

SS9055B Generalized Linear Models Course Outline

1. Course Information

Course Information

Academic Term: Winter 2026

Lecture Hours: Monday, Friday 10:00 – 11:30 AM

Lecture Location: WSC 248

List of Prerequisites

You must have completed SS9859A or an equivalent course. Please contact the instructor if you have any concerns about prerequisites.

Unless you have either the requisites for this course or written special permission from your Dean's Designate (Department/Program Counsellors and Science Academic Advisors) 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. Hyukjun (Jay) Gweon	hgweon@uwo.ca	WSC 211	519-661-2111 ext.87792	Mon 1:30 – 2:30 pm
TA:				TBA

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

3. Course Syllabus, Schedule, Delivery Mode

This course on generalized linear models (GLM) blends theoretical insights with practical applications, emphasizing the unifying principles that connect a variety of statistical procedures. Starting with inference techniques such as parameter estimation, hypothesis testing, goodness-of-fit assessment, and model comparison, we'll cover the theory and application of GLMs, focusing on binary, categorical, and count data while also covering the full generality of responses from the exponential family. Throughout

the course, we will use R to interpret and report results, focusing on GLM types like logistic regression, Poisson log-linear models, and multinomial regression. The course is designed for students interested in advanced regression modeling, aiming to equip them with an understanding of statistical theory and the skills to fit regression models across various contexts.

Below is the tentative weekly schedule.

Week		Topics
1	Jan 5-9	Review of linear regression
2	Jan 12-16	Likelihood methods: parameter estimation and inferences
3	Jan 19-23	Logistic regression (Ch 2)
4	Jan 26-30	Logistic regression (Ch 2) Binomial regression (Ch 3)
5	Feb 2-6	Poisson regression (Ch 5) Midterm 1
6	Feb 9-13	Poisson regression (Ch 5)
7	Feb 16-20	Reading week
8	Feb 23-27	Two-way contingency tables (Ch 6)
9	Mar 2-6	Multinomial regression (Ch 7) Midterm 2
10	Mar 9-13	Generalized linear models (Ch 8)
11	Mar 16-20	Generalized linear models (Ch 8)
12	Mar 23-27	Random effects (Ch 10) Midterm 3
13	Mar 30-Apr 3	Longitudinal data (Ch 11)
14	April 6-8	Generalized linear mixed models (Ch 13)

Key Sessional Dates

Classes begin: January 6, 2025

Spring Reading Week: February 17 – 21, 2025

Classes end: April 4, 2025

Contingency plan

Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will **not** change. Any assessments affected will be conducted online as determined by the course instructor.

4. Course Materials

The instructor will use his own course notes and examples.

Course notes will be heavily based on the following textbook:

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

Information about the textbook cost can be found [here](#). Book resources are available at the author's webpage: <https://julianfaraway.github.io/faraway/ELM/>

Note: Students need to use the second edition. The first edition will not be sufficient.

Software: We will use **R** for covering examples. A laptop or personal computer with R/RStudio installed is recommended.

All R codes that we use in class will be posted to OWL: <https://westernu.brightspace.com/>

Students are responsible for checking the course OWL site (<https://westernu.brightspace.com/>) regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class.

If students need assistance with the course OWL site, they can seek support on the [OWL Brightspace 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

The overall course grade will be calculated as listed below:

Assignments (2)	10%
Midterm Tests (3)	60%
Final Exam	30%

Assignments

There will be **two homework assignments (each is worth 5%)** during the course.

Midterm Tests

There will be **three in-person midterm tests** that cover the course material. **The tentative test dates are Feb 12 and Apr 2. Each test will be worth 20% of your final grade.** The topics covered for each test will be announced later.

Final Exam

The time and location of the final exam (3-hour long) will be determined later.

Specific conditions that are required to pass the course:

- Before the final exam, students are required to have completed assessments whose weight totals at least **45% of their final grade**. Students who do not meet this requirement may be given an opportunity to complete the requirement with the next offering of the course.

Notes:

- All tests are closed book.
- Late assessments with approved accommodation or academic consideration must be completed no later than 48 hours from the scheduled deadlines. Late assessments without approved accommodation or academic consideration will not be accepted.
- The weight for a missed assignment is not transferrable.

6. Student Absences

Evaluation Scheme for Missed Assessments

Missed midterm test: There are no make-up exams for missed midterm tests. For those who do legitimately miss a test, the weight of the missed test will be transferred to the final exam.

Missed final exam: Students who miss the final exam with an approved academic consideration are required to take a make-up final exam scheduled after the original final exam date.

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 an accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor. Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays:

<https://www.edi.uwo.ca>.

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.

8. Academic Policies

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

In accordance with policy,

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.

Calculators: Only non-programmable calculators are permitted on exams.

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:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

9. Support Services

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.

To connect with a case manager or set up an appointment, please contact 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

if you have any questions regarding accommodations.