

MATH/CSCI 385: Introduction to Data Science

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Data Science is the science of learning from data in order to gain useful predictions and insights. This course provides an overview of the wide area of data science, with a particular focus on the tools required to store, clean, manipulate, visualize, model, and ultimately extract information from various sources of data. Topics include the data analytics lifecycle, data wrangling and visualization, modeling, and communicating

results. Emphasis is placed on reproducible research, version control, and communicating results to a non-technical audience.

Course Details	Section 01
Meeting Times	TTh 12:30-1:45pm
Meeting Location	[UPDATE ME]

Prerequisites: Prerequisites: CSCI 111, MATH 130, or MATH 230; MATH 109 or MATH 120

Instructor

- **Name:** Dr. Robin Donatello (Dr. D, she/her/hers)
- **Office Location:** Holt 202
- **E-mail:** rdonatello@csuchico.edu
- **Office Hours:** M 1-2pm, TR 2-3pm in Holt 202, and Wed 1-3pm at [Community Coding](#)

You can address me as “Robin”, “Dr. D”, or some other respectful title that you feel comfortable with.

I have a Doctorate in Public Health (DrPH) Biostatistics from UCLA, but I’m a Chico alum. I double majored in Statistics & Biology, with minor in Chemistry, and a first generation college student who started at Butte College.

My campus life consists of training the next generation of Scientists how to harness the power of Statistics and Data in a responsible and ethical manner, leading the Data Science Initiative (DSI) provide training and experiences for students and faculty, and providing analytical support and statistical consulting for many projects on and off campus.

When I’m not on campus, typically I’m growing food for my family, out adventuring with my dogs, or getting some game time in. You can learn more about the projects I’m involved in on my [website](#).

Best method of contact? Discord.

Learning Outcomes

Upon successful completion of this course, students will be able to

Reproducible Workflows

1. Write clean, readable R code using tidyverse framework and apply it to real data problems
2. Maintain reproducible, well-documented workflows using Quarto, Git, and GitHub

Working with Data

3. Wrangle, reshape, and clean data to prepare it for analysis
4. Create accurate and effective data visualizations that support data-driven decisions
5. Conduct exploratory data analysis and summarize findings in writing

Modeling & Communication

6. Build and evaluate predictive models

7. Navigate the data science lifecycle — from formulating an answerable question to communicating results to a non-technical audience

Working in Context

8. Collaborate on a data science project using version control and code review
9. Use LLMs effectively as a coding and research aid, and evaluate their outputs critically
10. Identify and discuss ethical implications of data science methods and products

Tentative Topic List

- The data analytics lifecycle
 - R fundamentals — data types, structures, objects
 - Data visualization with ggplot2
 - Data wrangling with dplyr
 - Tidy data principles
 - Reproducible workflows with Quarto
 - Version control and collaboration with Git and GitHub
 - Exploratory data analysis
 - Using LLMs as a data science efficiency tool
 - Data collection — web scraping and APIs
 - Predictive modeling — linear and logistic regression
 - Ethics and social implications of data science
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Required Materials

All materials are free.

- **Primary Reference:** R for Data Science (2e) — <https://r4ds.hadley.nz/>
- **Course Website:** <https://data385.netlify.app/>
- **Reliable Laptop & Internet:** Expect to bring your fully charged computer daily.
- **Analysis Software:** R and RStudio. Students will begin using Posit Cloud in Week 1 — no installation required on day one. Local installation expected by Week 4.
- **Version Control:** Git and GitHub. A GitHub account is required from Week 1.
- **Canvas:** Assignment submission, gradebook, announcements
- **Gradescope:** [UPDATE ME]
- **Discord:** [UPDATE ME]

Class Flow

This course runs on a Tuesday/Thursday schedule with a weekly rhythm built around those class days:

- **Sun:** Assignments due by midnight
- **Mon:** Prepare for Tuesday's class (watch assigned videos, complete readings)

- **Tue:** Class
- **Wed:** Prepare for Thursday's class
- **Thu:** Class
- **Friday–Sunday:** Complete the week's homework or reading response, due Sunday midnight

This is a largely flipped classroom where the ingestion of learning material is your responsibility, and done prior to class. In class I will answer questions and briefly review the topic for the day and how it fits into the broader class topics. My goal is to not lecture but have you working actively on the computer. This may be “code alongs” where i am showing my screen and you are working along side me, or it could be labs where you are working through some activities with your neighbors. All activities that are started in class, are due by the end of that class

Grading

See Canvas for due dates and submission instructions. I highly recommend using the Canvas calendar to manage your schedule.

The following statement applies to all graded work: *“AI slop, gibberish, and answers using methods not discussed in class will not receive credit”*. See my Academic Integrity policy for more details.

Your final grade will be an equally weighted sum of each the domains described below. You can check your grade and do a “what if” analysis at any time in Canvas. Grades follow standard +/- letter grade conventions ([see Wikipedia](#)): A (90–100), B (80–89), C (70–79), D (60–69), F (< 60).

Late work policy

Assignments close **one week after the original due date**, or **48 hours before the exam**, whichever comes first. Something submitted late is better than nothing, but work turned in after we've moved on rarely helps you — and that shows up on exams.

Regrade requests on individual questions are accepted through Gradescope until **48 hours before the exam**. After that, grades are final. Entire assignment submissions are allowed if you scored below 50%.

Grading Domains

- **Labs:** 25%
- **Homework / Reading Responses:** 20%
- **Exams:** 30%
- **Quizzes:** 10%
- **Project:** 10%
- **Participation:** 5%

Final Project

[UPDATE ME]

Worksheets

[UPDATE ME]

Reading Responses

[UPDATE ME]

Quizzes / Exams

[UPDATE ME]

Active Learning

[UPDATE ME]

My Class Policies

Code of Conduct

Everyone is welcome here

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture.

Supportive Learning Environment

This course will push you into unfamiliar territory — that's intentional, and it's where real learning happens. I've built in multiple support structures to help you get there: office hours, Community Coding, and Discord. Use them.

To help accomplish this:

- Let me know if you have a name and/or set of pronouns that differ from those that appear in your official Chico records.
- Help me pronounce your name as accurately as possible. Corrections and patience are welcome.
- If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I am a resource for you.
- Everyone must agree to treat each other with kindness and respect, understand that we all come from different backgrounds and have different experiences and strengths.
- When in doubt, assume a positive intent.

Attendance

Class attendance is expected. Talk to me ahead of time if you need to miss a class for a planned reason. In the event of an unplanned reason, PM me in Discord when you can so that I know you are still alive.

This is a college class and you all are adults with lives outside this class. Things happen. Each class session will be live streamed, with the recording posted to Canvas within a few days. Common reasons to join the class virtually: - you're sick - you're out of town

Don't expect as good of quality of presentation, and this is not a long term solution/resource. Don't abuse this resource.

Academic Integrity

Students are expected to be familiar with the [University's Policy on Student Academic Integrity](#). Specific sections of this policy are highlighted below as they pertain to this class.

Artificial Intelligence

How I use AI

There is only one of me and a lot of you. I use AI as a thinking partner, a first-draft machine, a research and code assistant — while applying my own expertise to catch when it's wrong. I use it to provide better, faster support to you.

Your work never touches AI. I do not use AI to grade assignments or evaluate your writing or code.

Course AI Policy — Two Phase

This course has an explicit two-phase AI policy tied to the academic calendar.

Phase 1 (approximately Weeks 1–8): LLMs and AI coding assistants are **not permitted**. Students build R fundamentals and data science reasoning without AI assistance. The goal is to develop enough vocabulary and mental model of how R works that you can articulate what you need — which is a prerequisite to using AI well.

Phase 2 (approximately Weeks 9–16): LLMs are **permitted and explicitly taught** — as a coding aid, a research support tool, and as course content. We will discuss how they work, where they fail, and how to use them responsibly. Using AI without understanding the output remains a violation of academic integrity in both phases.

How to use AI well

Use it as a thinking partner, to help debug code and understand error messages, and to learn how to write code to implement ideas you can already articulate. Push back on it when it shares code that doesn't make sense or uses approaches not taught in this class.

Collaboration

You are *highly encouraged* to work together with classmates to learn the material. However, your submitted work must be 100% a product of your personal effort.

Summary

! Not Allowed

- Working with or getting help from others on exams and individual quizzes
- Copying code from another student's homework and presenting it as your own
- Copy/paste from AI tools or internet sources without customization, citation, or explanation
- Getting someone else to write code for you
- Submitting any assignment that is not 100% your own personal effort
- AI-generated writing submitted as your own
- Using AI on a quiz or exam
- Using AI tools during Phase 1 of the course

💡 Allowed

- Helping each other solve homework problems (concepts or code)
- Using AI tools during Phase 2 for code assistance, debugging, and research support
- Copy/paste code from course notes or your own prior assignments (Encouraged!)

If at any time I suspect that the work you are submitting is not reflective of your personal knowledge, I will assign a 0 and ask you to come talk with me — not to penalize, but as a learning opportunity. Any use outside of this permission constitutes a violation of Chico State's Integrity Policy and may result in referral to the Office of Student Rights and Responsibilities.

University Policies and Campus Resources

Adding and Dropping the course

The last day to add or drop classes without instructor permission is **[UPDATE ME]**. No adds or drops are allowed after **[UPDATE ME]** without a serious and compelling reason approved by the instructor, department chair, and college dean.

IT Support Services

Computer labs for student use are located in multiple locations in the library, Tehama Hall Room 131, and in the lobby of the new BSS building. You can get help using your computer from IT Support Services; contact them through the ITSS web site at <http://www.csuchico.edu/itss>. Additional labs may be available to students in your department or college.

Americans with Disabilities Act

If you need course adaptations or accommodations because of a disability or chronic illness, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Please also contact Accessibility Resource Center (ARC) as they are the designated department responsible for approving and coordinating reasonable

accommodations and services for students with disabilities. ARC will help you understand your rights and responsibilities under the Americans with Disabilities Act and provide you further assistance with requesting and arranging accommodations. Phone: 530-898-5959. Location: Student Services Center 170. Email: arcdept@csuchico.edu. Website: <http://www.csuchico.edu/arc>

Chico State Basic Needs Project

The **Hungry Wildcat Food Pantry** provides supplemental food, fresh produce, CalFresh application assistance and basic needs referral services for students experiencing food and housing insecurity. All students are welcomed to visit the Pantry located in the Student Service Center 196. Check the website for a location map and for the most up to date information on open hours: <https://www.csuchico.edu/basic-needs/pantry.shtml>.

Confidentiality and Mandatory Reporting

As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. I also have a mandatory reporting responsibility related to my role as a your instructor. I am required to share information regarding sexual misconduct with the University. Students may speak to someone confidentially by contacting the Counseling and Wellness Center (898-6345) or Safe Place (898-3030). Information on campus reporting obligations and other Title IX related resources are available here: www.csuchico.edu/title-ix.