

MGMT 605 Generalized Linear Models

Online Syllabus

Instructor: Juan Vazquez

Office Hours: By appointment.

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Course Dates/Times: August 24 – October 17 2020

Live meetings will be held via Zoom on Wednesdays from 6:30 – 8:00 pm EST.

Please note that this syllabus is the instructor's best effort at presenting a definitive statement of the course's policies, assignments, and schedule. However, this syllabus and the course contents are subject to change at the discretion of the instructor. Before any changes are made, the instructor will make every effort to include students in the process, and he will provide adequate advance notice of any prospective changes.

Course Description

This course extends linear “OLS” regression by introducing the concept of Generalized Linear Model “GLM” regression. The course reviews traditional linear regression as a special case of GLM's, and then continues with logistic regression, poisson regression and survival analysis. The course is heavily weighted towards practical application with large datasets containing missing values and outliers. It addresses issues of data preparation, model development, model validation, and model deployment.

Student Learning Objectives

After completing this course, students will be able to:

1. Choose, apply, and develop appropriate linear statistical models to solve business problems and find business opportunities
2. Recognize the basic assumptions, as well as strengths and weaknesses, of models using multivariate analyses
3. Interpret the result from the application of various linear models and communicate those clearly to decision makers
4. Address ethical implication associated with applying GLM techniques

Required Text and Articles

- Extending the Linear Model with R: Generalized Linear, Mixed Effects and Nonparametric Regression Models 1st edition, Julian J. Faraday
- Generalized Linear Models with Examples in R, Peter K. Dunn, Gordon K. Smyth

Reference Books (Recommended)

- Applied Predictive Modeling, 1st ed. 2013, by Max Kuhn and Kjell Johnson, Corr. 2nd printing 2018 Edition
- Data Mining and Business Analytics with R, by Johannes Ledolter, 1st Edition

Weekly Topics

Over the seven weeks of this course, students should expect to work on the following topics in this general schedule:

Week and Major Topics	Learning Objectives Addressed
1. Introduction to SAGE Jupyter Notebooks, data manipulation with R, visualizations with GGLOT, Refresh R and statistics	4
2. Introduction to the linear regression model	1, 2, 3
3. Introduction to the binomial & proportion response, special case Lasso and Ridge regression	1, 2, 3
4. Introduction to the multinomial model	1, 2, 3
5. Introduction to the count regression models	1, 2, 3
6. Additional count models	1, 2, 3
7. Introduction to Time-to-Event modeling	1, 2, 3

8. Introduction to Machine Learning Applications	1, 2, 3, 4
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Assignments

Full details of weekly assignments are available in the weekly modules. Please complete your assignments on time as specified. Failure to submit an assignment by the date and time noted in Canvas may result in a lowering of your grade. Should you not submit an assignment within 24 hours of its due date and time, you will earn a zero (0) for that assignment.

Grading Expectations

This syllabus is subject to change throughout the semester. Any updates to the syllabus will be announced in class and posted on Canvas. Students are responsible for any announcements made in class and are expected to check email or Canvas on a daily basis for course updates. The instructor reserves the right to apply qualitative judgment in determining final grades for the course.

Percentage weights by assignment type

Overall grade weighted as follows	
Attendance and Participation	20%
Online Assignments and Discussions	20%
Exams	35%
Final Project	25%
Total	100%

Final Grading Scheme

Grades Scored Between	Will Equal	Grades Scored Between	Will Equal
96% and 99%	A	75% and 79.99%	C+
90% and 95.99%	A-	70% and 74.99%	C
87% and 89.99%	B+	65% and 69.99%	C-

Grades Scored Between	Will Equal	Grades Scored Between	Will Equal
84% and 86.99%	B	50% and 64.99%	D
80% and 83.99%	B-	Less than 50%	F

Expectations of Students

During the first meeting, we will discuss student expectations of the course and the instructor.

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Live Class Meeting Format

Live sessions are hosted via Zoom through a link in Canvas. Zoom is an online web-based videoconferencing platform. Please be sure that you have access to a computer with a working webcam and mic. It is the student's responsibility to check Canvas prior to each class period for information or notices regarding any possible class schedule changes, but they should also receive a notice via email.

Cancelled Classes and Postponed Synchronous Sessions

In the highly unlikely situation where an emergency arises (personal, weather, etc.), the instructor will post a message on Canvas to inform students if the class is canceled or rescheduled. Unless specifically notified by the instructor, online sessions will continue as scheduled despite inclement weather or other school closings.

Academic Honesty

Moravian College expects its students to perform their academic work honestly and fairly. A Moravian student, moreover, should neither hinder nor unfairly assist other students in efforts to complete their own work. This policy of academic integrity is the foundation on which learning at Moravian is built.

The College's expectations and the consequences of failure to meet those expectations are outlined in the current [Student Handbook](#) and in the Statement on Academic Honesty at Moravian College, available from the Office of the Provost. If a student, at any point in an academic career at Moravian, is uncertain about their responsibility as a scholar or about the propriety of a particular action, the instructor should be consulted.

Attendance

Online courses are heavily dependent on asynchronous learning and activities. Students' success in this course is dependent on their active participation and engagement throughout. Students are required to complete all readings, activities, and assignments by the deadlines indicated by the faculty member. Students will be marked as absent for the course in a particular week if they have not completed one of the main course deliverables described above in this document (including discussions, assignments, and synchronous live sessions).

As a general expectation, students should attend all eight live sessions offered by the course instructor. These sessions provide real-time engagement between the faculty and students, and are commonly used for activities such as student breakout groups, live group discussions, presentations, and office hours. Each student has two permissible absences to use at their discretion and without explanation, but it is required that you notify the professor by email before missing class. The instructor also has the discretion to allow additional excused absences for serious illness, medical or family emergencies, or professional obligations. In these situations, students are expected to notify the professor by email before said absence, or, in the case of emergency, by email or phone as soon as possible.

Disability Support

Moravian College is committed to ensuring the full participation of all students in its programs. If you have a documented disability (or think you may have a disability) and, as a result, need a reasonable accommodation to participate in this class, complete course requirements, or benefit from the College's programs or services, contact the Accessibility Services Center (ASC) as soon as possible.

To receive any academic accommodation, you must be appropriately registered with ASC. The ASC works with students confidentially and does not disclose any disability-related information without their permission. To contact the Accessibility Services Center (ASC), located in the lower level of Monocacy Hall, stop in, call 610-861-1401 or email: asc@moravian.edu.

Civility & Inclusion

Economics & Business Department Values

Moravian College is a welcoming community that embraces and values the diversity and individuality of all members of the campus community. We acknowledge the uniqueness of all individuals, and we seek to cultivate an environment that respects, affirms, and defends the dignity of each member of the community. We comply with Moravian College's nondiscrimination policy. For the purposes of the classroom, it means that all persons, regardless of actual or perceived race, color, sex, religion, ancestry, genetic information, national origin, sexual orientation, gender identity or expression, familial status, marital status, age, mental or physical disability, use of guide or support animals and/or mechanical aids, have an equal opportunity to participate and learn in this class and are to be treated equally in an inclusive and supportive manner.

But more than just legal compliance, we in the Economics & Business Department acknowledge a moral obligation and commitment to create a safe and inclusive learning environment in which we can all grow and learn together, and are sensitive to the varied backgrounds and needs of everyone in our community in order to progress as a college that values the diversity and inclusion of students and faculty. Both safety and inclusion enhance the quality and effectiveness of the learning experience.

Promoting Safety & Inclusion

It is the responsibility of faculty, staff, and students to promote safety and inclusion by cultivating a culture that welcomes and supports people of varying backgrounds, different viewpoints, experiences, talents, and ideas. By respecting and valuing these differences, we can make problem solving and decision making multi-dimensional, leading to more learning and better outcomes for all, including project clients. It is everyone's responsibility to respect the thoughts and opinions of others, especially when they differ from our own.

Behaviors such as those listed in the table below will lead to an inclusive classroom culture.

Behavior	Description
Listening to understand	Listening with an open mind to fully understand all aspects of a situation
Seeing multiple points of view	Understanding that our perspective is not the only one when looking at a situation, issue, or person

Giving & receiving feedback	Inviting and giving feedback
Enhancing inclusion	Helping others feel included and involved
Addressing inappropriate behavior	Acknowledging inappropriate behavior such as hostile or aggressive actions, discrimination, and/or vulgar or inappropriate language (i.e. cursing, obscenities). In addition, it is necessary to communicate expectations for appropriate behavior.
Cultivating & sustaining a safe learning environment	Acknowledging the physical, emotional, and intellectual dimensions of <i>safety</i> so that students feel comfortable expressing themselves authentically
Challenging respectfully	Asking questions, sharing opinions, and making statements that provoke individuals to think about a situation differently or against the norm enhances learning for students and faculty. It is imperative that this be done in ways that build esteem and mutual respect.

Source: drafted July 31, 2018 and partially adapted from MIT Human Resources, Diversity & Inclusion, <http://hrweb.mit.edu/diversity/affirmative-action-plan-admins/resources>

The Department complies with ethics, complaints, and grievances policies and processes established by the College. Any situations which arise that would fall under one of these categories will be referred appropriately.

Title IX statement

Moravian College faculty are committed to providing a learning environment free from gender discrimination and sexual violence. Should a student disclose a concern of this nature, the faculty member is obligated to inform the Title IX Coordinator, who will assist the student in determining resources for support and resolution. Fully confidential reporting options include the [Counseling Center](#), [Health Center](#), and [Religious Life](#) (chaplain). Survivors are encouraged to seek immediate assistance by

contacting the [Advocates](#) at (484) 764-9242. For more information, please visit www.moravian.edu/titleix.

Workload Requirements

Moravian College, and its accreditors, requires a minimum number of hours of work for each credit hour a student earns. For **online graduate classes**, the requirement is 44 hours of work for each credit hour or 132 hours of work for a three-credit hour course. This requirement works out to 16.5 hours of work required per week of an eight-week course, or 18.9 hours per week if the course is delivered over seven weeks.

Writing Center

The Writing Center is a resource for all Moravian students. At the Writing Center, a trained tutor will work individually with you on your writing at any point in the process, from brainstorming to editing. The Writing Center is located on the second floor of Zinzendorf Hall, a building that is not accessible to persons with mobility impairments. If you need the services of the Writing Center, please visit moravian.edu/writingcenter or call 610-861-1592.