



Course Syllabus: Causal Inference Applications to Business Analytics

Dillard College of Business Administration
BUAD 5633 Y80
Fall 2026
DB 129 5:30-7pm on Tuesdays

Contact Information

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Office hours: 11am – 12:30pm Tuesdays and Thursdays
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Course Description

Often, businesses want to know the effect their policies and decisions have on revenue, suppliers, customers; however, their policies cannot be implemented randomly. This poses a problem for a data scientist because most of the time non-random policies or decisions cannot be used to infer the effects of said policies or decisions.

General Learning Goals:

- Students will be asked to demonstrate their critical thinking and problem-solving skills by applying statistical learning techniques in their homework assignments and exams.
- This course aims to contribute to developing students' ability to communicate their analyses in a professional manner.
- Students will have to integrate the statistical knowledge they acquire from this course with multiple business disciplines.

Course Specific Learning Goals:

By the end of the course, students should be able to:

- Use linear regression to estimate and interpret relationships between variables and evaluate the assumptions underlying regression models.

- Use regression models with dummy variables, interaction effects, logarithms, and nonlinear terms to represent relationships commonly encountered in business data.
- Diagnose potential problems with regression models and evaluate how those problems affect the interpretation of statistical results.
- Explain why associations observed in nonexperimental data may not represent causal effects, including the role of selection bias and confounding variables.
- Use causal diagrams to identify potential sources of bias and determine which variables should be considered when estimating a causal relationship.
- Apply fixed-effects and difference-in-differences methods to estimate causal effects using observational data.
- Evaluate the assumptions required for causal inference and assess whether a particular empirical strategy provides credible evidence of a causal effect.
- Conduct statistical analyses in R and interpret the results in the context of a specific business question.
- Communicate empirical findings in a clear and professional manner, including the magnitude, interpretation, and limitations of estimated effects.

Textbook & Instructional Materials

If you want to read a textbook, then I suggest the following two books; however, my lecture notes and slides will be available.

Introductory Econometrics: A Modern Approach by Jeffery Wooldridge
Using R for Introductory Econometrics by Florian

You will need to download [R](#) onto your computer.

You will need to submit R-script files for homework. I recommend using [RStudio](#).

Student Handbook

Refer to: [Student Handbook](#)

Academic Misconduct Policy & Procedures

Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual's to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct. [Office of Student Conduct](#)

Moffett Library

Moffett Library provides resources and services to support student's studies and assignments, including books, peer-reviewed journals, databases, and multimedia materials accessible both on campus and remotely. The library offers media equipment checkout, reservable study rooms, and research assistance from librarians to help students effectively find, evaluate, and use information. Get started on this [Moffett Library webpage](#) to explore these resources and learn how to best utilize the library.

Grading

Course Grade - List all graded assignments with their point value and or percentage of total grade. Letter Grade Scale indicate the overall points or % to letter grade scale for example 1270 to 1137 = A.

Table 1: Points allocated to each assignment

Assignments	Points
Homework (12 at 2 pts each)	24
Midterm Exam	25
Final Exam	25
Total Points (1 free bonus point)	75

Table 2: Total points for final grade.

Grade	Points
A	67.5+
B	60 to 67.5
C	52.5 to 60
D	45 to 52.5
F	Less than 45

Homework

There will be 12 online homework assignments worth 2 points each. They will generally be due on Friday night at 11:59pm. These homework assignments will include multiple-choice, true-false, and fill in the blank questions.

Exams

There are two exams and they will take place during class time or during the final exam time decided upon by the university. They are worth 25 points each. They will be timed. These exams will include multiple-choice, true-false, and fill in the blank questions.

Late Work

I do not accept late homework. If you miss the first exam, your grade on the second exam will replace it.

Important Dates

- Last day for term schedule changes: Check date on [Academic Calendar](#).
- Deadline to file for graduation: Check date on [Academic Calendar](#).
- Last Day to drop with a grade of "W:" Check date on [Academic Calendar](#).
- Refer to: [Drops, Withdrawals & Void](#)

Desire-to-Learn (D2L)

Extensive use of the MSU D2L program is a part of this course. Each student is expected to be familiar with this program as it provides a primary source of communication regarding assignments, examination materials, and general course information. You can log into [D2L](#) through the MSU Homepage. If you experience difficulties, please contact the technicians listed for the program or contact your instructor.

Attendance

Students are expected to attend all meetings of the classes in which they are enrolled. Although in general students are graded on intellectual effort and performance rather than attendance, absences may lower the student's grade where class attendance and class participation are deemed essential by the faculty member. In those classes where attendance is considered as part of the grade, the instructor should so inform students of the specifics in writing at the beginning of the semester in a syllabus or separate attendance policy statement. An instructor who has an attendance policy must keep records on a daily basis. The instructor must give the student a verbal or written warning prior to being dropped from the class. Instructor's records will stand as evidence of absences. A student with excessive absences may be dropped from a course by the instructor. Any individual faculty member or college has the authority to establish an attendance policy, providing the policy is in accordance with the General University Policies.

Online Computer Requirements

Taking this class requires you to have access to a computer (with Internet access) to complete and upload your assignments. It is your responsibility to have (or have access to) a working computer in this class. ****Assignments and tests are due by the due date, and personal computer technical difficulties will not be considered reason for the instructor to allow students extra time to submit assignments, tests, or discussion postings.*** Computers are available on campus in various areas of the buildings as well as

the Academic Success Center. ***Your computer being down is not an excuse for missing a deadline!!** There are many places to access your class! Our online classes can be accessed from any computer in the world which is connected to the internet. Contact your instructor immediately upon having computer trouble. If you have technical difficulties in the course, there is also a student helpdesk available to you. The college cannot work directly on student computers due to both liability and resource limitations; however, they are able to help you get connected to our online services. For help, log into [D2L](#).

Recording Classes

Recording classes is generally prohibited without the professor's explicit permission. Such recordings, when permitted, are for personal use only and may not be uploaded to the internet or otherwise shared, transmitted, or published without the professor's prior consent. Some faculty may not permit recordings of their classes. When it is feasible and appropriate, students may record classes to accommodate disabilities under the Americans With Disabilities Act, with prior approval of Disability Support Services. Such recordings may not be uploaded to the internet or otherwise shared, transmitted, or published.

Change of Schedule

A student dropping a course (but not withdrawing from the University) within the first 12 class days of a regular semester or the first four class days of a summer semester is eligible for a 100% refund of applicable tuition and fees. Dates are published in the Schedule of Classes each semester.

Refund and Repayment Policy

A student who withdraws or is administratively withdrawn from Midwestern State University (MSU) may be eligible to receive a refund for all or a portion of the tuition, fees and room/board charges that were paid to MSU for the semester. HOWEVER, if the student received financial aid (federal/state/institutional grants, loans and/or scholarships), all or a portion of the refund may be returned to the financial aid programs. As described below, two formulas (federal and state) exist in determining the amount of the refund. (Examples of each refund calculation will be made available upon request).

Services for Students with Disabilities

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Student Wellness Center, (940) 397-4140.

Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to [Disability Support Services](#).

Emergency Aid Resources for Basic Needs

Unexpected life circumstances can affect anyone. If you are experiencing challenges meeting basic needs—such as housing, utilities, food, transportation, healthcare, technology, textbooks or other life necessities, resources may be available to help. Visit the [Student Emergency Support and Resources webpage](#) to learn more, and explore emergency support opportunities through MSU and how to access them. For additional information, please contact the Office of Student Affairs: Clark Student Center #108, (940) 397-7500, student.affairs@mstuexas.edu.

College Policies

Campus Carry Rules/Policies

Refer to: [Campus Carry Rules and Policies](#)

Smoking/Tobacco Policy

College policy strictly prohibits the use of tobacco products in any building owned or operated by WATC. Adult students may smoke only in the outside designated-smoking areas at each location.

Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

Campus Carry

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes has prohibited. The new Constitutional Carry law does not change this process. Concealed carry still requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit [Campus Carry](#).

Active Shooter

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit [MSUReady – Active Shooter](#). Students are encouraged to watch the video entitled “Run. Hide. Fight.” which may be electronically accessed via the University police department’s webpage: ["Run. Hide. Fight."](#)

Grade Appeal Process

Update as needed. Students who wish to appeal a grade should consult the Midwestern State University [MSU Catalog](#)

***Notice:** Changes in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor.

Course Schedule:

Week	Date	Topic	Assignments
1	August 27	Syllabus Day	
2	September 3	OLS Procedure	
3	September 10	Assessing OLS Models	• Homework 1
4	September 17	Regressions in R	• Homework 2
5	September 24	Dummy Variables and Interaction Effects	• Homework 3
6	October 1	Natural Logs and Polynomials	• Homework 4
7	October 8	Diagnostic Tests	• Homework 5
8	October 15		• Homework 6 • Exam 1
9	October 22	Causality and Selection Bias	• Homework 7
10	October 29	DAGS	• Homework 8
11	November 5	Fixed Effects	• Homework 9
12	November 12	Difference-in-Differences 1	• Homework 10
13	November 19	Difference-in-Differences 2	• Homework 11
14	November 17	Thanksgiving Break	
15	December 3	Difference-in-Differences 3	• Homework 12
16			• Exam 2