal administrative question (i.e. confidential questions about marks, participation, progress, absences, etc.) that requires a brief response. Course content related questions or non-personal questions should be posted to the OWL course Forums. You can expect a response to a message to the instructor or a posting to the Forum.
within **approximately 48 hours** during the work week (during busy times, it may take a little longer). **Note that Messages or Forum questions will not be answered within the 24-hour period before the tests or exams**, nor can I guarantee responses over weekends/holidays.

Students should check OWL (http://owl.uwo.ca) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class. Students are responsible for checking OWL on a regular basis.

### 4. Course Materials


**R statistical software package:** This course is heavily based on R and, therefore, all assignments and final project will require **coding in R and Rmarkdown**. Please make sure you have the latest R version installed in our computer (https://cran.r-project.org/) as well as R studio (https://www.rstudio.com/products/rstudio/download/).

### 5. Methods of Evaluation

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<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Deadlines/Due dates</th>
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<tbody>
<tr>
<td>5 short review quizzes</td>
<td>2%</td>
<td>Approx. biweekly on OWL</td>
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<tr>
<td>Assignment 1</td>
<td>3%</td>
<td>Wed Jan 15</td>
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<tr>
<td>Assignment 2</td>
<td>5%</td>
<td>Wed Jan 29</td>
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<tr>
<td>Assignment 3</td>
<td>5%</td>
<td>Wed Feb 12</td>
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<tr>
<td>Assignment 4</td>
<td>5%</td>
<td>Wed March 11</td>
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<td>Assignment 5</td>
<td>5%</td>
<td>Wed April 1</td>
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<tr>
<td>Midterm</td>
<td>35%</td>
<td>Tue Feb 25 in class</td>
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<tr>
<td>Final Exam: group project report and presentation</td>
<td>40%</td>
<td>Date and time during final exam period*</td>
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*To be scheduled by the Registrar’s Office. All students must attend. Project reports and presentation slides are due 15 minutes before the scheduled exam time.

**Assignments must be submitted through GradeScope** (https://www.gradescope.com/) an on-line collaborative grading system. Instead of submitting paper copies you will scan your answers with your phone or other electronic device and submit these online. You are welcome to handwrite your solutions, but it is your responsibility to make sure that the text is legible. Submissions that cannot be read by the grader will receive a grade of zero. Each assignment will contribute 5% to your final grade. **Assignment submissions are due 11:55pm on the due date.** Half credit will be given for late submissions within 24 hours of the deadline. No credit will be given for submissions beyond this time unless a valid academic accommodation is obtained (see Section 6 for details on accommodation). **Students must submit at least 3 out of the 5 assignments in order to write the final exam (group project report and presentation).**
6. Note to Actuarial Science students

This course is accredited under the Canadian Institute of Actuaries (CIA) University Accreditation Program (UAP) for the 2019-20 academic year. Achievement of the established exemption grade in this course may qualify a student from exemptions from writing certain preliminary exams.

Please note, a combination of this course, Statistics 3859A and Statistics 3850B, is required to achieve an exemption for preliminary exam SRM (minimum of 80% in each course is required). Please see the following link for full details:

http://www.cia-ica.ca/membership/university-accreditation-program---home

7. Accommodation

- **No accommodation will be made after the deadline of a quiz for any reason** (e.g., technical problems).

- **There will be no assignment extensions or make-up assignments for any reason.** If you are unable to submit an assignment by the due date/time, you must seek approval for the absence as soon as possible and contact your instructor immediately. Approval can be granted either through a self-reporting of absence or via the Dean’s Office/Academic Counselling unit of your Home Faculty. **Those students obtaining such appropriate accommodation will have the weight(s) of the missed assignment(s) shifted to the other completed assignments (but remember that students must submit at least 3 out of the 5 assignments to write the final exam).** Failure to obtain academic accommodation for a missed due date will result in a grade of 0% for the Assignment(s).

- If you miss the Midterm you must request accommodation from Academic Counseling in your Faculty’s Dean’s Office (**students cannot use self-reporting accommodation since the Midterm is worth 35% of the final grade**). Students who obtain appropriate accommodation will be eligible for writing a make-up Midterm test and are responsible to contact the instructor.

- If you miss the Final Exam (group project) you must request accommodation from Academic Counseling in your Faculty’s Dean’s Office (**students cannot use self-reporting accommodation for the Final Exam**) and contact the instructor immediately.

8. Academic Policies

The website for Registrarial Services is [http://www.registrar.uwo.ca](http://www.registrar.uwo.ca).

**UWO email:** In accordance with policy, [http://www.uwo.ca/its/identity/activatenonstudent.html](http://www.uwo.ca/its/identity/activatenonstudent.html), the centrally administered e-mail account provided to students will be considered the individual’s official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.
If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible. Approval can be granted either through a self-reporting of absence or via the Dean’s Office/Academic Counselling unit of your Home Faculty. For further information, please consult the university’s policy on academic consideration for student absences: [https://tinyurl.com/AcademicConsiderations](https://tinyurl.com/AcademicConsiderations)

Non-programmable calculators are permitted for use during the midterm exam. No other aids are allowed (unless otherwise noted). **Cellular phones, iPods, and other similar technology are not permitted in the midterm rooms.** This means that cellular phones, iPods, and other similar technology **cannot** be used as a timekeeper/clock, calculator, or for any other purpose.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: [http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

**Classroom Environment:** The Department has adopted a "Mutual Expectations" policy governing the classroom environment and all work submitted by students. The full text of the policy can be found at: [http://www.uwo.ca/stats/undergraduate/mutual-expectations.html](http://www.uwo.ca/stats/undergraduate/mutual-expectations.html). In summary, the policy was developed under the premise that all interactions between students and faculty should be governed by the principles of courtesy, respect and honesty.

**9. Support Services**

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Student Accessibility Services (SAS) at 661-2147 if you have any questions regarding accommodations.

The policy on Accommodation for Students with Disabilities can be found here: [http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_disabilities.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_disabilities.pdf)

The policy on Accommodation for Religious Holidays can be found here: [http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf)

Learning-skills counsellors at the Student Development Centre ([http://www.sdc.uwo.ca](http://www.sdc.uwo.ca)) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health@Western ([http://www.health.uwo.ca/mental_health](http://www.health.uwo.ca/mental_health)) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, [http://westernusc.ca/services](http://westernusc.ca/services).
10. Important Information

- If you would like to make an audio recording of the lectures/tutorials in this course, you MUST ask permission first (through OWL Messages sent to “Instructor Role”). According to intellectual property laws, not asking permission constitutes stealing. I will NOT permit videotaping lectures under any circumstances.

- All course materials (i.e. lecture slides, quizzes, assignments, and actual exam questions and other supplementary material posted on OWL) are made available to you for your personal use in this course only. Sharing, posting, selling, or using this material outside of your personal use in this course is considered an infringement of intellectual property rights.

- The Forum tool is enabled on the OWL website. Please use this Forum to post and respond to questions about course content (e.g., lecture, readings, etc). The Forum will be monitored on a regular basis and the instructor will interject with corrections or responses as necessary. As this is an open Forum, please be respectful of your peers, instructor(s), and TAs. Derogatory, discriminatory, or otherwise inappropriate language or topics will be removed and dealt with at the instructor’s discretion.