

Bus/Econ 309 Fall 2024

About this class

Welcome to Bus/Econ 309! The purpose of this course is to equip you with a mastery of the fundamental tools of mathematics, statistics and data analysis that you will need to succeed in your upper division courses and careers post-graduation. Further, I hope you leave this course with an increased ability to critically assess the means by which data is collected so you can better understand its potential and limitations in order to better critique and conduct your own analyses and the analyses of others.

While this class features a live meeting every week, it is **not a lecture**. Instead, the live meeting provides an opportunity for you all to practice the material that was covered in the lecture videos for that week and ask any questions you may have. As such, you are expected to watch the lecture videos in advance of each week's lecture (the videos to watch are detailed in the course outline table below) so you can come to class prepared to practice the material, further improve your understanding, and ask any questions you may have.

To make lectures more digestible/searchable/rewatchable, rather than posting a small number of long lectures (as you might get in a live class), I have recorded and posted a very large number of small lectures. There are four types of lectures, each with an associated number that corresponds to the order in which you should watch that lecture within that type, they are:

m## - These are the "math review" lectures

G## - These are the "graphing" lectures where I'll show you how to make graphs

A## - These are the "applied" lectures where I'll show you how to conduct applied data analysis

(no letter)## – These are the probability and statistics lectures (both theory and applied)

The last pages of this syllabus provide a recommended timeline for watching all the lectures and completing all the assignments. I highly recommend you follow those timelines to avoid falling behind.

Professor Contact Information

Office Hours: T/W, 12pm-1:00pm

Email: bryan.tomlin@csuci.edu

Course Description

The course reinforces and synthesizes quantitative skills developed in the lower division to ensure high levels of competence. You will polish and apply these skills to examples from core business disciplines from previous lower division classes as well as upcoming major requirements.

Course Learning Outcomes: Upon completion of this course, you will be able to

1. Use algebra to solve challenges in abstract and applied settings.
2. Use derivatives to find local/global maxima and minima in abstract and applied settings.
3. Interpret graphs and tables in business applications.
4. Create accurate and compelling graphs and tables for business applications.
5. Analyze information using personal calculations as well as software applications.

Translation of Learning Outcomes: At least sometimes, in some classes (and disproportionately in mathematically-based classes), you have earned grades that you know are not commensurate with your understanding of the material. This class is designed to make you demonstrate repeatedly, quickly, and with high accuracy that you can indeed use quantitative reasoning in abstract settings as well as settings applied to your major.

Textbooks

No textbook is required for this course, though I may occasionally post some recommended readings to the course webpage. Links to two “open” (free) textbooks are provided on the course Canvas page and the tables below discuss which chapters of these texts to reference for any particular topic we’ll be covering.

Grading

There are 2,000 total possible points available in this class. Your grade will be determined as follows:

Grade	F	D	C	B	A
Point Range	0-1199	1200-1399	1400-1599	1600-1799	1800-2000

Pluses (“+”) and minuses (“-“) will be assigned to grades falling in the top and bottom quarters of each range, respectively. For example, if you earn between 1,600 and 1,650 points you will receive a B-.

There is no curve in this class. **There is no extra credit in this class of any kind.** The only grading exceptions will occur for students who have experienced an extenuating circumstance (sickness, injury, death of a loved one, birth of a loved one, etc.; they’re usually pretty obvious).

Examinations

Your 2,000 possible points will be determined as follows:

Quizzes	Midterm	Graphing Portfolio	Final
1,100	300	300	300

All exams are open book and open note. You can work on the quizzes in groups. The midterm and final must be taken alone.

Quizzes (1,100 points total) – 11 quizzes, 100 points each

*Take these anytime you like before the due date, as many times as you like. You will keep only your highest score. **All quizzes must be completed (are due) by 11:59pm on November 22, 2024***

Graphing portfolio (300 points) – **Due on or before 11/29/24** – *This is the day after Thanksgiving, so please try to have this finished well before then so as not to ruin your holiday.*

See “Graphing portfolio” section below and the “Graphing Portfolio assignment.pdf” file on Canvas.

Midterm (300 points) – Week 8, during class (10/15 for Tuesday class, 10/16 for Wednesday class)

Final (300 points) – Finals week.

See final exam schedule (<https://www.csuci.edu/academics/final-exam-schedule.htm>) for date/time.

Graphing Portfolio

A point of emphasis in this class is that you can create a graph that clearly uses data to tell a compelling story and/or answer some question. I will grade this assignment very harshly. If your graph lacks basic elements (a title, axis labels, etc.) expect a zero. More details are provided in separate handouts.

Make-up Exams

I'll reschedule exams for students who experience extenuating circumstances (sickness, injury, death of a loved one, birth of a loved one, etc., they're usually pretty obvious). Work is not an extenuating circumstance, so – given that you now know when the exams will be held – make sure to request off of work well in advance to avoid a conflict, because I won't reschedule to accommodate your work schedule.

Academic Honesty

Academic honesty is of the utmost importance, and any academic misconduct will be subject to the strictest enforcement possible. This includes taking the midterm or the final with anyone's help – the midterm and final must be taken by yourself.

See <http://www.csuci.edu/studentlife/judicial-affairs/academic-dishonesty.htm> for more information.

Disability Accommodations

CSU Channel Islands is committed to equal educational opportunities for qualified students with disabilities in compliance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. The mission of Disability Accommodation Services is to assist students with disabilities to realize their academic and personal potential. Students with physical, learning, or other disabilities are encouraged to contact the Disability Accommodation Services office at (805) 437-8510 for personal assistance and accommodations.

Lecture Schedule (Continues onto next page)

Videos are numbered in the order they are intended to be viewed. The “m” prefix tells you it’s a “math” video, “A” means it’s an “applied” video (typically Excel), and “G” indicates a graphing video. The course proceeds from the top of this table to the bottom.

Lecture Video(s)	Topics Covered	Exam(s) featuring this material	Corresponding Textbook 1 Chapter(s)*	Corresponding Textbook 2 Chapter(s)*
m1-m5,	Algebra review	All	N/A	
m6-m9	Calculus review	All	N/A	
G1-G7, A0	Interpreting Graphs and Tables	All	N/A	
	Creating Graphs and Tables	All	N/A	
1-2, A1	Intro to data (Types of data)	All	1	I
3-6, A2-A3	Random variables and their distributions (PDFs, CDFs, medians, percentiles)	Quiz 4, Midterm	2	I-III
7-15, A4-A5	Measures of central tendency and spread (Expected value, standard deviation)	Quiz 5, Midterm	2	II, III
16-19	Joint probability distributions (Conditional expected value, covariance, correlation)	Quiz 6, Midterm	2	II, III
20-22	The normal distribution (z-scores, standard normal distribution)	Quiz 7, Midterm	3.1, 3.2	V, VI
23-29	Random sampling and properties of the sampling distribution (LLN, CLT, sample SD, standard error)	Quiz 8, Midterm	4	VII
30-38, A6-A7	Hypothesis tests involving the mean (t-tests, p-values, confidence intervals, (un)paired t-tests)	Quiz 8, Midterm	4, 5.1, 5.2, 5.3	VIII, IX, X
39-43	Sample covariance, sample correlation, and univariate regression using OLS (slope and intercept parameter estimates, OLS assumptions)	Quiz 9, Final	7	VIII, IX, X, XII

* The textbooks are optional and purely supplemental for students who prefer learning from textbooks rather than (or in addition to) videos. All exams will be based upon the material as covered in the videos.

Lecture Schedule - Continued

Lecture Video(s)	Topics Covered	Exam(s) featuring this material	Corresponding Textbook 1 Chapter(s)*	Corresponding Textbook 2 Chapter(s)*
44-48, A8-A9	Measures of model fit and precision, and model adjustments (R-squared, standard error of regression, hypothesis testing in regression, variable transformation, binary independent variables)	Quiz 10, Final	7	XII
49-58, A10-A11	Multivariate regression, control variables, and model specification (Omitted variable bias, (im)perfect multicollinearity)	Quiz 10, Quiz 11, Final	8	XII
59-61, A12	Multivariate regression techniques (Linear probability modeling, interaction terms, logarithmic terms)	Quiz 10, Quiz 11, Final	8.1, 8.2	N/A

Course Timeline

Quizzes and your graphing portfolio can be turned in early if you like, but not after the listed due dates. The midterm and final must be taken on the listed dates (excepting extenuating circumstances)

Week(s) (Monday-Friday)	Videos	Exams/Assignments (suggested quiz completions)
Weeks 1 and 2: 8/26 – 9/6	m1-m12, G1-G7, A0 1-2, A1	Quiz 1, Quiz 2, Quiz 3
Weeks 3 and 4: 9/9 – 9/20	3-19, A2-A5	Quiz 4, Quiz 5, Quiz 6
Weeks 5 and 6: 9/23 – 10/4	20-38, A6-A7	Quiz 7, Quiz 8
Week 7: 10/7 – 10/11	Review and catch-up	Retake quizzes with scores < 100%
Week 8: 10/14 – 10/18	Midterm	
Week 9: 10/21 – 10/25	Midterm review, Portfolio feedback	Graphing portfolios should be completed
Week 10: 10/28 – 11/1	39-48, A8-A9	Quiz 9
Weeks 11 and 12: 11/4 – 11/15	49-61, A10-A12	Quiz 10, Quiz 11
Week 13: 11/18 – 11/22	Review and catch-up, Portfolio feedback	ALL QUIZZES DUE
Week 14: 11/25 – 11/29	Review for final	Graphing portfolio due, Prepare for Final exam
Week 15: 12/2 – 12/6	Final Exam: 8am	