

## Bus/Econ 309 – Fall 2023

### About this class

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Welcome to Bus/Econ 309! This is an asynchronous online class, which means that it is highly self-motivated, but – and this is important – that doesn't mean that I'm not here for you every step of the way! In addition to office hours (see below), I am typically very quick to respond to emails, so if you're ever confused about anything, please contact me and we'll do our best to catch you up.

What makes this class asynchronous is that the lectures are not “live” (me, in person), but rather “virtual” (me, recorded). To succeed in this medium of instruction, I recommend treating the virtual lectures as you would in-person lectures, specifically **take notes!** Also, if you have questions, write them down and then you can ask me about them in person (office hours) or via email. Also, unlike live lectures, you can pause and rewind the lectures if necessary. Watching a given lecture video multiple times is quite common.

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

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*Office Hours:* (Through Zoom – online) See course webpage for details.

*Email:* [bryan.tomlin@csuci.edu](mailto:bryan.tomlin@csuci.edu)

### Course Description

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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.

## **Textbook**

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No textbook is required for this course, though I may occasionally post some recommended readings to the course webpage. Link 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**

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There are 1,000 total possible points available in this class. Your grade will be determined by your point total according to this table:

<b>F</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>
0-599	600-699	700-799	800-899	900-1000

Points above 599 and below 1,000 with ending digits between 0 and 25 will receive a “-“  
Points above 599 with ending digits between 75 and 99 will receive a “+” as will 1,000 points.

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**

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Your 1,000 points will be determined as follows:

<b>Quizzes</b>	<b>Midterm</b>	<b>Graphing Portfolio</b>	<b>Final</b>
360	200	240	200

**IMPORTANT!** – You can take the quizzes in a group if you like, in fact, I highly recommend it! As such, there’s no reason not to do very well on these, because you also have plenty of time to take them.

**ALSO IMPORTANT!** – Quizzes 1, 2, and 3 **each have two files**. One of the files is the pdf containing all of the quiz questions. The other is simply the answer-entry-form through Canvas where you must enter your answers receive a grade. When you open the answer-entry form **it will appear mostly blank**, that’s because all of the actual questions are on the pdf; just enter your answers on that form.

The midterm and final must be taken alone. However, they are open book and open note.

**Math quizzes** – Due 8/25/23 and 9/1/23 –

The algebra quiz (50 points, due 8/25/23) and the power-rule quiz (40 points, due 9/1/23) can be taken as many times as you like before the due date and you will receive your highest grade across attempts.

**Stats quizzes** – 90 points each and can only be taken once each.

*Quiz 1 Due 9/8/2023*

*Quiz 2 Due 9/15/2023*

*Quiz 3 Due 9/29/2023*

**Graphing portfolio** – Due on or before 10/6/23 –

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

**Midterm:** Must be taken and turned in on **FRIDAY, September 22, 2023** during any two-hour window of your choice. Because you only have 2 hours, you must start before 10pm to finish on time. Must take alone.

**Final:** Must be taken and turned in on **Friday, October 13, 2023** during any two-hour window of your choice. Because you only have 2 hours, you must start before 10pm to finish on time. Must take alone.

### **Graphing Portfolio**

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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 a separate handout.

### **Make-up Exams**

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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**

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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**

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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.

<b>Lecture Video(s)</b>	<b>Topics Covered</b>	<b>Exam(s) featuring this material</b>	<b>Corresponding Textbook 1 Chapter(s)*</b>	<b>Corresponding Textbook 2 Chapter(s)*</b>
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)	Midterm 1	2	I-III
7-15, A4-A5	Measures of central tendency and spread (Expected value, standard deviation)	Quiz 1, Midterm	2	II, III
16-19	Joint probability distributions (Conditional expected value, covariance, correlation)	Quiz 1, Midterm	2	II, III
20-22	The normal distribution (z-scores, standard normal distribution)	Quiz 2, Midterm	3.1, 3.2	V, VI
23-29	Random sampling and properties of the sampling distribution (LLN, CLT, sample SD, standard error)	Quiz 2, Midterm	4	VII
30-38, A6-A7	Hypothesis tests involving the mean (t-tests, p-values, confidence intervals, (un)paired t-tests)	Quiz 2, 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 3, 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**

<b>Lecture Video(s)</b>	<b>Topics Covered</b>	<b>Exam(s) featuring this material</b>	<b>Corresponding Textbook 1 Chapter(s)*</b>	<b>Corresponding Textbook 2 Chapter(s)*</b>
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 3, Final	7	XII
49-58, A10-A11	Multivariate regression, control variables, and model specification (Omitted variable bias, (im)perfect multicollinearity)	Final	8	XII
59-61, A12	Multivariate regression techniques (Linear probability modeling, interaction terms, logarithmic terms)	Final	8.1, 8.2	N/A

### Recommended Course Timeline

*Quizzes and 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)*

<b>Week</b>	<b>To do &amp; Videos to study</b>	<b>Exams (due date)</b>
Week 1: 8/18 – 8/25	Review syllabus and graphing portfolio assignment. m1 – m5, A0, A1	Algebra quiz (8/25)
Week 2: 8/26 – 9/1	m6-m12, G1-G7, 1-2, A1	Power rule quiz (9/1)
Week 3: 9/2 – 9/8	3-19, A2-A5	Quiz 1 (9/8)
Week 4: 9/9 – 9/15	20-29, 30-38, A6-A7	Quiz 2 (9/15)
Week 5: 9/16 – 9/22	Study for midterm, review all above videos and “Cool Graphs from New York Times.pdf”	Midterm (9/22)
Week 6: 9/23 – 9/29	39-48, A8-A9, 49-61, A10-A12	Quiz 3 (9/29)
Week 7: 9/30 – 10/6	Concentrate on polishing up your graphing portfolio	Graphing portfolio (10/6)
Week 8: 10/7 – 10/13	Study for final exam, review all videos, particularly 39-61	Final exam (10/13)