

**SS 3860B Generalized Linear Models / SS 9155B Statistical Modelling II
Winter 2021 Course Syllabus**



Although this academic year might be different, Western University is committed to a **thriving campus**. We encourage you to check out the [Digital Student Experience](#) website to manage your academics and well-being. Additionally, the following link provides available resources to support students on and off campus: <https://www.uwo.ca/health/>.

Technical Requirements and Important Dates:



Stable internet connection



Laptop or computer



Working microphone



Working webcam



Classes Start	Reading Week	Classes End	Study day(s)	Exam Period
January 11	February 15 - 19	April 12	April 13	April 14 - 30

* March 15, 2021: Last day to drop a second-term half course or a second-term full course without penalty

1. Course Information

Instructor	Day/Time	Location	Contact	Office hours
Camila de Souza	Tuesdays 9:30-11:30 am (EST) Wednesdays 10:30-11:30 am (EST)	Synchronous Online via Zoom	use OWL messages (contact "Instructor Role") – not UWO email	Tuesdays 1:00-2:00 pm (EST) online via Zoom

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.

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

Prerequisites for SS 9155B: SS9159A

→ See Course Schedule on Page 5

2. Learning Outcomes

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.

3. Online Participation and Engagement



- Attendance at synchronous sessions is required
- Sessions will **not** be recorded but all slides will be available on OWL
- Students are expected to participate and engage with content as much as possible
- Students can participate during the live class sessions by raising your hand on Zoom or using the chat option to post a question. I plan to stop every once in a while during the live classes to check to see if any student has posted a question or has raised their hand.
- Students can also participate by interacting in OWL forums with their peers, instructor and TAs.

4. Communication

To communicate with the instructor **always use the OWL messages (to “Instructor Role”)** tool. Messages sent to instructor’s UWO email will **not** be replied.

You can expect a response to a message to the instructor within **approximately 48 hours** during the work week (during busy times, it may take a little longer). ***Note that messages will not be answered within the 24-hour period before exams or project deadlines***, 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.

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 or TAs 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.

5. Course Materials

Required text: Faraway, J. J. (2016) Extending the Linear Model with R: Generalized Linear, Mixed Effects and Nonparametric Regression Models, 2nd Edition. CRC Press.

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/>).

6. Methods of Evaluation

Component	Weight	Deadlines/Due dates
Assignment 1	5%	Friday Jan 29
Assignment 2	5%	Friday Feb 12
Assignment 3	5%	Friday March 26
Assignment 4	5%	Monday April 12
Midterm	35%	To be scheduled by the Registrar's Office
Final Exam: group project report and presentation	45%	During final exam period (to be scheduled)

i) Assignments

The assignments will be available on the course OWL site. However, you will not submit your solutions to OWL. Instead, assignments must be submitted through **Gradescope** (<https://www.gradescope.com/>) an on-line collaborative grading system. It is your responsibility to make sure that your assignment is successfully uploaded and legible. Submissions that cannot be read by the grader will receive a grade of zero.

Assignment submissions are due 11:55pm (Eastern time) on the due date. No credit will be given for submissions beyond this time unless a valid academic accommodation is obtained (see Section 6 for details on accommodation).

Solutions to assignments **will not** be posted; however, TAs will provide comments on wrong answers using Gradescope, which will allow students to find out the correct solutions. In addition, students can ask the instructor and TAs for more details on solutions during office hours.

ii) Midterm

There will be a **2-hour midterm exam to be scheduled by the Registrar's Office** scheduling system, with an online proctoring system (such as Zoom or ProctorTrack). See Section 9 for policies of using Zoom or ProctorTrack proctoring.

ALL students **MUST** write the midterm at its given eastern time.

The midterm is **NOT** an open-book exam and you must work independently. Before you begin the exam, you will agree to an Honour Statement. I will be conducting response and cheating analysis after the exam. Please honour the Honour Statement.

You can use a non-programable calculator.

If the midterm exam is administered through the Tests and Quizzes tool on OWL, then submissions will not be accepted after the exam closes. If an examination requires submission through Gradescope then late submissions will be subject to a penalty of 1% per minute for the first 10 minutes and 5% per minute thereafter.

iii) Final exam

The final exam consists of a group project report and presentation. Students will be **randomly assigned** to groups via an R script that will be run live during class. The project involves a comprehensive statistical analysis of a dataset. Each group will work on a different dataset. More details will be presented in the first weeks of classes.

The time for the presentations will be the time for the final exam to be scheduled by the Registrar's Office. All students must attend. Project reports and presentation slides are due **1 hour before the scheduled exam time**. Presentations will be conducted online via zoom.

iv) Rounding of marks

Across the Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g., a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark "bumping" will be denied.

7. Accommodation and accessibility

- 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 to submit their assignment within 24 hours of the end of the accommodation period**. Failure to submit a missed assignment within 24 hours of a valid academic accommodation period will result in a grade of 0%.
- If you miss the Midterm you must request accommodation from Academic Counseling in your Faculty's Dean's Office. Students who obtain appropriate accommodation will have the weight of the midterm redistributed to the final exam.

- **There is no accommodation for the final project report**, since one of the group members should be able to submit the report by the due time and date. However, if you miss the final group project presentation you must request accommodation from Academic Counseling in your Faculty's Dean's Office and contact the instructor immediately.
- Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The Academic Accommodation for Students with Disabilities policy can be found at: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf
- Religious Accommodation: students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the Western Multicultural Calendar: <https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>

8. Course Schedule

Week		Topics	Reminders
1	Jan 11 – 15	- Review of Linear Regression (Ch. 1) - Logistic Regression (Ch. 2)	
2	Jan 18 – 22	- Logistic Regression (Ch. 2) - Binomial Regression (Ch. 3)	
3	Jan 25 – Jan 29	- Poisson Regression (Ch. 5)	Assignment 1 Jan 29
4	Feb 1 – 5	- Poisson Regression (Ch. 5) Modelling data from two-way contingency tables (Ch. 6)	
5	Feb 8 – 12	- Three-way contingency tables (Ch. 6)	Assignment 2 Feb 12
6	Feb 15 – 20	Reading week	
7	Feb 22 – Feb 6	- Multinomial logit model (Ch. 7)	
8	Mar 1 – 5	- Generalized linear models (Ch. 8)	
9	Mar 8 – 12	Random effects (Ch. 10)	
10	Mar 15 – 19	- Random effects (Ch. 10) - Longitudinal data (Ch. 11)	
11	Mar 22 – 26	- Repeated measures (Ch. 11) - Nonparametric Regression (Ch. 14)	Assignment 3 March 26
12	March 29 – April 2	- Nonparametric Regression (Ch. 14)	
13	Apr 5 - 9	- Additive models (Ch. 15)	
14	April 12	- Last day of classes	Assignment 4 April 12

9. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy, <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>

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

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.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

When Zoom is used for exam invigilation, you will be required to keep your camera on for the entire session, hold up your student card for identification purposes, and share your screen with the invigilator if asked to do so at any time during the exam. The exam session using Zoom will not be recorded.*

ProctorTrack will require you to provide personal information (including some biometric data). The session will be recorded. By taking this course, you are consenting to the use of this software.

More information about remote proctoring is available in the Online Proctoring Guidelines at the following link:

<https://www.uwo.ca/univsec/pdf/onlineproctorguidelines.pdf>

Completion of this course will require you to have a reliable internet connection and a device that meets the system and technical requirements for both Zoom and ProctorTrack. Information about the system and technical requirements are available at the following links:

<https://www.proctortrack.com/tech-requirements/>

<https://support.zoom.us/hc/en-us>

* Please note that Zoom servers are located outside Canada. If you would prefer to use only your first name or a nickname to login to Zoom, please provide this information to the instructor in advance of the test or examination.

Professionalism & Privacy

Western students are expected to follow the Student Code of Conduct (<https://www.uwo.ca/univsec/pdf/board/code.pdf>). Additionally, the following expectations and professional conduct apply to this course:



- Students are expected to follow online etiquette expectations provided on OWL
- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared
- Recordings are not permitted (audio or video) without explicit permission
- Permitted recordings are not to be distributed
- Students will be expected to take an academic integrity pledge before some assessments

Copyright Statement

Please be aware that all course materials created by the instructor(s) are copyrighted and **cannot be sold/shared**. Those include materials used in tests/quizzes, midterms, and finals. Any posting/sharing of such materials in part or whole without owner's consent is considered as violation of the Copyright Act and will be considered as a scholastic offence.

In addition, online services such as Chegg are actively monitored. Any questions that are coming out during midterms and finals and are posted to an online service will be searched. Such an activity will be considered as a scholastic offence and will result in academic penalty.

10. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>

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.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Learning-skills counsellors at the Student Development Centre (<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) 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>.