BUSN 5000
Introduction to Data Science for Business and Economics

Chris Cornwell

Fall 2025
(updated 13 Aug 25)

Class Room: Amos B010
Recitation Room: TBA

Class Hours: TR, 935a and 1110a
Recitation Hours: TBA

Teaching Team

My TA, Abbi Cormier, and I will be available during our office hours to address your course content questions. I am happy to meet with you by appointment if you are unable to visit during my office hours. We've also built a GPT that is trained on the course content "who" can answer any question you put to "him". We call him "Don". Don is not flawless, but he's available 24/7 at the link below.

Contact	Web	Email	Hours
Chris Cornwell	https://cornwl.github.io/	cornwl@uga.edu	W, 230-330p
Abbi Cormier	https://abbicormier.github.io/	abigail.cormier@uga.edu	TBD
Don	BUSN 5000 GPT 2.0		24/7

Abbi is the primary contact for questions about course grades and administration.

Course Description

The modern world is awash in a seemingly unlimited amount of data. Harnessing these data for decision-making begins with acquiring the raw information and ends with communicating the results of analysis. Along the way, the data are transformed for analysis and the analyst matches statistical methods to the task at hand. BUSN 5000 covers the data science skills necessary at every stage of the value chain, including data transformation; descriptive, explanatory and predictive analyses; and professional communication.

Course Objectives

After completing this course, you should understand how to

1. acquire and prepare data for analysis.
2. design reproducible data analyses.
3. map business problems and policy questions to hypotheses about relationships in data.
4. describe data and perform basic descriptive analysis.
5. implement and interpret basic causal-inference research designs.
6. implement and interpret basic machine-learning algorithms.
7. communicate the results from descriptive, causal and predictive analyses.

Topical Outline

The topical outlines for parts I and II of the course are provided below. A detailed course schedule is posted on eLC and here.

Part I :: Transformation to Analysis

1. Data fundamentals
2. Beginning to learn
3. Models for exploration
4. Making inferences
5. Measurement error, sample selection, and confounding
6. Bayesian approach to learning from data

Part II :: Explaining and Predicting

1. Regression fundamentals
2. Potential outcomes and causal inference
3. Regression discontinuity
4. Difference in differences
5. Prediction with regression
6. Introduction to machine learning

Course Materials

Course slides packet

The BUSN 5000 slide decks are written to be read rather than presented. You should regard them more like a textbook. To make them more useful, we have arranged with Bel-Jean's to offer printed copies in a notes format (3 slides per page with space for note-taking). The packets are available in black and white (cheaper) or color (more expensive). The purpose of the packet is to provide structure for taking notes during class and studying course content outside of class. We strongly recommend that you purchase a copy and bring it to class each day. Viewing them on your laptop would be beside the point. In any event, our electronics device policy prohibits the use of laptops in class except on special days devoted to coding activities.

Recommended texts

There are no required texts for this course (other than the slides packet), but many useful ones. Here is a curated list where you can find the course content covered at a "skill-appropriate" level.

If we were to recommend just one to buy, it would probably be the "Gabors" text, as it has the most comprehensive treatment of the topics covered in BUSN 5000. Anyone considering continuing on from BUSN 5000 to Terry's MSBA or a similar program should buy it.

- *Beginner*

  Bueno de Mesquita, E. and Fowler, A., *Thinking Clearly with Data*, Princeton University Press.

  Çetinkaya-Rundel, R., *Data Science in Box*.

  Healy, K., *Data Visualization: A Practical Introduction*, Princeton University Press.

- *Intermediate*

  Bekes, G. and Kedzi, G., *Data Analysis for Business, Economics, and Policy*, Cambridge University Press.

  Angrist, J. and Pischke, S., *Mastering 'Metrics*, Princeton University Press.

- *Next Level*

  Cunningham, S., *Causal Inference: The Mixtape*, Yale University Press.

  Schwabish, J., *Better Data Visualizations*, Columbia University Press.

If you need a statistics refresher, you might start with *Computational and Inferential Thinking: The Foundations of Data Science*. It is the text for Berkeley's Data 8 course, which is a modern take on the topics covered in introductory statistics courses. It includes basic instruction in Python as well.

There are many other good online resources for statistics coverage with R programming tossed in. Check out *R for Data Science* and *Learning Statistics with R*. Finally, there is *R for Excel Users* for those wanting some guidance in transitioning from spreadsheets to a proper scripting language.

Software

Data analysis in this class is done in R, a free and open-source language for statistical computing and graphics. RStudio is a popular integrated development environment (IDE) for R that will greatly enhance your R experience. First, download and install R; then download and install RStudio. Follow these instructions. Our *helpR* guide posted on eLC links to numerous resources for learning R.

Terry Analytics Lab

TAL is a resource supported by the Ivester Institute for Business Analytics and Insights (IIBAI) for all Terry students enrolled in business analytics courses. It is located in *Orkin D207* and directed by *Dr. Katie Ireland* (katherine.ireland@uga.edu). Her team provides free tutoring in course concepts and R coding. You should regard TAL as the first stop for help with course content and assignments. TAL has its own eLC course page, where its operating hours and learning resources are posted. All BUSN 5000 students will be subscribed.

Course Policies

Performance evaluation

Your performance will be evaluated on the basis of homework assignments, Dailies, projects, and in-class tests weighted as follows:

Assessment	Number	Total
Dailies	28	10%
Homework	11	30%
Project	1	20%
Test 1	1	20%
Test 2	1	20%

Dailies

A Daily comprises 1–3 short active-learning exercises that we will conduct each class period. You will earn Dailies points by participating and providing correct responses. Your overall Dailies score will be the percentage of total potential Dailies points you earned. *If you are absent from class you cannot participate in the Daily.* (This should go without saying, but just in case: participating in Dailies on behalf of students who are absent from class constitutes an academic honesty violation and will be prosecuted as such.) We will drop the 4 lowest Dailies scores.

Homework

Homework assignments are *formative* graded tutorials that guide you through the key concepts in each course topic and include an empirical component involving R. We will drop the 2 lowest homework scores.

Homework assignments are delivered as Shiny apps running in the cloud. Links to each assignment are posted on eLC. We provide access to Shiny's cloud service at no cost to you and you do not need an account to access it.

We have posted a video explaining the process of submission on eLC. Watch it and then watch it again. Submissions that do not comply with the process will not be accepted. To promote compliance, you will begin with *"Homework 0"*, which gives you the experience of completing and submitting the 10 substantive Homework assignments that follow. *Homework 0 counts toward your grade*, so failure to complete it will not only leave you unprepared to submit the others, but it will also exhaust one of your drops.

Project

The Project is a *summative* assignment in which you draw on key course concepts to learn about an empirical relationship and document what you learn. You will use R and R Markdown to conduct the analysis and report your findings, "knitting" the two together in a slide deck. The Project is to be completed individually. You should not collaborate with other students, but you may consult TAL staff or the TAs for coding and knitting assistance.

We have posted a video explaining the process of submitting the project on eLC. You should probably watch this one at least 3x. Submissions that do not comply with the process and the

rubric spelled out in the project instructions will not be accepted. To promote compliance and provide the foundation for a successful project, we require you to complete a *pre-Project exercise* that takes you through the steps of establishing a workflow, knitting an R Markdown slide deck, and creating a PDF version for submission. *This exercise accounts for 5% of your Project grade and must be completed by the deadline indicated on the course schedule*. "Completion" here means not just an on-time submission but one that is *fully compliant* with the project instructions. Trust us, this hard line is for your benefit.

In addition to the Pre-Project exercise, we offer an *optional Project Progress Check* that covers about two-thirds of the project tables and figures. We will award 5 bonus points to your project grade if your project progress submission is complete and correct.

Tests

The tests are *summative* assessments of the key concepts covered in each section of the course. We believe real mastery of the course material is demonstrated by high-level performance on both formative and summative assessments.

The tests will be held in class at night, the first on **Thu, Oct 9 at 700p** and the second on **Mon, Nov 24 at 700p**. Mark these dates on your calendars now. We expect all students to take the tests during their prescribed time. If you know now that you will not be able to take either test during the period it is scheduled, you should drop this class.

Dates, deadlines and drops

We are likewise serious about Homework and Project deadlines, which are indicated in the course schedule. *Late submissions will not be accepted, period*.

The policy of dropping the 4 lowest Daily and 2 lowest Homework scores is to accommodate unforeseen events that prevent you from participating in a particular Daily or submitting a particular Homework assignment. We don't distinguish between excused and unexcused drops, so there is no reason to email anyone on the teaching team to document the reason for you dropping an assignment, whether it be for illness, an interview, car trouble, or whatever. Just take the drop and move on. Think of the policy as insurance. The drops are your allotted claims. Use them wisely because *when they're gone, they're gone*.

Attendance

There is no explicit penalty assessed for missing class, but missing class means missing a Daily. Make no mistake, the data on Dailies participation show that regular class attendance predicts success in BUSN 5000.

Overall assessment

You will be ranked relative to other students in the class according to your overall performance and grades will be assigned based on your class rank. We will use the plus/minus system to make distinctions within grade categories. We do not "round up".

Communication

Our communications to the class will generally come through the eLC Announcements tool, which functions like an instant messaging system. You should set your notifications preferences to re-

ceive Announcements postings in the manner that suits you. We strongly encourage the SMS option. Regardless, you are responsible for information conveyed in the announcements.

Please address content and assignment-related questions to TAL staff first. If TAL staff members cannot solve the problem, please reach out to Abbi or me.

Course administration questions should first be directed to Abbi. If she is unable to resolve the issue, I will be happy to intervene.

When you write to any member of the teaching team, your email *must* have the following components:

- A subject line that includes your section time and a few words that categorize the problem (e.g. "coding error" or "homework question")
- A proper greeting ("Hey" is not a proper greeting. "Dear Abbi" or "Dear Ms. Cormier" is.)
- A clear description of the problem and how you have tried to solve it. If it involves a coding issue, include your code in your message. For homework assignments, paste the relevant chunk in the body of your email. For the project, attach your `.Rmd` file and paste the error message in the body of your email. Do *not* send screenshots or photos.
- A proper closing (e.g. "Respectfully, your_name")

Omission of any of these features may cause your message to be rejected.

Electronic devices

BUSN 5000 has a strong *no-electronic-device policy*. That means no phones, earbuds, tablets, or laptops. One exception will be for laptops on days devoted to computing activities. We will announce those days in advance so you can plan accordingly.

Phones and earbuds are a clear distraction, but why tablets and laptops? Because the data (here, here, and here) clearly indicate their use in class harms learning and learning is what we care about.

Generative AI

My take is that you should view generative AI chatbots, like ChatGPT, Claude, and Gemini, as exceedingly productive collaborators with whom you should learn to work, much like you would with a human. Unfortunately, there are no secret prompting strategies or special step-by-step manuals (also like with a human). For some practical guidance along these lines, I recommend that you follow Ethan Mollick's substack.

As you probably have discovered, one place gen AI really helps is in coding. You can get coding help from the chat interface but you may prefer using Cursor or integrating GitHub Co-pilot with your favorite IDE. Here is how to get free access to Github Co-pilot as a student. Here are instructions for integration into RStudio. Alternatively, you may find you can get by just vibe coding with the chatbot.

University and College Policies and Statements

UGA student Honor Code

"I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others." A Culture of Honesty, the University's policy and procedures for handling cases of suspected dishonesty, can be found at honesty.uga.edu.

UGA Well-being Resources

UGA Well-being Resources promote student success by cultivating a culture that supports a more active, healthy, and engaged student community.

Anyone needing assistance is encouraged to contact Student Care & Outreach (SCO) in the Division of Student Affairs at 706-542-8479 or visit https://sco.uga.edu. Student Care & Outreach helps students navigate difficult circumstances by connecting them with the most appropriate resources or services. They also administer the Embark@UGA program which supports students experiencing, or who have experienced, homelessness, foster care, or housing insecurity.

UGA provides both clinical and non-clinical options to support student well-being and mental health, any time, any place. Whether on campus, or studying from home or abroad, UGA Well-being Resources are here to help:

- Well-being Resources: https://well-being.uga.edu
- Student Care and Outreach: https://sco.uga.edu
- University Health Center: https://healthcenter.uga.edu
- Counseling and Psychiatric Services: https://caps.uga.edu or CAPS 24/7 crisis support at 706-542-2273
- Health Promotion/ Fontaine Center: https://healthpromotion.uga.edu
- Accessibility & Testing: https://accessibility.uga.edu/

Additional information, including free digital well-being resources, can be accessed through the UGA app or by visiting https://well-being.uga.edu.

Inclusive excellence

The Terry College of Business is committed to promoting an inclusive learning and working environment among its students, faculty, and staff. This class welcomes the open exchange of ideas and values freedom of thought and expression and provides a professional environment that recognizes the inherent worth of every person. It aims to foster dignity, understanding, and mutual respect among all individuals in the class.

Changes to the syllabus

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.