

**SS 3860B Generalized Linear Models / SS 9155B Statistical Modelling II  
Winter 2023 Course Syllabus**

## 1. Course Information

### Course Information

Instructor	Day/Time	Location	Contact
Dr. Camila de Souza	Tuesday: 9:30 am – 11:30 am Wednesday: 10:30 am – 11:30 pm	<b>NCB-114</b>	use <b>OWL messages</b> (contact “Instructor Role”)

**Description:** In this course, we will use the R statistical software 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

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course, and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

## 2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Dr. Camila de Souza	use OWL messages (contact “Instructor Role”)	WSC 225	519-661-2111 x83618	TBD

- To communicate with the instructor **always use the OWL messages (to “Instructor Role”)** tool.
- Messages sent to the 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.

### 3. Course Objectives, Schedule, Delivery Mode

#### Course Objectives

By the end of this course, you should be able to:

- Select an appropriate statistical method for analyzing data with a continuous, count, binomial, or multinomial response variable.
- Explain maximum likelihood inference for the generalized linear model framework.
- 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.
- Summarize and report your results for statistical and general audiences.

#### Tentative Course Schedule - Textbook: Extending the Linear Model with R, 2<sup>nd</sup> Edition

Week	Topics	Reminders
Jan 9 – 13	- Review of Linear Regression (Ch. 1) - Logistic Regression (Ch. 2)	
Jan 16 – 20	- Logistic Regression (Ch. 2) - Binomial Regression (Ch. 3)	
Jan 23 – 27	- Poisson Regression (Ch. 5)	
Jan 30 – Feb 3	- Poisson Regression (Ch. 5) Modelling data from two-way contingency tables (Ch. 6)	<b>Assignment 1 Feb 3</b>
Feb 6 – 10	- Three-way contingency tables (Ch. 6)	
Feb 13 – 17	- Multinomial logit model (Ch. 7)	
Feb 20 – 24	<b>Reading week</b>	
Feb 27 – Mar 3	- Generalized linear models (Ch. 8)	
Mar 6 – 10	- Generalized linear models (Ch. 8)	<b>Assignment 2 Mar 10</b>
Mar 13 – 17	- Random effects (Ch. 10)	
Mar 20 – 24	- Random effects (Ch. 10) - Longitudinal data (Ch. 11)	
Mar 27 – 31	- Repeated measures (Ch. 11) - Nonparametric Regression (Ch. 14)	<b>First project part Mar 31</b>
Apr 3 - 7	- Nonparametric Regression (Ch. 14)	
Apr 5 - 9	- Additive models (Ch. 15)	
April 10	- Last day of classes	<b>Assignment 3 April 10</b>

#### Key Sessional Dates

Classes begin: January 9, 2023

Fall Reading Week: February 18, 2023 to February 26, 2023

Classes end: April 10, 2023

Exam period: April 13, 2023 to April 30, 2023

#### Contingency plan for an in-person class pivoting to 100% online learning

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, affected course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for

students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

## 4. 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/>).

Students are responsible for checking the course OWL site (<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.

All course material will be posted to OWL: <http://owl.uwo.ca>

**The Forum tool is enabled on the OWL website.** Please use this Forum to post and respond to questions about course content (e.g., lectures, 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.

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

## 5. Methods of Evaluation

Component	Weight	Deadlines/Due dates
Assignment 1	10%	Friday February 3
Assignment 2	10%	Friday March 10
Assignment 3	10%	Monday April 10
Midterm	30%	To be scheduled by the Registrar’s Office
Final Exam: data analysis project report ( <u>individual or in groups of maximum of 3 students</u> ) In addition to the report, SS9155 students are also required to give an oral presentation	40% (10% for the first part and 30% for the complete final report)	<ul style="list-style-type: none"> <li>• First project part (dataset description and methodology plan) is due Friday, March 31</li> <li>• Complete final project report is due Wednesday, April 19</li> <li>• Oral presentation for SS9155 students only is due Thursday, April 20. Location and time TBD</li> </ul>

## Assignments

- **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 online collaborative grading system. It is your responsibility to make sure that your assignment is successfully uploaded and legible. Pages must also be assigned to questions. Submissions with no pages assigned to questions or that cannot be read by the grader will receive a grade of zero.
- After receiving the grades from an assignment, **students will have seven days to submit any regrade requests on that assignment.** After this seven-day period, regrade requests will NOT be accepted. Regrade requests must be made using the Gradescope tool “Regrade Request”.
- **Assignment submissions are due 11:55 pm (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 incorrect 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 via the Regrade Request tool on Gradescope and during office hours.

## Midterm and final exams

- There will be a **2-hour in-person closed-book midterm exam, and its time will be scheduled by the Registrar’s Office.**
- The final exam consists of an individual or group (maximum of 3 students) project report. SS9155 students will also give an oral presentation. 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.

## 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.

## 6. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

## **Assessments worth 10% or more of the overall course grade:**

For work totalling 10% or more of the final course grade, which is the case for all our course assessments, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the University's medical illness policy at

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf).

The Student Medical Certificate is available at

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

If you are unable to submit an assignment by the due date/time, you must seek accommodation from Academic Counseling in your Faculty's Dean's Office as described above. Approval can be granted via the Dean's Office/Academic Counselling unit of your Home Faculty. SS9155 students must require accommodation from the direction of their MDA program. Those **students obtaining such appropriate accommodation will have to submit their assignment via OWL messages 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. SS9155 students must require accommodation from the direction of their MDA program. Students who obtain appropriate accommodation will be eligible to write a makeup exam.

If you are unable to submit your final project report by the due date/time, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility for a deadline extension. SS9155 students must require accommodation from the direction of their MDA program.

## **7. Accommodation and Accessibility**

### **Religious Accommodation**

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

### **Accommodation Policies**

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic\\_Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

## 8. Academic Policies

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

In accordance with policy,

[https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf),

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 their official university address is attended to in a timely manner.

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

Online services such as Chegg are actively monitored. Any questions that are coming out from assignments and are posted to an online service will be searched. Such an activity will be considered as a scholastic offence and will result in an academic penalty.

**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).

Clickers, specifically iClicker will be used in this class for instant feedback and non-graded assessments. Clickers will not be used for any marks towards the course.

### 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:

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

### 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 assignments, 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.

## 9. Support Services

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

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

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

[https://www.uwo.ca/health/student\\_support/survivor\\_support/get-help.html](https://www.uwo.ca/health/student_support/survivor_support/get-help.html).

To connect with a case manager or set up an appointment, please contact [support@uwo.ca](mailto:support@uwo.ca).

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 Accessible Education at

[http://academicsupport.uwo.ca/accessible\\_education/index.html](http://academicsupport.uwo.ca/accessible_education/index.html)

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<https://learning.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.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.